

REQUEST FOR COUNCIL ACTION CITY OF SAN DIEGO				CERTIFICATE NUMBER (FOR COMPTROLLER'S USE ONLY)	
TO: CITY COUNCIL		FROM (ORIGINATING DEPARTMENT): Transportation&Storm Water Dept		DATE: 9/17/2015	
SUBJECT: Winter Storm Preparation, Master Maintenance Program Annual Report and Channel Prioritization					
PRIMARY CONTACT (NAME, PHONE): Gene Matter,(619) 527-7506; MS 44			SECONDARY CONTACT (NAME, PHONE): Drew Kleis, (858) 541-4320; MS 1900		
COMPLETE FOR ACCOUNTING PURPOSES					
FUND					
FUNCTIONAL AREA					
COST CENTER					
GENERAL LEDGER ACCT					
WBS OR INTERNAL ORDER					
CAPITAL PROJECT No.					
AMOUNT	0.00	0.00	0.00	0.00	0.00
FUND					
FUNCTIONAL AREA					
COST CENTER					
GENERAL LEDGER ACCT					
WBS OR INTERNAL ORDER					
CAPITAL PROJECT No.					
AMOUNT	0.00	0.00	0.00	0.00	0.00
COST SUMMARY (IF APPLICABLE): This is an informational item only					
ROUTING AND APPROVALS					
CONTRIBUTORS/REVIEWERS:		APPROVING AUTHORITY	APPROVAL SIGNATURE	DATE SIGNED	
Liaison Office		ORIG DEPT.	McFadden, Kris	09/22/2015	
		CFO			
		DEPUTY CHIEF	Gomez, Paz	09/29/2015	
		COO			
		CITY ATTORNEY			
		COUNCIL PRESIDENTS OFFICE			
PREPARATION OF:	<input type="checkbox"/> RESOLUTIONS	<input type="checkbox"/> ORDINANCE(S)	<input type="checkbox"/> AGREEMENT(S)	<input type="checkbox"/> DEED(S)	
This is an informational item only					
STAFF RECOMMENDATIONS: No action required, information item only					
SPECIAL CONDITIONS (REFER TO A.R. 3.20 FOR INFORMATION ON COMPLETING THIS SECTION)					
COUNCIL DISTRICT(S):	All				
COMMUNITY AREA(S):	All				
ENVIRONMENTAL IMPACT:	None, no discretionary actions are required.				
CITY CLERK					

INSTRUCTIONS:	
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COUNCIL ACTION
EXECUTIVE SUMMARY SHEET
CITY OF SAN DIEGO

DATE: 9/17/2015

ORIGINATING DEPARTMENT: Transportation&Storm Water Dept

SUBJECT: Winter Storm Preparation, Master Maintenance Program Annual Report and Channel Prioritization

COUNCIL DISTRICT(S): All

CONTACT/PHONE NUMBER: Gene Matter/(619) 527-7506; MS 44

DESCRIPTIVE SUMMARY OF ITEM:

Pursuant to the Master Storm Water System Maintenance Program (MMP) and in accordance with Site Development Permit Number 1134892 (SDP) the Storm Water Division provides this Annual Report to document flood channel maintenance activities and associated mitigation implemented over the past fiscal year (July 1, 2014 – June 30, 2015). This report also includes a discussion of future (FY 18 and beyond) drainage channel maintenance prioritization as of Fiscal Year 2016, and a summary of the Storm Water Division's preparations for the 2015-2016 winter rainy season.

STAFF RECOMMENDATION:

No action required, information item only

EXECUTIVE SUMMARY OF ITEM BACKGROUND: The foundation of the Division's plan of action for each rainy season is a thorough review of existing conditions in the storm water conveyance system. Over the past year, Division staff has been reviewing and documenting system conditions throughout the City. Staff has performed assessments, operational checks and many needed repairs on several components of the City's municipal drainage system. This work includes checks at pump stations, and maintenance of pumps and motors. Also, cleaning of drainage channels were performed at seven locations between September 15, 2014 and September 22, 2015 and are scheduled at two other locations this fall. Preparations included assessments of various conveyances, proactive cleanings of all pipes and inlets, and partnering with non-profit groups to perform cleanup events near storm drain channels. Lastly, the department is working proactively to prepare for the upcoming winter. When a storm is imminent, crews are mobilized in advance of and during storms to patrol assigned areas and inspect and clean key drainage locations.

Pursuant to the Master Storm Water System Maintenance Program (MMP) and Site Development Permit (SDP) Mitigation Measure 4.3.7, the Storm Water Division provides this Annual Report to document flood channel maintenance activities and associated mitigation implemented over the past fiscal year (July 1, 2014 – June 30, 2015). Due to the environmental sensitivity of the flood control channels the City maintains, the City of San Diego Storm Water Division (SWD) adopted the MMP to minimize and permit environmental impacts associated with channel maintenance. The MMP includes storm water facilities, specifically open channels, which the SWD has the responsibility to maintain. Over the past year, the SWD maintained seven storm water channel facilities. Three were part of a planned effort and four were

emergency activities. The planned channel maintenance included flood control channels within the Sorrento Creek – Reach 3 (MMP Map 11,12), Murphy Canyon Creek – Reaches 1, 2 (MMP Map 58, 58a), and Mission Bay High School & Pacific Beach/Olney Drive (MBHS/PBO) (MMP Map 36, 37). The three channels that were maintained under emergency conditions were San Carlos Creek (MMP Map 54), Reservoir Drive (requires amendment to MMP to create a map), Smythe Channel (MMP Map 129), and the Lobrico Channel. Within the Sorrento Creek Channel – Reach 3, approximately 343 tons of material was removed from 770 linear feet of the channel. Within Murphy Creek, approximately 10,324 tons of material was removed from 1,760 linear feet of the channel. At MBHS/PBO, approximately 420 tons of sediment and vegetation have been removed thus far for 1,972 linear feet of channel. At the San Carlos Creek channel, approximately 158 tons of material was removed from the project area. During emergency maintenance, approximately 131 tons of material was removed from 780 linear feet of the Reservoir Drive channel. Within the Smythe Channel, approximately 178 tons of material was removed from a 1,015 linear foot section of channel. Within the Lobrico Channel, approximately 135 tons of material was removed from a 200-foot section of the channel.

Wetlands mitigation for Sorrento Creek Reach 3 has been designed and is scheduled to begin implementation during the Fall of 2015. Wetlands mitigation for the Murphy Creek Channel will be located at the Stadium (San Diego River) site which is being planned and permitted by the City's Public Utilities Department. For all emergency maintenance work, staff is preparing all required documentation and technical studies to submit for after the fact approvals. As needed, staff is seeking appropriate mitigation related to each emergency location. SWD maintained compliance with all applicable permits during the maintenance activities for all channels. Channels anticipated for maintenance during the Fall of 2015 include Alvarado Creek (MMP Maps 59, 60 and 64) and Tijuana River Pilot Channel and Smuggler's Gulch (MMP Map 138, 139, 138 a, b, c).

The process to prepare technical documents and obtain agency permits takes two years, therefore advance planning is needed to determine which channels will be permitted and maintained two years in advance. Prior to conducting the required technical studies needed for permits, storm drain channels are prioritized. Each year in the spring field staff assess all storm water channels inventoried in the MMP. The evaluations include assessments of channel conditions relative to vegetation, sediment, infrastructure, and elements that could lead to flooding. Photographs and inspection forms are used to document findings. The findings associated with the twenty five (25) channels that appear to have the greatest flooding potential are forwarded to a Technical Consultant (TC) with hydraulic and hydrological expertise who analyzes channel capacity, clogging potential, vegetation density, and adjacent land uses. Other factors used in the prioritization include water quality impacts, public input, and aesthetics. With this information the TC formulates a draft channel prioritization score used to determine ranking of channels for future maintenance. In prior years, public input was limited to staff researching any previous requests from the public regarding any particular channel. Starting this year, the SWD included conducting a public outreach meeting on August 11, 2015 as an additional element of public outreach. At the meeting staff presented data on the channel drainage capacity, water quality impacts, aesthetics and past public requests. Staff provided information on the channel cleaning program, how the channels were prioritized and answered questions from the public. After the meeting, an online survey was established for any member of the public to vote on the highest

priorities channels to be planned for maintenance in Fiscal 2018 and beyond. The public input scores have been finalized and incorporated into the overall channel priority list for 2018. It is SWD's recommendation that channels planned for maintenance in 2018 be based on this prioritization process with an emphasis on those channels scoring 85 or greater. In the coming months, SWD will continue to evaluate the current resources available and any additional needs will be requested through the upcoming budget process.

CITY STRATEGIC PLAN GOAL(S)/OBJECTIVE(S): Goal #2: Work in partnership with all of our communities to achieve safe and livable neighborhoods.

Objective #1: Protect lives, property, and the environment through timely and effective response in all communities.

FISCAL CONSIDERATIONS: Not applicable

EQUAL OPPORTUNITY CONTRACTING INFORMATION (IF APPLICABLE): Not applicable

PREVIOUS COUNCIL and/or COMMITTEE ACTION : None

COMMUNITY PARTICIPATION AND PUBLIC OUTREACH EFFORTS: See discussion above.

McFadden, Kris
Originating Department

Gomez, Paz
Deputy Chief/Chief Operating Officer



THE CITY OF SAN DIEGO

MEMORANDUM

DATE: September 25, 2015

TO: Honorable Mayor and Members of the City Council

FROM: Kris McFadden, Transportation & Storm Water Department Director

SUBJECT: 2015 Rainy Season Emergency Preparations and Storm Water Channel Maintenance

This memorandum provides an overview of the Transportation & Storm Water Department, Storm Water Division's (Division) preparations for the 2015-2016 rainy season. It also provides information about the channel maintenance that is planned for the 2015-2016 rainy season. Finally, the memo provides a list of channel maintenance locations that may be maintained in future fiscal years that have been prioritized based on engineering analysis and public input.

Rainy Season Preparations

The foundation of the Division's plan of action for each rainy season is a thorough review of existing conditions in the storm water conveyance system. Over the past year, Division staff has been reviewing and documenting system conditions throughout the City. This information is used as part of the selection criteria for maintenance services as described below.

1. Pump Stations: Staff has also reviewed conditions and performed preventative maintenance on the system of 14 pump stations used to move storm water across low-lying areas of the City. The pump stations near the beach, including the large facility on Santa Clara Point, received substantial upgrades following the 2010 – 2011 rainy season including new electrical systems and the addition of submersible pump motors. In the last three years, eight additional pumps were repaired and 12 pumps were replaced. Remote telemetry was also installed at eight locations in FY15, and the remaining six locations will be fitted by June 2016. The Division also purchased one additional mobile pump and generator to deploy at flood prone locations. Six additional mobile pumps will be added in October 2015. These systems have been regularly inspected and maintained by staff. They are all in working order and have been in operation since early September rains arrived. The Division has a contract in place to rent additional pumps and generators as necessary.
2. Trash cleanups: The Division, working in partnership with Urban Corps, community groups and non-governmental organizations has also conducted trash and debris clean-ups in storm

Honorable Mayor and Members of the City Council

Subject: 2015-16 Rainy Season Preparations and Storm Water Channel Maintenance

September 25, 2015

channels throughout the City. Areas immediately adjacent to storm channels were also serviced to ensure they were free of debris that could wash into channels during heavy rains.

3. Channel Maintenance: In FY15, more than 14,000 tons of material (sediment, trash, vegetation, and debris) were excavated from six channels (Sorrento, Murphy Canyon Creek, Smythe, Reservoir Drive, San Carlos, and Pacific Beach Drive/Olney Street channels) throughout the City to improve water flow capacity along nearly 10,000 linear feet of channels. In addition to the major channel clearing efforts at these six locations, in FY15 the Division selectively cleared non-native vegetation and trash from 27 additional locations. The Division is preparing to clear two additional channel locations in FY16: Alvarado Creek channel and the adjoined Smugglers Gulch and Pilot Channels in the Tijuana River Valley. See the "FY16 and FY17 Planned Channel Maintenance" section below for more information. Work at these locations is weather dependent and subject to environmental approvals. Work is tentatively planned to begin at both locations between September 30, 2015 and October 7, 2015.
4. Storm Drain repairs: In the last year, the Division has completed five storm drain repairs with two additional repairs currently underway and scheduled to be completed in the next 30 days. To identify other locations where storm drain pipe may be in need of critical repair, the Division has televised over 2,500 feet of storm drain pipe and will continue assessments whenever a drainage system's condition is in question. In addition, the Division has cleared seven clogged pipes and began using a new vactor truck-operated auger head (drill head) to clear calcified deposits from pipes that could not be cleaned with conventional methods.
5. Storm Drain Cleaning: Staff has continued to conduct nearly 28,000 storm drain inlet cleaning efforts each year to remove trash, debris and sediment that might cause system impairments or failures. That effort, which is part of the pollution prevention strategy called out in the City's storm water permit, provides system managers and staff up-to-date information about the condition of these important facilities. Crews also clean storm drain channels during Storm Patrol, as described below.
6. Storm Patrol & Emergency Response Efforts: Finally, Division staff is coordinating with weather experts at the National Weather Service to monitor weather forecasts. This information is used to initiate "Storm Patrol" duties in the Transportation & Storm Water Department. When Storm Patrols are initiated, crews from Storm Water and Street Divisions are mobilized to patrol assigned areas and inspect and clean key drains and locations in advance of and during storms. Administrative staff from the Division is prepared for complaint and report intake duties and to serve as additional dispatchers during wet weather. The Department is also prepared to shift its public communication efforts toward wet weather preparations and flood safety when rains are forecasted. Public information staff is ready to begin a proactive media outreach effort to convey flood safety messaging, and Department leaders are available to provide regular briefings to any Council offices whose constituents are affected by flooding. If necessary, Department leaders are also prepared to

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Subject: 2015-16 Rainy Season Preparations and Storm Water Channel Maintenance

September 25, 2015

work with regulators to attempt to gain emergency permission to conduct as much channel maintenance, reinforcement or restoration as possible during heavy rains.

Channel Maintenance (Master Storm Water System Maintenance Plan) Update

In September 2013, the City received final approval to use the Master Storm Water System Maintenance Plan (Master Maintenance Plan) as the guiding document for selecting which channels will receive maintenance each year. The Master Maintenance Plan documents priority channels within the City's storm water conveyance system and outlines the kind of maintenance activities that may be employed to restore capacity for those channels. The Division uses the Master Maintenance Plan as the basis for responding to outside regulatory agencies with permitting authority over the channel maintenance effort.

The City is required to obtain permits to conduct work in its storm channels from five separate agencies: US Department of Fish and Wildlife, US Army Corps of Engineers, California Department of Fish and Wildlife, San Diego Regional Water Quality Control Board, and San Diego Local Coastal Program (Development Services Department). The City may also have to seek permit authority from the California Coastal Commission in order to conduct maintenance in a channel within the Coastal Zone. Each agency has a unique permitting process and the Storm Water Division's Operations & Maintenance section must submit individual permit applications for any channel it intends to maintain in a given year.

The permitting process also requires development, submission and approval of special reports for each channel segment identified for maintenance. These studies include reviews of hydrologic conditions, biological resources, archaeological/cultural resources, noise impacts, and mitigation options.

FY16 and FY17 Planned Channel Maintenance

The entire permitting process for any maintenance effort in any segment of the City's storm channel system takes approximately 24 months to complete. Consequently, in order to effectively budget staff and financial resources for channel maintenance, the Division must prepare a forecast for channel maintenance needs extending past the current fiscal year. Given this lead time, the channels planned for maintenance in FY16 and FY17 have been selected and are in various stages of planning and permitting, as described below.

The Division is preparing to clear channels at two locations in FY16: Alvarado Creek channel and the adjoined Smugglers Gulch and Pilot Channels in the Tijuana River Valley. Work at these locations is weather dependent and subject to environmental approvals. Work is tentatively planned to begin at these locations between September 30, 2015 and October 7, 2015.

The Division is processing environmental permits for two locations planned to be maintained in FY17: Smythe and Nestor Creek Channels. In addition, The Division is working with the Public

Works Department on a project that will improve the Encanto Channel. This capital improvement project is scheduled for construction in FY17.

FY18 and Beyond Channel Maintenance Prioritization

The Division's "Storm Water Channel Maintenance Program Prioritization List", dated September 11, 2015 is reviewed on an annual basis so staff may identify and prioritize work for future years based on each channel segment's ability to meet flood control objectives. While developing and prioritizing the needs list, staff considers:

1. Findings from routine inspections
2. Documented histories of flooding
3. Potential impacts to human health and safety (including vector control needs), and
4. Information provided through public inquiries and service requests.

Following these considerations, staff develops a short list of channels for maintenance and considers preliminary hydrology studies prepared for each location (<http://www.sandiego.gov/stormwater/services/channels.shtml>), requests for service from the public, site-specific water quality regulations, and pollutant reduction priorities to further refine that list. Staff also works simultaneously to locate, secure, design and prepare suitable mitigation sites in advance of channel maintenance activities that may occur in years ahead. To provide increased public input into the prioritization process, the Division also held a public meeting in August 2015, and conducted an online survey where the public was able to "vote" for the channels that they believed had the greatest need for maintenance. The results of this survey were incorporated into the channel prioritization provided in Attachment 1.

It is important to note that the refined list of channels chosen as potential candidates for maintenance work can be modified at any time should conditions within channels segments change. The list is reevaluated and re-prioritized each year. Therefore, eventual implementation of channel maintenance may be accomplished in a different order than the priority list due to multiple factors such as complexity of work required, time required to secure permit approvals from outside agencies, availability of mitigation options, workload demands (including emergency response needs during the rainy season), and other changes in priorities.

Public Reporting

The City encourages the public to report non-emergency problems or concerns with any part of the storm water conveyance system including storm channels. All non-emergency reports should be made to the City's Storm Water Hotline, (619) 235-1000 or via the service request system on the Division's web page: <http://www.sandiego.gov/stormwater/services/servicerequest.shtml>. All reports made through these systems are given a service request number allowing the reporting party to track how the Division responds to its concerns.

Honorable Mayor and Members of the City Council

Subject: 2015-16 Rainy Season Preparations and Storm Water Channel Maintenance

September 25, 2015

For flooding concerns and other storm water conveyance system emergencies, the public should immediately call the City's Public Works Dispatch Center (Station 38) at (619) 527-7500. The Dispatch Center team can effectively initiate the appropriate response for all flooding concerns.



Kris McFadden
Director

KM/dk

Attachment

cc: Stephen Puetz, Chief of Staff, Office of the Mayor
Jaymie Bradford, Deputy Chief of Staff/Chief of Policy, Office of the Mayor
Matt Awbrey, Deputy Chief of Staff/Chief of Communications, Office of the Mayor
Scott Chadwick, Chief Operating Officer
Stacey LoMedico, Assistant Chief Operating Officer
Mary Lewis, Chief Financial Officer
Paz Gomez, Deputy Chief Operating Officer, Infrastructure/Public Works
Ron Villa, Deputy Chief Operating Officer, Internal Operations
David Graham, Deputy Chief Operating Officer, Neighborhood Services
Chief Javier Mainar, Fire-Rescue Department
Chief Shelley Zimmerman, Police Department
Andrea Tevlin, Independent Budget Analyst
Jan Goldsmith, City Attorney
Elizabeth Maland, City Clerk
Brian Pepin, Director of Council Affairs, Office of the Mayor
Mike Hansen, Director of Land Use & Environmental Policy, Office of the Mayor
Katherine Johnston, Director of Budget and Infrastructure Policy, Office of the Mayor
Amanda Guy, Deputy City Attorney
Amelia Brazell, Communications Department Director
Bob Vacchi, Development Services Department Director
Mario X. Sierra, Environmental Services Department Director
Misty Jones, Library Department Director
Herman Parker, Park and Recreation Department Director
Tom Tomlinson, Planning Department Interim Director
Halla Razak, Public Utilities Department Director
James Nagelvoort, Public Works Department Director
Cybele Thompson, Real Estate Assets Department Director
Kristina Peralta, Purchasing and Contracting Department Interim Director
Matt Vespi, Risk Management Department Interim Director
Carolyn Wormser, Executive Director, Special Events
Thyme Curtis, Executive Director, ADA Compliance/Accessibility

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Honorable Mayor and Members of the City Council

Subject: 2015-16 Rainy Season Preparations and Storm Water Channel Maintenance

September 25, 2015

John Valencia, Executive Director, Office of Homeland Security

Drew Kleis, Deputy Director, Transportation & Storm Water Department

Gene Matter, Assistant Deputy Director, Transportation & Storm Water Department

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CITY OF SAN DIEGO
TRANSPORTATION & STORM WATER DEPARTMENT
STORM WATER CHANNEL MAINTENANCE PROGRAM PRIORITIZATION

September 11, 2015

Name of Channel	Map No.	Channel Assessment Factors / Scores				Final Score (Out of 100)
		1. Flood Hazard (75 Points)	2. Water Quality (10 Points)	3. Public Input History (5 Points) ³	3. Public Input Survey (5 Points) ⁴	
7969 and 7971 Engineer Road	47	73.8	6	5	5	94.8
Via De La Bandola	130a	75.0	5	5	4	94.0
Rancho Bernardo	3	73.8	6	5	5	93.6
Chollas Creek Channel (Reach 2)	71	68.8	6	5	5	87.3
Auburn Creek Channel (Section 4 of 4)	70	70.0	4	5	5	86.5
Washington Channel ²	84	71.3	4	5	3	83.3
Cottonwood Channel	120	70.0	6	5	1	82.0
Parkside Channel	122	71.3	3	5	1	80.3
South Chollas Creek Channel	98	65.0	6	5	4	80.0
Camino de la Reina & Camino del Arroyo	81	62.5	4	5	3	75.8
Auburn Creek Channel (Section 1 of 4)	67	62.5	4	5	4	75.5
South Chollas Creek Channel	95	65.0	2	5	3	75.0
Tocayo Channel	136	65.0	4	5	1	75.0
South Chollas Creek Channel	97	63.8	3	5	3	74.8
Chollas Creek Channel (Reach 1)	71	56.3	4	5	5	72.8
Tocayo Channel	137	63.8	3	5	1	72.8
South Chollas Creek Channel ²	104	56.3	4	5	2	72.3
Auburn Creek Channel (Section 2 of 4) ²	68	56.3	6	5	4	71.3
Auburn Creek Channel (Section 3 of 4)	69	56.3	3	5	4	69.6
South Chollas Creek Channel	97a	56.3	3	5	2	66.3
Red River Dr & Conestoga Dr	51	61.9	2	0	2	65.9
South Chollas Creek Channel	99	49.4	3	5	3	60.4
35th St & Martin Ave	92	54.4	3	0	2	59.4
4300 Mission Bay Drive	Proposed	38.1	6	5	2	56.1
Euclid & Castana	105	46.9	4	0	1	51.9

1. Assessment Factors per City of San Diego's Storm Water Master Maintenance Program (MMP)

2. This channel has 2 separate channel geometries, the controlling geometry is the score given.

3. Public input history is based on the number of service requests received.

4. To be completed with Public survey via <http://www.sandiego.gov/stormwater/services/channels.shtml>

Master Storm Water System Maintenance Program Annual Report

City of San Diego

Transportation & Storm Water Department
Storm Water Division

September 2015



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Appendices

Appendix A: Master Storm Water Facility and Mitigation List

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

Appendix C: Pre- and Post-Maintenance Photos

Appendix D: Pre- and Post-Maintenance Maps

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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's Storm Water Division (SWD) 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 approved Site Development Permit (SDP) Number 1134892 for the program. Pursuant to Section 5.5 of the MMP and in accordance with PEIR Mitigation Measure 4.3.8, the Storm Water Division provides this Annual Report to document flood control channel maintenance activities and associated mitigation implemented over the past fiscal year, July 1, 2014 - June 30, 2015 (FY 2015).

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. Some work may occur during the bird breeding season, but typically involves focused minimization measures to avoid impacts to breeding birds.

During FY 2015, the Storm Water Division performed planned maintenance activities in the following channel areas:

- Sorrento Valley Reach¹ 3 (aka Soledad Creek Channel) (MMP Maps 9, 11, 12)
- Murphy Canyon Creek (MMP Map 58)
- Mission Bay High School and Pacific Beach/Olney Street Channels (MMP Maps 36 and 37)

During FY 2015, the Storm Water Division performed emergency maintenance activities in the following channel areas:

- San Carlos Creek Channel (MMP Map 54)
- Reservoir Drive Channel (MMP Map 64a²)
- Smythe Channel (MMP Map 129)

Wetlands mitigation for the Tijuana River Pilot Channel and Smuggler's Gulch channels (MMP Maps 138 a, b, c, and 139) was continued during FY 2015 within and adjacent to the channel maintenance footprint. Wetlands mitigation for the Murphy Channel has been reserved at a larger City mitigation site

¹ A reach is a section of channel studied during an Individual Hydraulic and Hydrology Assessment (IHHA). The boundaries of a reach are defined most frequently by a change in channel properties, such as construction type (e.g. earthen or concrete), design, width, substrate, or connection to other portions of the larger channel system.

² The MMP is currently undergoing an amendment to add this channel as Map 64a.

near Qualcomm Stadium. Wetlands mitigation for Sorrento Valley Reach 3 and Mission Bay High School and Pacific Beach/Olney Street Channels has been designed. The enhancement component is in implementation and the creation component is in the City's contracting process with construction expected during fall of 2015. Uplands mitigation will be in the form of payment into the City's Habitat Acquisition Fund in accordance with Mitigation Measure 4.3.11 of the PEIR. Mitigation for the emergency activities has not yet been identified. The Storm Water Division maintained compliance with all regulatory permits and agreements during the maintenance activities for all 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 landscaped areas, driveways, and streets that flow into drainage facilities and, ultimately, into receiving waters and the ocean. 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 2011 a and b, October 2011). These regulations include, but are not limited to the Clean Water Act (CWA), 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 hydrology, potential risk of flooding, and public input; conducts the appropriate technical analyses required by the PEIR to determine scope, scale, justification, and environmental impacts of each channel prioritized 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;
- 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, as a primary objective, each channel 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, public input, 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 that analyze potential impacts to biological, cultural, and water quality resources associated with each facility.

First, an Individual Hydraulic and Hydrology Assessment (IHHA) is completed to assess the current channel conveyance capacity, need for maintenance, determine the minimum amount of sediment and/or vegetation that must be removed to improve flood conveyance, and determine if any structures or actions are required to minimize impacts to water quality and/or provide improved erosion control during or after maintenance. When an IHHA is completed for a channel identifying the need for maintenance, an Individual Maintenance Plan (IMP) is developed to document the maintenance area and methods that will be used. 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, wet weather and other factors may limit maintenance activities during the rainy season, typically October through April.

Table 1 – MMP Facilities Maintained in Fiscal Year 2015 and Associated Mitigation lists the channels that were maintained during the FY 2015 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 2015 and Associated Mitigation

Map No.	Facility	Date	Maintenance Type	Vegetation Impacts (acres)	Vegetation Type	Mitigation
11,12	Sorrento Creek, Reach 3 ¹	9/15/2014-10/2/2014 3/11/2015-3/14/2015	Sediment and Vegetation Removal	0.96	Disturbed (Developed/Concrete Lined)	1.91 acres at El Cuervo Del Sur Wetlands Mitigation Site and 5.53 acres at Los Penasquitos Preserve Wetlands Enhancement Site ²
				0.11	Disturbed (Developed) - Temporary	
				0.04	Disturbed Ruderal - Temporary	
				0.02	Non-Native / Ornamental - Temporary	
				1.13	Subtotal	
58, 58a	Murphy Canyon Creek, Reaches 1 & 2	12/22/2014 - 3/14/2015	Sediment and Vegetation Removal	0.70	Freshwater Marsh	4.28 acres of wetlands restoration and enhancement credits at the Stadium Mitigation Site
				0.25	Disturbed Southern Willow Scrub	
				0.21	Southern Riparian Forest	
				0.04	Open Water/Natural Flood Channel	
				0.02	Developed Habitat	
1.22	Subtotal					
36, 37	Mission Bay High School & Pacific Beach Dr/Olney Dr Channels	3/7/2015 - Fall 2015 (Ongoing)	Sediment and Vegetation Removal	0.31	Freshwater Marsh	0.34 acre at El Cuervo Del Sur Wetlands Mitigation Site and 0.96 acre at Los Penasquitos Preserve Wetlands Enhancement Site
				0.3	Non-native Grasslands	
				0.34	Non-Native Vegetation	
				0.22	Disturbed Habitat	
				0.38	Developed Habitat	
1.55	Subtotal					
54	San Carlos Creek Channel Emergency	11/1/2014 - 11/8/2014	Emergency Removal of Debris	0.004	Freshwater Marsh/Concrete Channel	TBD
64a	Reservoir Dr Channel Emergency	11/28/2014	Emergency Removal of Vegetation and Sediment	0.07	Disturbed Freshwater Marsh (on Concrete Channel)	TBD
				0.01	Disturbed Wetland	
				0.07	Developed, Unvegetated Concrete-Lined Channel	
				0.15	Subtotal	
129	Smythe Channel Emergency	12/1/2014	Emergency Removal of Vegetation and Sediment	1.30	Developed, Unvegetated Concrete-Lined Channel	None Required.
MMP Total Vegetation Impacts (acres)				5.35		

¹ A reach is a section of channel, the boundaries of which are created during an Individual Hydraulic and Hydrology Assessment (IHHA). The boundaries of a reach are defined most frequently by a change in channel properties, such as construction type (e.g. earthen or concrete), design, width, substrate, or connection to other portions of the larger channel system.

² Mitigation listed is for entire channel maintenance project, including Reach 7

Additional details regarding channels that were maintained during the FY 2015 season are provided in subsequent sections of this report. Appendix C includes Figures 1-12, 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.

Sorrento Valley (MMP Maps 9, 11 and 12)

The Sorrento/Soledad/Flintkote Channel Maintenance Project was fully permitted in March 2014 to remove 125–175 cubic yards of accumulated vegetation and sediment from the 11000 Roselle Street/11100 Flintkote Avenue Channel (MMP Map 9; also referred to as Reach³ 7), a concrete lined facility, and 2,000–4,000 cubic yards of accumulated vegetation and sediment from the Soledad Canyon/Sorrento Creek Channel (MMP Maps 11 and 12; also referred to as Reach 3). Prior maintenance occurred under emergency conditions in 2011 in Reach 3. Vegetation and sediment coverage were noted at 40% and 60%, respectively, and, based upon post-maintenance photographs, over 95% of vegetation and 80% of sediment was removed. In the 2013 IHHA for Reach 3, it was observed that sediment deposited along the channel bed varied from approximately 18 inches at its downstream end to a very minimal amount at the upstream end. Some sections contained pebbles and cobbles up to 3 inches in diameter, mixed in with silty sands that were observed to a depth of 12 inches. In general, the downstream end, where the sediment deposition is the deepest, supported the most dense vegetation. Based on pre-maintenance and post-maintenance photos, this accumulation of vegetation and sediment equated to approximately 80% sediment coverage and approximately 10% vegetation coverage.

Maintenance was conducted in Reach 7 in FY2014 and included the removal of 108.10 tons of material from 0.12 acres. More details regarding this maintenance event can be found in the FY2014 MMP Annual Report. Project maintenance activities during FY2015 were completed for a 2,300 linear feet portion of Reach 3 between September 16 and October 2, 2014. During this period, crews removed approximately 3,135 tons of sediment and vegetation from the channel using mechanized equipment. Approximately 770 linear feet of the site was revisited during a second maintenance effort which took place March 11 through March 14, 2015, and included the removal of an additional 343 tons of material, bringing the total amount of vegetation and sediment removed from Reach 3 to 3,478 tons. All BMPs (gravel bags, authorized access routes, etc.) were implemented during maintenance and removed following completion of maintenance. 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 in Reach 7. As sediment and debris is found, it is swept up by hand and removed from the channel.

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 Peñasquitos Canyon Preserve Wetlands Enhancement Project and the El Cuervo Del Sur Wetlands Mitigation Project. See Mitigation Projects Section for details.

³ A reach is a section of channel, studied during an Individual Hydraulic and Hydrology Assessment (IHHA). The boundaries of a reach are defined most frequently by a change in channel properties, such as construction type (e.g. earthen or concrete), design, width, substrate, or connection to other portions of the larger channel system.

Conveyance Capacity Resulting from Maintenance

The pre-project IHHA determined that Reach 3 had the capacity to convey a 10-year storm flow in its pre-maintenance condition, and without corrective action, its conveyance capacity would be reduced to a 5-year storm event. However, by maintaining the channel, the projected conveyance capacity increased to the 15- to 20-year storm event.

Water Quality Monitoring Summary

The pre-project IWQA involved assessing water quality and sediment to determine whether the project would impact or benefit water quality. The methodology is documented in the *Standard Operating Procedure (SOP) to Conduct Water Quality Assessment and Quantification Model for Flood Channel Maintenance* found in Appendix A of the *Water Quality Assessment – White Paper* of the PEIR.

The annual existing pollutant removal load capacity over a three year period was calculated during this assessment and compared to the theoretical maintained pollutant load removal capacity over the same time frame. Factors such as pollution uptake by biomass and pollutant removal resulting from sediment excavation were taken into account, and it was determined that the proposed sediment removal during maintenance would eliminate a larger pollutant load than what is theoretically removed during ambient flow by natural treatment system processes. The study showed that sediment excavation in Reach 3 would prevent re-suspension and downstream transport of sediment-bound pollutants during wet weather, and regrowth of fresh water marsh species in Reach 3 within one year would further enhance dry-season pollutant removal from the channel. The IWQA results suggest that there is a benefit to the channel maintenance.

However, in an effort to best combine the as-built channel capacity with improvements to water quality, the City, in accordance with the Coastal Development Permit (CDP) and SDP, is implementing a suite of water quality improvement activities including the distribution of pollution prevention outreach materials; 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 within the priority channel drainage area will lead to long-term water quality benefits.

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

Murphy Canyon Creek Channel (MMP Map 58)

The Murphy Canyon Creek Channel Maintenance Project involved the removal of accumulated sediment, trash, and vegetation from Reaches⁴ 1 and 2 of Murphy Canyon Creek. The project was fully permitted in November 2014 to remove up to 12,000 cubic yards of material from Reach 1, and up to 3,000 cubic yards of material from Reach 2.

⁴ A reach is a section of channel, studied during an Individual Hydraulic and Hydrology Assessment (IHHA). The boundaries of a reach are defined most frequently by a change in channel properties, such as construction type (e.g. earthen or concrete), design, width, substrate, or connection to other portions of the larger channel system.

Prior maintenance occurred approximately 10-12 years ago and pre-dates the current documentation and tracking system for record keeping. Thus records of what occurred during the past maintenance event are not presented in this report.

Project maintenance activities were completed in Reaches 1 and 2 from December 22, 2014 to March 14, 2015 removing approximately 10,324 tons of material. In Reach 1, 0.87 acre (1,554 linear feet) was excavated, 0.02 acre was cleared of vegetation only, and 0.20 acre was not maintained due to inundated conditions. The entire length of Reach 2, which is a concrete-lined segment, was maintained through excavation of approximately 206 linear feet. Where sediment was removed, depths ranged from three to six feet. A portion of an existing bike path in a disturbed, upland location had been undermined prior to the start of work and was repaired at the conclusion of the project. Access points used along the side of the channel were restored to adjacent bank elevations and revegetated with an erosion control seed mix.

BMPs (gravel bags, authorized access routes, etc.) were implemented during maintenance and removed at the end of the current work period on March 14, 2015. 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.

Wetlands mitigation for this project is planned south of Qualcomm Stadium in accordance with the Stadium Wetland Mitigation Project (Atkins 2015). See Mitigation Projects Section for details. In addition, quarterly inspections of access and staging areas have been scheduled for 25 months after maintenance to check for and remove weeds, including giant reed (*Arundo donax*).

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

Conveyance Capacity Resulting from Maintenance

The pre-project IHHA results indicated that Murphy Channel could not contain a 2-year storm event in the pre-project condition. With sediment and vegetation removed, the conveyance capacity increased to convey the 5-year storm event in Reach 1 and the 50-year storm event in Reach 2.

Inundated conditions during maintenance precluded sediment removal for approximately 100' at the south end of the channel.

Water Quality Monitoring Summary

The pre-project IWQA for Murphy Canyon Channel evaluated potential water quality benefits and impacts associated with channel maintenance activities. The methodology for the IWQA is documented in the *Standard Operating Procedure (SOP) to Conduct Water Quality Assessment and Quantification Model for Flood Channel Maintenance* found in Appendix A of the *Water Quality Assessment – White Paper* of the PEIR.

These results of the water quality impact analysis outlined by the SOP suggested that overall the proposed sediment removal during maintenance would remove a larger pollutant load than that which

is theoretically removed under existing conditions during dry weather flow by natural treatment system processes over three years. Therefore, the maintenance was determined to provide an overall water quality benefit and the IWQA did not recommend mitigation requirements as a result of the analysis.

Nevertheless, the City implemented water quality improvement activities in accordance with the SDP. The City elected to restore 100 square feet of wetlands for every 200 linear feet of vegetation removed per fiscal year; an estimated 909 square feet of wetland restoration has been added to the wetlands mitigation planned for the Stadium Mitigation Site for the project to comply with this condition.

During maintenance activities conducted on January 7, 2015, the City crews encountered a section of excavated soil within the Reach 1 earthen channel which was emitting a petroleum-like odor. Work was halted and a hydrologist sampled the area of interest and delivered the soil samples to an approved laboratory for chemical composition testing. The tested sediment was determined to not contain hazardous substances and the material was authorized for disposal at the Miramar Landfill. The project team developed a protocol for air quality monitoring and segregation of potentially contaminated sediment, allowing channel maintenance work to safely continue. At the end of the project, the small stockpile containing potentially contaminated soil was tested to confirm that hazardous materials were not present. ; Test results indicated that the soil did not contain hazardous materials and the soil was disposed at the Miramar Landfill.

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

Mission Bay High School and Pacific Beach/Olney Street Channels (MMP Maps 36 and 37)

Mission Bay High School (MBHS) and Pacific Beach Drive/Olney Drive (PBO) Channel maintenance began March 7, 2015 and is scheduled to be completed in fall 2015. The maintenance activity includes the clearing of vegetation, sediment, and trash over an 8,600 square foot area of the MBHS concrete-lined channel and a 16,146 square foot area in the PBO earthen channel to restore the conveyance capacity of the channel.

Prior maintenance activities in this channel pre-date the current documentation and tracking system for record keeping. Thus records of what occurred during past maintenance events are not presented in this report. However, the IHHA for the FY 2015 maintenance event describes vegetation and sediment accumulation observed during site visits in August 2012 and September 2013 and the conditions in the MBHS and PBO sections were slightly different. In 2012, sediment mixed with organic material was noted as having a depth of approximately three to four inches and well-established and dense freshwater marsh vegetation and non-native grasslands were observed within the MBHS channel. Additionally, the outlet of the existing 27-inch RCP storm drainpipe that discharges into the channel was significantly obstructed by the vegetation growth within the concrete channel and the side slope west of the MBHS channel, ornamental vegetation, mainly unmaintained ice plant had overgrown to the degree that it had covered the channel's west side in its entirety and, in some instances, had covered the

channel bottom and reached the east side of the channel. Comparatively, the PBO channel had similar vegetation growth, including iceplant growing from one side of the channel to the other, and sediment (also mixed with organic material) was recorded as approximately six to seven inches. In 2013, the sediment accumulation in the entire MBHS/PBO channel was unchanged, but the vegetation was noted as being significantly denser and taller since the previous visit. Based upon photos in the IHHA, the pre-maintenance coverage for both vegetation and sediment can be considered approximately 100%.

During the FY2015 maintenance event, 1,972 linear feet of material have been cleared in order to increase the conveyance capacity and reduce the extent of flooding in severe storm events. Approximately 420 tons of material have been removed and legally disposed of thus far in the maintenance period. The channel was accessed through previously disturbed staging areas, and all BMPs were implemented as part of the MMP protocol. The project is ongoing and is anticipated to be completed by fall 2015 and incorporates mitigation measures to protect nesting birds during the general avian nesting season. 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.

Mitigation for wetland impacts is proposed within the Los Peñasquitos Canyon at the El Cuervo del Sur Wetlands Mitigation Project and the Los Peñasquitos Canyon Wetlands Enhancement Project. Non-native grassland impacts will be mitigated through payment into the City's Habitat Acquisition Fund, acquisition and preservation of specific land, or purchase of mitigation credits. Mitigation project status is discussed below in the Mitigation Projects section.

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

Conveyance Capacity Resulting from Maintenance

The analysis provided in the pre-maintenance IHHA determined that maintenance would serve to significantly control and minimize flooding issues in the area. Maintaining the channels increased the conveyance capacity of the MBHS channel from 30% of a 1-year storm event up to a full 2-year storm event and the PBO from a 2-year storm event to a 5-year storm event.

Water Quality Monitoring Summary

Due to the absence of low flow in the MBHS and PBO Channels, which was determined by site visits on three separate occasions, the pre-maintenance IWQA determined the proposed maintenance would not have an impact on water quality. Further, a dry weather diversion is located at the downstream end of the channel segments which intercepts all dry weather flows and diverts these flows to the sewer system for treatment. However, in an effort to best combine the as-built channel capacity with improvements to water quality, the City, in accordance with the Coastal Development Permit (CDP) and SDP, is implementing a suite of water quality improvement activities including the distribution of pollution prevention outreach materials; 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 within the priority channel drainage area will lead to long-term water quality benefits.

Post-maintenance water quality monitoring was not required for this project and, therefore, was not conducted.

San Carlos Creek Channel Emergency (MMP Map 54)

In the early morning hours of November 1, 2014, approximately 0.5 inches of rain fell in the San Carlos area, causing vegetation and debris within the San Carlos Channel Map 54 to wash downstream and clog a culvert within a residential area. As the clog occurred, flood water rose and overtopped the banks of the channel. With another storm forecasted later in the afternoon, crews mobilized to remove the clog to avoid additional flooding.

The project involved the removal of approximately 145 tons of vegetation and debris that had dislodged and formed the clog at the 60" culvert. Additional sparse vegetation (collectively 0.002 ac.) and sediment were removed upstream of the culvert by hand along with several large chunks of concrete that had broken free during the rain event. Vegetation (180 sq. ft. or 0.004 ac.) and sediment that was impeding the flow of water through the culvert were also removed at the west end of the culvert. A total of 158 tons of material was removed from the project area.

A notice of exemption and emergency site development permit were issued for the project, and subsequent permitting in accordance with the Environmentally Sensitive Lands Ordinance is in progress. A small portion of the work area occurred just outside of the MMP geographic boundary. This area will be added to the MMP via an addendum to the PEIR. USACE, RWQCB, and CDFW were notified but did not require permits for the emergency work.

PEIR vegetation mapping indicated there were no quantifiable wetlands within the concrete-lined channel. Updated vegetation mapping had not been completed prior to the emergency event and storm that washed vegetation downstream; therefore, it is not known what amount of vegetation and sediment was in the channel prior to the emergency. It is also unknown when the last maintenance event in the channel occurred.

No remedial actions were required for this project.

Mitigation has not yet been designated for this emergency. A search for suitable wetland mitigation opportunities is underway.

Conveyance Capacity Resulting from Maintenance

During the emergency, the San Carlos Channel and associated culvert were plugged and conveyed little to no storm water. Post-emergency maintenance, the channel and culvert are able to function as designed.

Water Quality Monitoring Summary

Due to the emergency nature of the activity, no water quality monitoring was conducted.

Reservoir Drive Channel Emergency (MMP Map 64a- to be added to MMP)

Emergency maintenance including the removal of vegetation, sediment, trash, and debris was conducted in the 12 foot wide, 780 foot long, concrete-lined storm water channel along Reservoir Drive in November 2014 immediately prior to a forecasted rain event of 1-3 inches. Emergency maintenance was conducted to prevent imminent flooding of critical infrastructure located nearby, including Alvarado Hospital. Maintenance included impacts to 0.083 acre of wetlands comprised of 0.071 acres of freshwater marsh (including disturbed) and 0.012 acres of disturbed wetland. The channel also contained 0.065 acres of bare concrete lined channel. A total of 131 tons of material was removed from the channel.

The date of the last maintenance event is unknown. Based on pre-project photos, the channel was covered approximately 75-80% with vegetation (including palm trees) growing in accumulated sediment on top of the concrete-lining of the channel.

A notice of exemption and emergency site development permit were issued for the project, and subsequent permitting in accordance with the Environmentally Sensitive Lands Ordinance is in progress. The channel will be added to the MMP through an addendum to the PEIR. USACE, RWQCB, and CDFW were notified but did not require permits for the emergency work.

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

Mitigation has not yet been designated for this emergency. A search for suitable wetland mitigation opportunities is underway.

Conveyance Capacity Resulting from Maintenance

Before maintenance, the Reservoir Drive Channel and associated culvert were had significant build-up of debris and vegetation growing on the concrete lining of the channel. The potential for this relatively loosely rooted material uprooting and causing flooding downstream was evaluated and resulted in emergency maintenance. . Post-emergency maintenance, the channel and culvert are able to function as designed.

Water Quality Monitoring Summary

Due to the emergency nature of the project, the IWQA pursuant to the Master Storm Water Maintenance Plan was prepared post-project and noted that there was no opportunity to conduct pre-maintenance water quality sampling or conduct the standard usually completed. However, water quality protection measures were implemented during maintenance. A vacor truck was stationed at the downstream end of the channel to vacuum debris so it would not leave the project site.

Downstream impacts from increased sedimentation would not be expected to occur as a result of the maintenance. As a concrete-lined channel, the maintenance did not expose soil. In fact, the

maintenance removed sediment which could have potentially been transported downstream by runoff. Increases in downstream water-borne pollutants would also not be expected. The relatively short length of channel and associated vegetation did not offer substantial capacity to remove pollutants from storm water runoff (Reservoir Drive IWQA 2015).

Smythe Channel Emergency (MMP Map 129)

Emergency maintenance including the removal of non-native vegetation such as giant reed (*Arundo donax*), sediment, trash, and debris was conducted immediately prior to a forecasted rain event of 1-3 inches in two concrete lined segments of the Smythe Channel in November 2014: 1) a 10-foot wide, 820-foot long section and 2) a 10-foot wide, 1,015-foot long section. A large mass of dirt, cattails, and other plant debris that had washed down to the entrance of the multiple box culvert under West San Ysidro Boulevard was removed. Trash removal was also conducted by hand in an earthen detention basin at the north end of the channel. Impacts to wetlands and significant biological resources were avoided through the retention of small area of southern willow scrub at the north end of the channel. A total of 178 tons of material was removed from the channel.

The date of the last maintenance event is unknown. An estimated 200 tons of vegetation and sediment had accumulated, and much of this had washed downstream as a mass of debris prior to emergency actions commencing.

A notice of exemption and emergency site development permit were issued for the project. Subsequent permitting pursuant to ESL regulations was not required. USACE, RWQCB, and CDFW were notified but did not require permits for the emergency work.

Compensatory mitigation was not required for this emergency which was limited to removing an uprooted mass of vegetation, trash, debris, and non-native vegetation. No remedial actions were taken with regard to this facility; the project was compliant with all permits.

Conveyance Capacity Resulting from Maintenance

Maintenance and a post-maintenance inspection took place in December 2014. The survey confirmed that all vegetation and accumulated sediment had been removed from the concrete-lined portions of both reaches. As recommended, the southern willow scrub vegetation in earthen-bottom portions of the northern reach was undisturbed, but trash had been removed. The conveyance capacity was restored to the design capacity in the concrete portions.

Water Quality Monitoring Summary

The vegetated swale area downstream of the maintenance area showed no sign of sediment inflow on December 22, 2014, indicating that maintenance activities did not result in discharge of sediment into downstream receiving waters. Water quality monitoring was not required for this emergency project.

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.

On March 19, 2015, Dudek conducted an assessment of the site to verify the mitigation area was still meeting USFWS performance standards. During the site walkthrough, least Bell's vireo (*Vireo belli pusillus*), a federally endangered bird species, were detected vocalizing on site. In addition, a mosaic of native riparian and wetland vegetation communities has been established. While the site exhibits natural changes as dictated by field conditions, the location and composition of vegetation communities is substantially consistent with the project design, and the site remains suitable for supporting the continued utilization by least Bell's vireo (Dudek, April 2015).

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 and proposed 2015-2016 channel maintenance activities. The wetland enhancement occurs in two locations per the regulatory permits: 1) Adjacent/Out-of-Channel; and 2) In-Channel. The Out-of-Channel mitigation area is adjacent to the channel maintenance areas. The mitigation site is within the Tijuana River Valley Regional Park on City and County of San Diego property.

The 4.31 acre In-Channel mitigation was initiated in September 2013 with the maintenance event which removed non-native vegetation within the channel. Non-native invasive control was also performed through herbicide application to giant reed (*Arundo donax*), castor bean (*Ricinus communis*) and salt cedar (*Tamarix ramosissima*). In FY 2015, for channel maintenance areas within the 4.31 acre footprint in which dredging was not completed during year one, nonnative invasive control was performed through herbicide application.

The 4.31 acre Out-of-Channel mitigation was also initiated in September 2013, and involved herbicide treatment and biomass removal of the same three target species. During FY 2015, biomass removal and follow-up herbicide treatment resumed after the end of the 2014 bird breeding season (September 15), and was completed before the start of bird breeding season (March 15). Cleared biomass includes the

minimum required 4.31 acres of out-of-channel mitigation, plus an extra 0.43 acres has been treated as a contingency to ensure the mitigation requirements for minimum acreage is met, totaling 4.74 acres. Trash was also removed from the entire 8.62-acre mitigation area in March 2015. Biomass removal and herbicide treatments will continue in fall 2015 after the conclusion of the bird breeding season.

Los Peñasquitos Canyon Preserve Wetlands Enhancement

The Los Peñasquitos Canyon Preserve Wetland Enhancement Project was designed to remove 8.5 acres of non-native species found within and adjacent to jurisdictional waters in Lopez canyon, as well as support the well-being of native species of plants and animals in order to provide 6.64 acres of mitigation credit. Over the past year, significant progress has been achieved, with the initial removal of a large patch of garland daisy (*Glebionis coronarium*) in the upper reach of Lopez Canyon being completed on April 13, 2015. This area had been targeted due to its large, contiguous growth of garland daisy which posed a threat to state- and federally-listed willow monardella (*Monardella linooides*), which is also present in this portion of Lopez Canyon. During the process of removing the garland daisy, there were no impacts to the willow monardella or other biologically sensitive species. Following the removal of invasives, reseeding efforts were successfully conducted in order to revegetate the site with native plant species. The five year maintenance and monitoring period started on June 23, 2015, which marked the completion of the installation phase of the project.

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

- Sorrento Reaches 3 and 7, MMP Maps 9, 11, 12
- Mission Bay High School and Pacific Beach/Olney Streets, MMP Maps 36, 37
- Tripp and Industrial Court, MMP Maps 6, 6a

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 within the Los Peñasquitos Canyon Preserve. The site has been designed in two phases, however, only Phase I is being carried forward to implementation at the present time. This mitigation project is adjacent to previous City of San Diego mitigation projects (El Cuervo, El Cuervo Norte) along Los Peñasquitos Creek in the Los Peñasquitos Canyon Preserve. The project will involve creation of a within-floodplain depressional wetland area 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 Reaches 3 and 7, MMP Maps 9, 11, 12
- Mission Bay High School and Pacific Beach/Olney Streets, MMP Maps 36, 37
- Tripp and Industrial Court, MMP Maps 6, 6a

The construction contract was awarded in August 2015. The project will be implemented in fall 2015 at the conclusion of the sensitive bird breeding season. Site preparation and grading are projected for late-September through October 2015 and planting and irrigation installation are projected for December 2015.

Stadium (San Diego River) Mitigation Bank Purchase

The Public Utilities Department's Stadium (San Diego River) Mitigation site is located within the floodplain of the San Diego River between I-15 and I-805. The project site is approximately 57 acres and is currently dominated by a high number of non-native species. The project proposes to restore native habitat to the area by removing non-natives, installing native plants, and maintaining and monitoring the site for a minimum of five years. Site construction is anticipated to begin in fall 2016 (City of San Diego, 2015).

The Storm Water Division has reserved 8.528 acres of mitigation credits at this site through a Memorandum of Understanding with the Public Utilities Department. The credits are anticipated to be used for the following channel maintenance locations:

- Murphy Canyon Channel Maintenance (Map 58)
- Alvarado Creek Channel Maintenance (Maps 59, 60, 64)

Rancho Jamul Wetland Mitigation Bank Purchase

The Rancho Jamul Wetland Mitigation Bank, located on CDFW lands in unincorporated county lands near Jamul, is proposed to be expanded by approximately 26 acres (Phase IIB) and involves additional stream and wetland re-establishment and enhancement along Jamul Creek and its tributaries. The final permitting and agreements with all regulatory agencies is in progress. The Storm Water Division has purchased 3.3 acres of pre-released wetlands mitigation credits associated with this expansion from the bank sponsor for future projects that occur within the approved service area, consisting of multiple watersheds.

Otay River Wetland Mitigation Site

The Otay River Wetland Mitigation Site project consists of implementing wetlands creation and enhancement of habitat, involving replacement of eucalyptus woodland and restoration of southern-cottonwood willow riparian forest habitats, located along the Otay River within the Otay watershed. Of the 0.54 acre of mitigation proposed, 0.20 acre will be used to mitigate for the Nestor Creek emergency channel maintenance and 0.34 acre will be proposed as advance permittee-responsible compensatory mitigation for future City projects that occur in the Otay watershed.

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

- Nestor Creek Channel Emergency Maintenance, MMP Map 134
- Nestor Creek Channels, MMP Maps 131 and 133

The Habitat Mitigation and Monitoring Plan is anticipated to be finalized by the end of fall 2015 and the project is slated to be implemented in fall 2016 pending the completion of the environmental permitting effort and the City's contracting process.

Conclusions and Future Projects

Over the FY 2015 maintenance period, six channels were maintained and a total of 14,690 tons of trash, sediment, and debris was removed from flood control channels. Over 31 acres of wetlands mitigation is in various stages of progress to compensate for wetlands impacts associated with channel maintenance related to the MMP. 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 FY 2016 season, the Storm Water Division is pursuing permits to maintain the following facilities:

- Alvarado Creek Channel, MMP Maps 59, 60, and 64
- Tijuana River Pilot Channel and Smuggler's Gulch MMP Maps 138 a, b, c and 139

A preliminary assessment of sensitive biological and cultural resources to be impacted as a result of the anticipated FY 2016 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

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- DUDEK. 2015b. Current Condition Verification for the Tijuana River Emergency Channel Maintenance Wetland Mitigation Project, San Diego County, California. April 2015.
- 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 Murphy Canyon Channel. October 28, 2013.
- DUDEK. 2013b. Individual Water Quality Assessment for Soledad Canyon/Sorrento Creek & Flintkote Channel. October 15, 2013.
- HELIX Environmental Planning. 2015. Post – Maintenance Inspection Memorandum for Smythe Channel. February 2, 2015.
- RICK. 2014. Individual Water Quality Assessment Memorandum for Mission Bay High School & Pacific Beach/Olney Street Channels. June 30, 2014.
- URS. 2014a. Final Los Peñasquitos Canyon Preserve Wetland Enhancement Plan. February 28, 2014, updated February 25, 2015, with assistance from Helix Environmental Planning, Inc.
- URS. 2014b. Individual Hydrologic & Hydraulic Assessment Report for Mission Bay High School & Pacific Beach/Olney Street Channels. February 14, 2014.

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URS. 2013b. Individual Hydrologic & Hydraulic Assessment Report for Murphy Canyon Channels. June 14, 2013.

Appendix A

Master Storm Water Facility and Mitigation List

Master Storm Water System Maintenance Program Annual Report Appendix

September 2015

Appendix A. Master Storm Water Facility and Mitigation List

Map No.	Facility	Date of Most Recent Maintenance	Type of Most Recent Maintenance	Mitigation Site	Mitigation Location	Mitigation Type	Mitigation Acreage	Mitigation Status
137a,b,c, 138, 139	Tijuana River Pilot Channel and Smuggler's Gulch	2013-2014	Planned Maintenance; vegetation and sediment removal	Tijuana River Valley	Adjacent to Site	Wetlands Creation	9.43	Complete in 2001
				Tijuana River Valley	Adjacent to Site	Wetlands Enhancement	8.62	Maintenance and Monitoring Year 2
9, 11, and 12	Sorrento Creek Reaches 3 & 7	Reach 7: Spring 2014	Planned Maintenance; Vegetation and sediment removal	El Cuervo Del Sur	Off Site in Watershed	Wetlands Creation	1.91	Contracting
		Reach 3: 2014-2015		LPC Preserve Wetlands Enhancement	Off Site in Watershed	Wetlands Enhancement	5.53	Maintenance and Monitoring Year 1
58 and 58a	Murphy Canyon Creek, Reaches 1 & 2	Reach 1 & 2: 2014-2015	Planned Maintenance; Vegetation and sediment removal	Stadium Weland Mitigation Project	Adjacent to Site	Wetlands Restoration	4.28	Credits Reserved
36-37	Mission Bay High School & Pacific Beach Dr/Olney Dr Channels	Spring 2015 (ongoing through Fall 2015)	Planned Maintenance; Vegetation and sediment removal	El Cuervo Del Sur	Off Site in Watershed	Wetlands Creation	0.34	Contracting
				LPC Preserve Wetlands Enhancement	Off Site in Watershed	Wetlands Enhancement	0.96	Maintenance and Monitoring Year 1
				Habitat Acquisition Fund	Offsite	Payment into Habitat Acquisition Fund	0.15	In progress*
54	San Carlos Creek Channel Emergency	Fall 2014	Emergency Maintenance; debris removal	TBD	TBD	TBD	TBD	Site suitability search
64a**	Reservoir Drive Channel Emergency	Fall 2014	Emergency Maintenance; vegetation and sediment removal	TBD	TBD	TBD	TBD	Site suitability search
129	Smythe Channel Emergency	Fall 2014	Emergency Maintenance; vegetation and sediment removal	N/A	N/A	N/A	N/A	No mitigation required.
Total Acres							31.22	

*Will be completed at the end of the project

**Amendment to add this map to MMP in process

Appendix B

2015-2016 List of Storm Water Facilities Anticipated to be Maintained
and Preliminary Estimate of Biological and Cultural Resources to be
Impacted

2015-2016 List of Anticipated Biological Resources To Be Impacted

Map No.	Facility	Proposed Maintenance Type	Vegetation Impacts (acres)		Mitigation
138 a, b, c, 138, 139	Tijuana River Pilot Channel and Smuggler's Gulch	Sediment and Vegetation Removal	0.03	Southern Riparian Forest	Mitigated with first maintenance event. 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. No new mitigation proposed.
			0.01	Mule Fat Scrub	
			1.22	Open Channel	
			3.05	Open Water	
			4.31	<i>Subtotal*</i>	
59, 60, 64	Alvarado Channel	Sediment and Vegetation Removal	0.63	Freshwater Marsh	3.55 acres of Riparian Rehabilitation and Enhancement as part of the Stadium Mitigation Plan
			0.45	Southern Willow Scrub	
			0.03	Natural Flood Channel	
			0.12	Disturbed Habitat	
			0.01	Non-Native Riparian	
			0.01	Non-native / Ornamental	
			1.25	<i>Subtotal</i>	
MMP Total Vegetation Impacts (acres)			5.56		

*Impacts contained wholly within existing channel maintenance footprint. No new impacts.

2015-2016 List of Anticipated Cultural Resources To Be Impacted

Map No.	Facility	Proposed Maintenance Type	Cultural Resources Impacts
138 a, b, c, 138, 139	Tijuana River Pilot Channel and Smuggler's Gulch	Sediment and Vegetation Removal	None
59, 60, 64	Alvarado Channel	Sediment and Vegetation Removal	None

Appendix C

Pre- and Post-Maintenance Photos

Pre- and Post- Maintenance Photographs



Photo 1. Sorrento Creek Reach 3 Pre-Maintenance 9/15/14



Photo 2. Sorrento Creek Reach 3 Post-Maintenance 10/7/14



Photo 3. Murphy Canyon Creek Channel Pre-Maintenance 12/20/14



Photo 4. Murphy Canyon Creek Channel Post-Maintenance 3/20/15



Photo 5. Mission Bay High School and Pacific Beach/Olney Street Channels Pre-Maintenance 10/15/14



Photo 6. Mission Bay High School and Pacific Beach/Olney Street Channels Mid-Maintenance 4/9/15



Photo 7: San Carlos Creek Channel Emergency Pre-Maintenance 11/1/14



Photo 8: San Carlos Creek Channel Emergency Post-Maintenance 11/12/14



Photo 9: Reservoir Drive Channel Emergency Pre-Maintenance 11/14/14



Photo 10: Reservoir Drive Channel Emergency Post-Maintenance 12/3/14



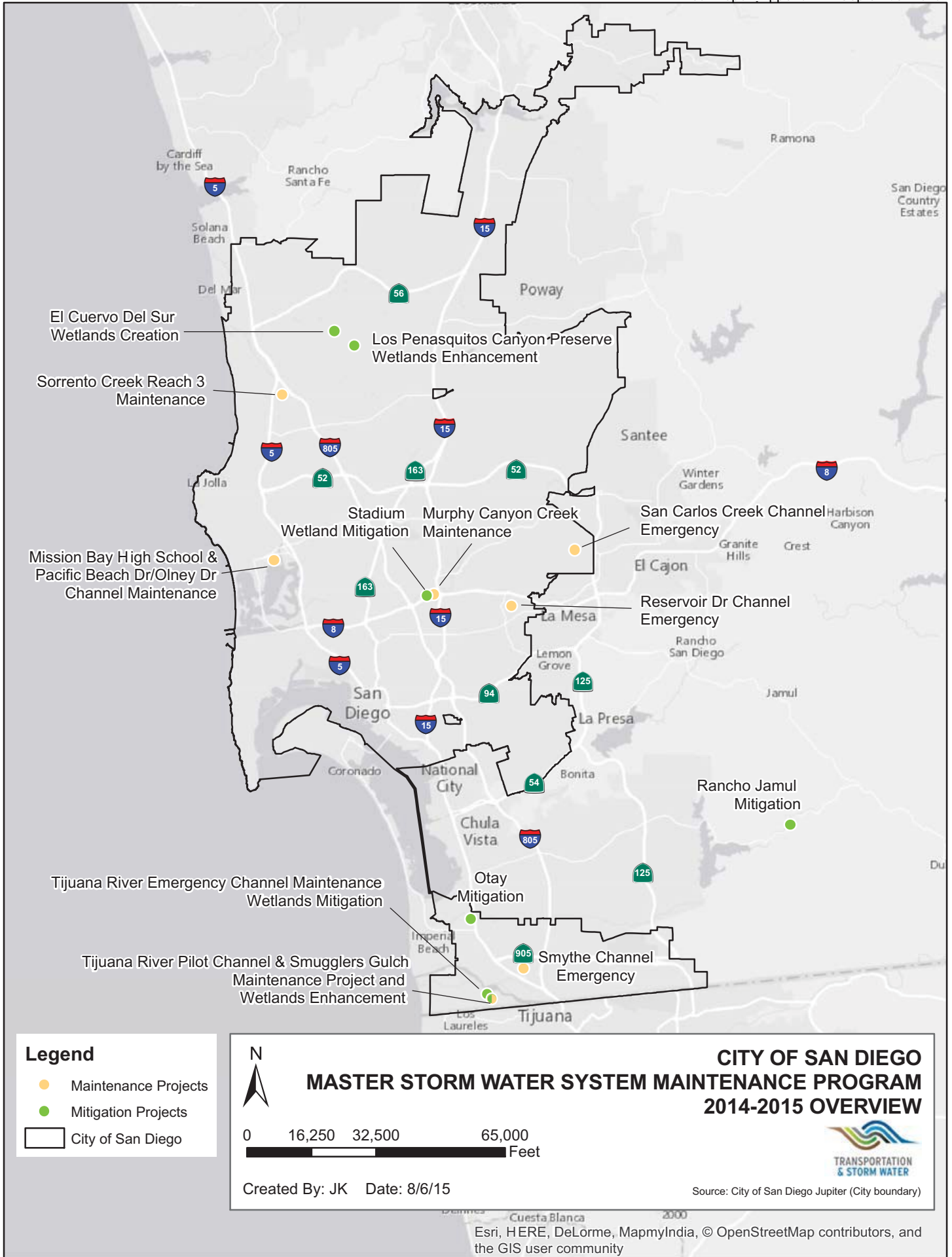
Photo 11: Smythe Channel Emergency Pre-Maintenance 11/16/14



Photo 12: Smythe Channel Emergency Post-Maintenance 12/3/14

Appendix D

Pre- and Post-Maintenance Maps

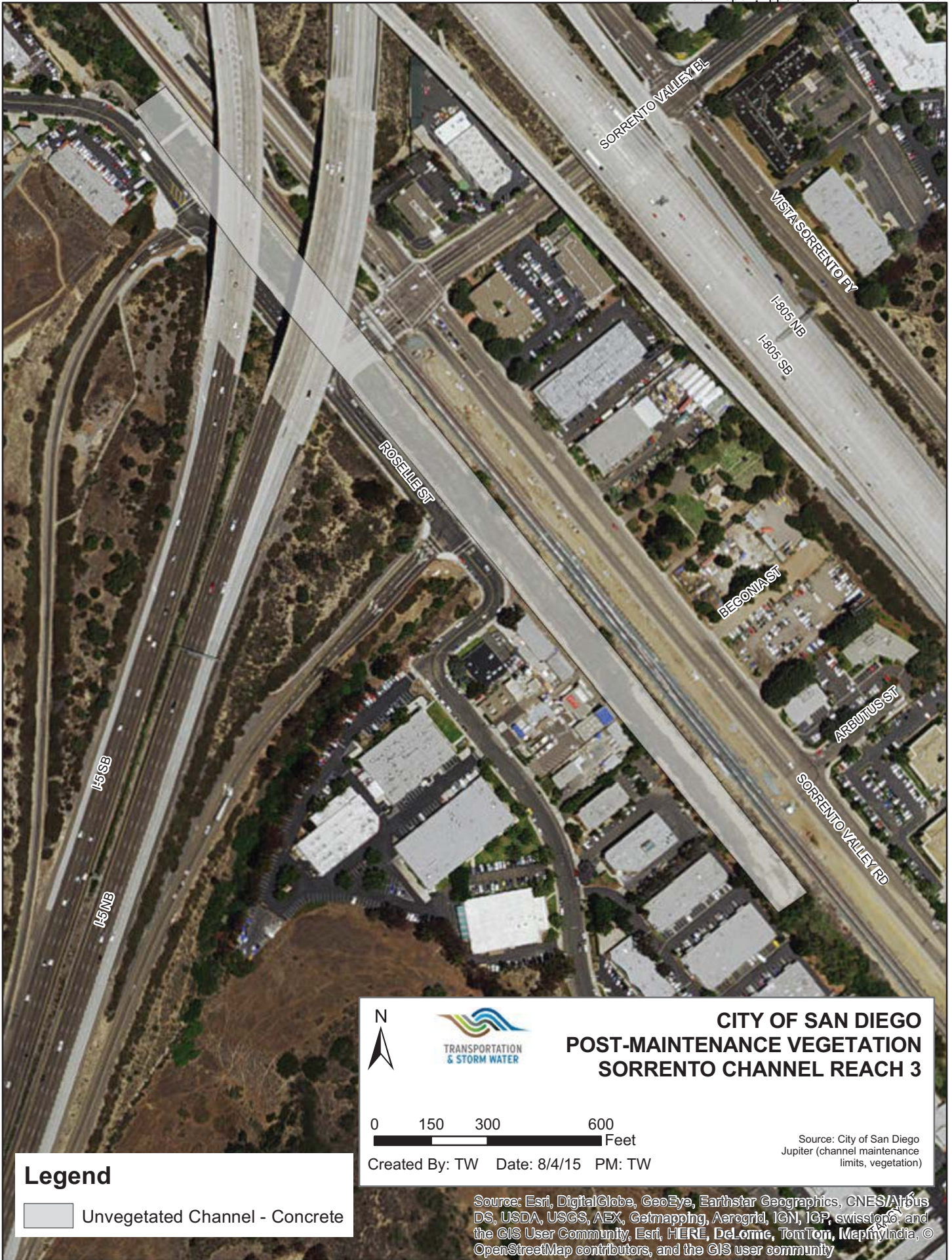


Annual Report Figure 1





Path: C:\projects\2013\27679954\img_docs\mxd\Sorrento\Reach3\Report\Sorrento_reach3.mxd; mail: moreno, 4/26/2013, 1:16:20 PM

Annual Report Figure 2



Legend

Unvegetated Channel - Concrete



CITY OF SAN DIEGO
POST-MAINTENANCE VEGETATION
SORRENTO CHANNEL REACH 3

0 150 300 600 Feet

Created By: TW Date: 8/4/15 PM: TW

Source: City of San Diego
Jupiter (channel maintenance limits, vegetation)

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Esri, HERE, DeLorme, TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS user community


Annual Report Figure 3



FIGURE 3A
Biological Resources



Legend

-  Access/Loading Areas
-  Unvegetated Channel - Earthen
-  Staging and Stockpile Area
-  Developed
-  Disturbed Habitat
-  Freshwater Marsh
-  Open Water
-  disturbed Freshwater Marsh
-  disturbed Southern Riparian Forest
-  disturbed Southern Willow Scrub



**CITY OF SAN DIEGO
POST-MAINTENANCE VEGETATION
MURPHY CANYON CREEK MAINTENANCE**

0 150 300 600 Feet

Created By: JK Date: 8/10/15 PM: JK

Sources: Dudek (channel maintenance limits, access/ loading, staging/stockpile, vegetation); City of San Diego


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Esri, HERE, DeLorme, TomTom, MapnyIndia, © OpenStreetMap contributors, and the GIS user community



Legend


Vegetation

- Concrete with Non-Native Ornamental
- Freshwater Marsh


CITY OF SAN DIEGO
PRE-MAINTENANCE VEGETATION
SAN CARLOS CREEK CHANNEL MAINTENANCE

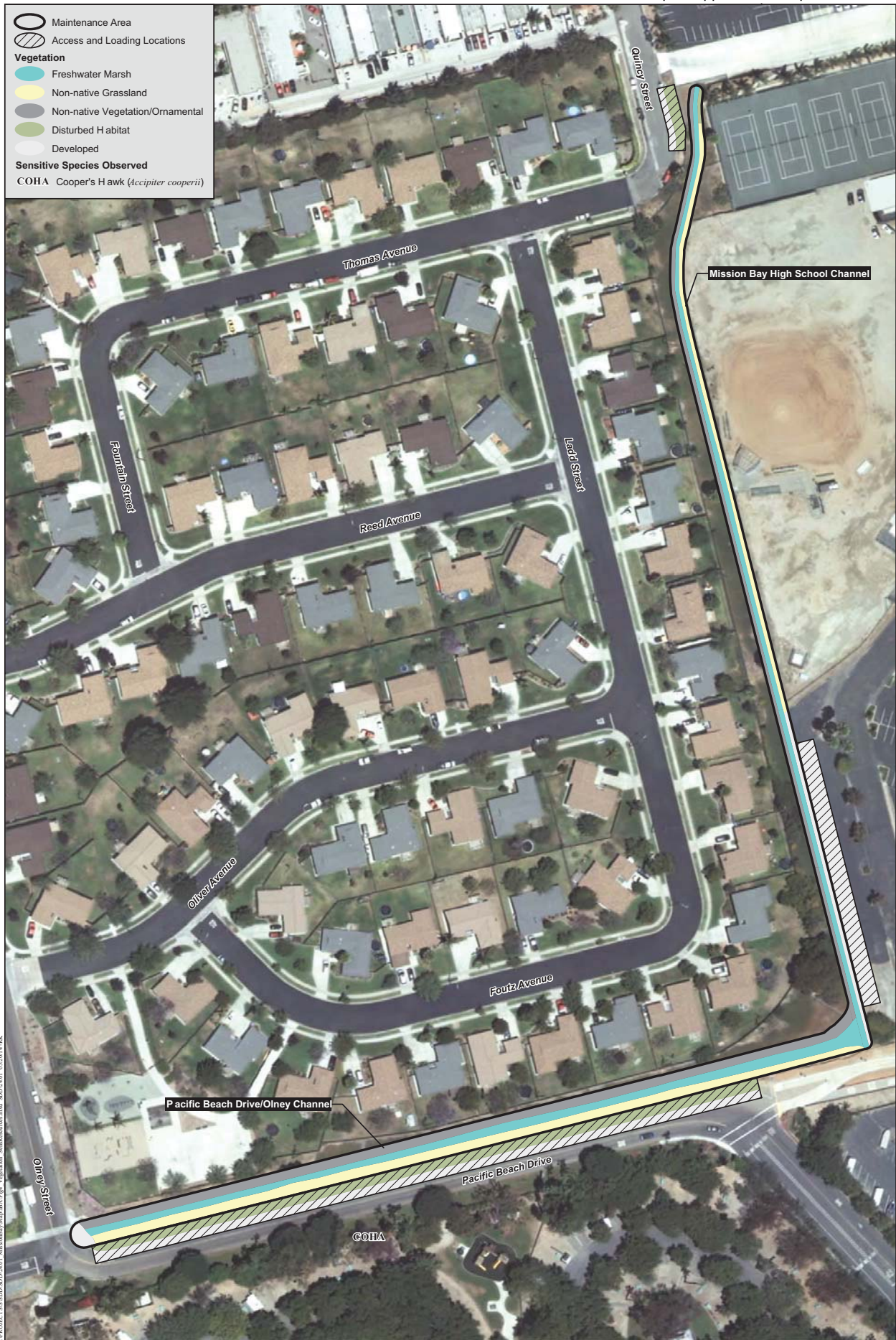
0 250 500 1,000
 Feet

Created By: JK Date: 8/7/15 PM: JK


 Sources: Helix (vegetation); City of San Diego

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Esri, HERE, DeLorme, TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS user community





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Vegetation and Sensitive Biological Resources
 STORM WATER FACILITY MAPS 36 AND 37 (MISSION BAY HIGH SCHOOL
 AND PACIFIC BEACH DRIVE/OLNEY STREET CHANNELS)

Figure 4



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Vegetation and Sensitive Biological Resources

RESERVOIR DRIVE CHANNEL

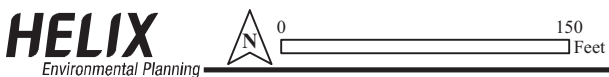
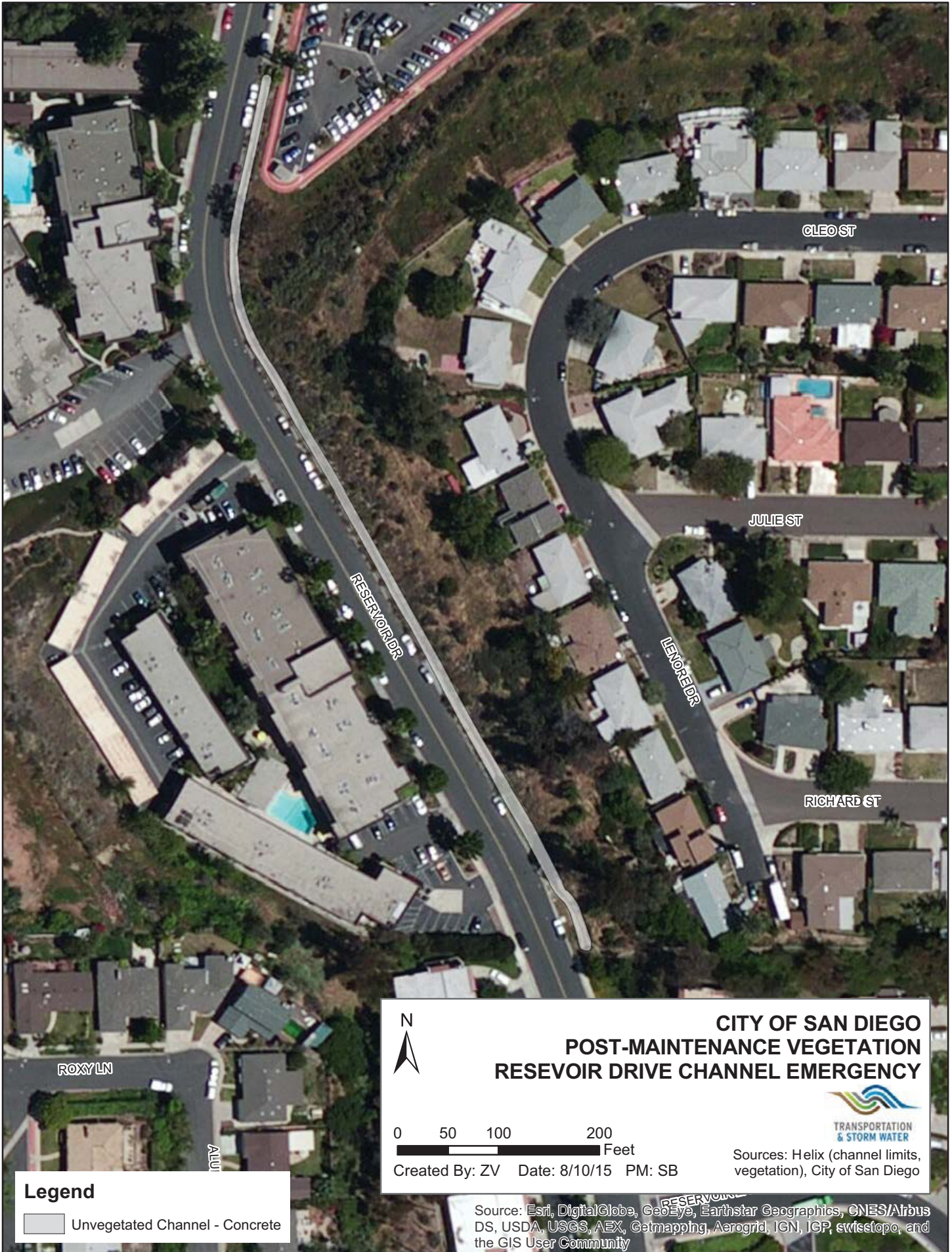


Figure 3



Legend

Unvegetated Channel - Concrete

CITY OF SAN DIEGO
POST-MAINTENANCE VEGETATION
RESEVOIR DRIVE CHANNEL EMERGENCY

0 50 100 200 Feet

Created By: ZV Date: 8/10/15 PM: SB

TRANSPORTATION & STORM WATER

Sources: Helix (channel limits, vegetation), City of San Diego

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Annual Report Figure 10



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Vegetation and Sensitive Biological Resources

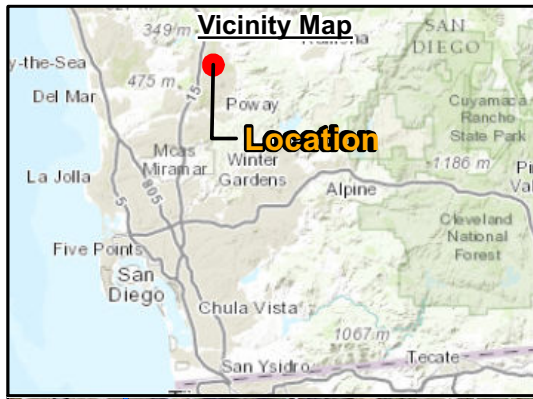
SMYTHE CHANNEL (MAP 129)



Figure 3
Annual Report Figure 11



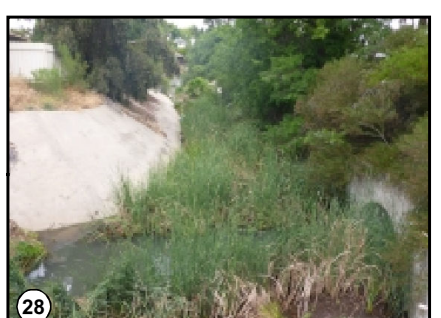
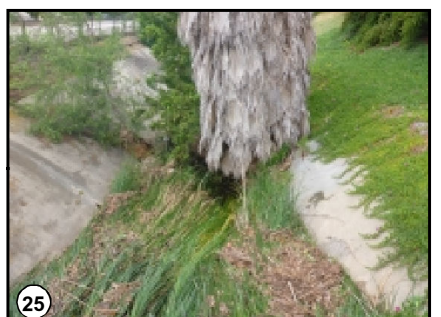
Annual Report Figure 12



Legend

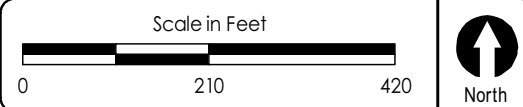
- Photo Location
- Channel Survey
- City Storm Drain Structure
- City Storm Drain

Photos:



Assessment Results

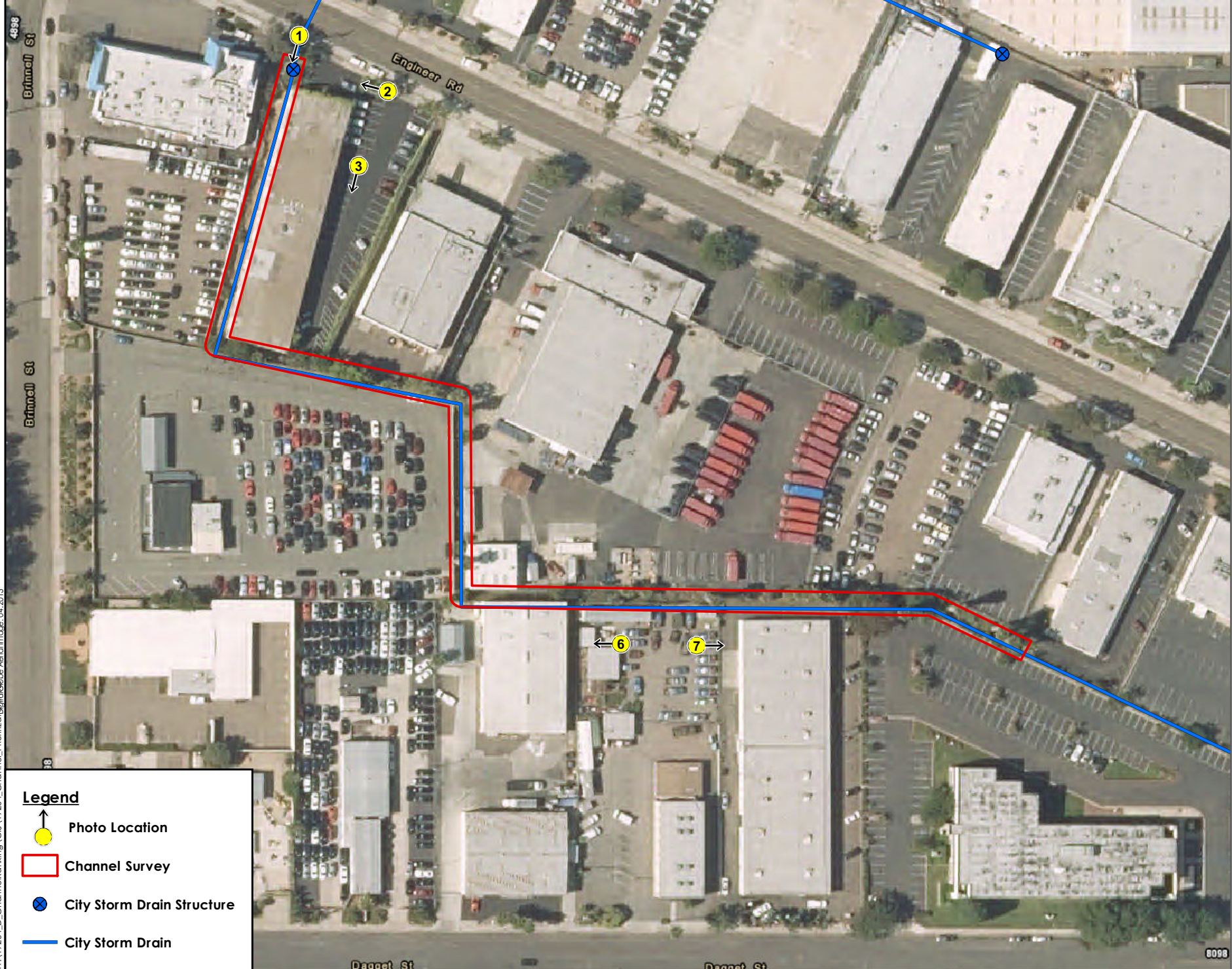
- Channel Prioritization Score: 93.6 out of 100
 - Flood Hazard Score: 73.8 out of 75
 - Water Quality Score: 6 out of 10
 - Community Input Score: 10 out of 10
 - Aesthetics Score: 3.8 out of 5
- Capacity Prior to Maintenance: Less than 2-year storm event
- Capacity After Maintenance (As-built Capacity): 100-year storm event
- Clogging Potential: HIGH
- Approximate Vegetation Coverage: HIGH
- Surrounding Area: Residential
- Infrastructure Failures: Yes
- Site Evaluation Date: May 9, 2015
- Notes/Comments: *The channel has holes and cracks in the concrete throughout portions of the channel. It is recommended that these areas be maintained to prevent continuous vegetation growth to exacerbate these areas.*



Channel: Rancho Bernardo

MMP Map # 03

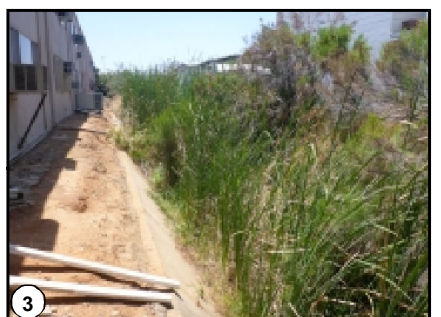
Channel Maintenance Prioritization Summary Sheet



Legend

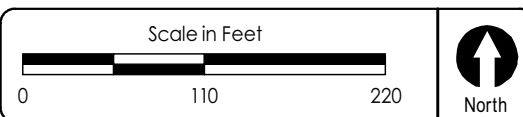
- Photo Location
- Channel Survey
- City Storm Drain Structure
- City Storm Drain

PhotosA



Assessment Results

- Channel Prioritization ScoreA
94.8 out of 100
 - Flood Hazard ScoreA
73.8 out of 75
 - Water Quality ScoreA
6 out of 10
 - Community Input ScoreA
10 out of 10
 - Besthetics ScoreA
5 out of 5
- Capacity Prior to MaintenanceA
Less than 2-year storm event
- Capacity Bfter Maintenance (B s-built Capacity) A
100-year storm event
- Clogging PotentialAHIGH
- B pproximate Vegetation CoverageAHIGH
- Surrounding B reaAIndustrial
- Infrastructure FailuresA
NONE
- Site Evaluation DateA
May 12, 2015
- Notes/CommentsA
There are trash and palm cuttings behind 7990 Daggest St. in Channel



ChannelA7: 5: and 7: 71 Engineer Road

MMP Map # 37

Channel Maintenance Prioritization Summary Sheet



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y Af W I chQ d cv M mmp8 Qmā c8
65.9 out of 100

y Dmmb E Wk Wb Qmā c8
61.9 out of 75

y S WcoNs Wgv Qmā c8
2 out of 10

y Ami i sl gv fl nsr Qmā c8
2 out of 10

y : cpf crp Qmā c8
0 out of 5

y AWhWagv M mmp8 Wj rcl W ac8
Less than 2 to 2-year storm event

y AWhWagv : dcol Wj rcl W ac
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100-year storm event

y Almeeg e Mmcl rW8HIGH

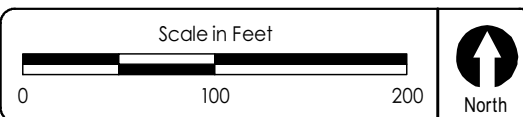
y : nncug Wc RcecrWmā
Ant cdWec8MEDIUM

y Qs ars l bge : αW8Residential

y fl dWps ars α DWs α p8
Holes and cracks in gunite channel

y Qc Q Ws Wmā B Wc8
May 16, 2015

y L mcp/Ami i cl rp8
It was noted on the O&M Channel Maintenance Inspection Form that there is a small hole and broken concrete at the downstream end of the channel and cracks in the side slopes along the channel. A high risk of vegetation clogging the culvert exists.



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Ami cpmWB d c

I I MI Wh # 41

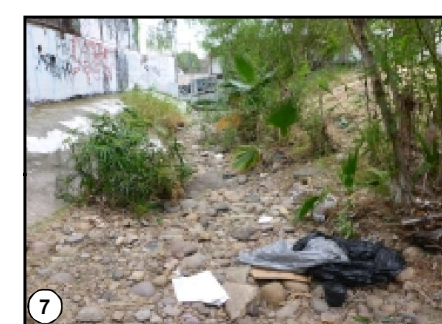
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- B lty Rform Cr_ ln Rtruburd
- B lty Rform Cr_ ln

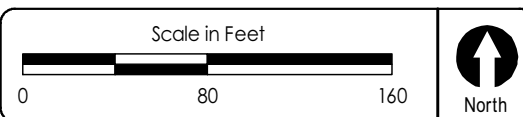
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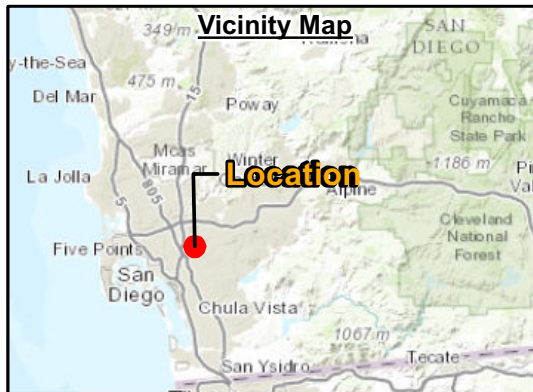


Assdssmnt Qdults

- B g_ nndl Nlortlz_ tlon Rbord: 75.5 out of 100
 - Elooc F_ z_ rc Rbord: 62.5 out of 75
 - V_ tdr P_ u_ lly Rbord: 4 out of 10
 - B ommunty Htput Rbord: 9 out of 10
 - Adstgdltbs Rbord: 0 out of 5
- B_ p_ bly Nlort to L_ lntdn_ nbd: 25- to 50-year storm event
- B_ p_ bly Aedr L_ lntdn_ nbd (As-ault B_ p_ bly): 100-year storm event
- B lof f mf Notdnt h l: HIGH
- Approxm_ td S df dt_ tlon B ovdr_ f d: LOW
- Rurrounchmf Ard_: Residential
- Ht_ struburd E_ Hurds: Slope Failure
- Rhtd Dv_ lu_ tlon C_ td: May 6, 2015
- Motds/B ommdnts: One of the side slopes in the channel has failed. It is recommended that this be maintained.

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Legend

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- B g_ nndl Rurvyd
- B lty Rform Cr_ m Rtruburd
- B lty Rform Cr_ m

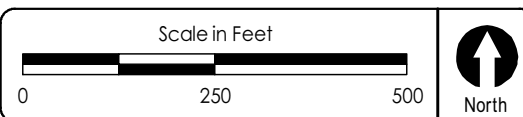
Ngotos:



Assdssmnt Qdults

- B g_ nndl Nrtthz_ tton Rbord: 71.3 out of 100
 - Elooc F_ z_ rc Rbord: 56.3 out of 75
 - V_ tdr P_ u_ lly Rbord: 6 out of 10
 - B ommunty Htput Rbord: 9 out of 10
 - Adstgdltbs Rbord: 0 out of 5
- B_ p_ bly Ntr to L_ mtdn_ nbd: 100-year storm event
- B_ p_ bly Aedr L_ mtdn_ nbd (As-ault B_ p_ bly): 100-year storm event
- B lof f mf Notdnt h l: **MEDIUM**
- Approxm_ td S df dt_ tton B ovdr_ f d: **MEDIUM**
- Rurrounchmf Ard_: **Residential**
- Htr_ struburd E_ Hurds: **Slope Failure**
- Rhd Dv_ lu_ tton C_ td: **May 20, 2015**
- Motds/B ommdnts:

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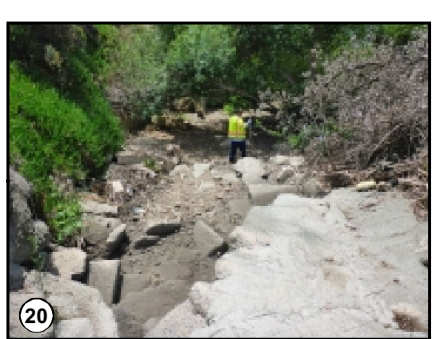


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Q r v uB



Cuuf uo f pvSf uxru

Di bppf nQlr tlv: bvr p Vdr ff B
69.6 out of 100

Hn r e l b: bte Vdr ff B
56.3 out of 75

_ bvf t R xbrlv Vdr ff B
3 out of 10

Dr o o xplv lps xvVdr ff B
9 out of 10

Cf uif vdu Vdr ff B
1.3 out of 5

Dbs bdlv Qlr t v N blpf p bpdf B
100-year storm event

Dbs bdlv Cgf t N blpf p bpdf
(Cu-cxlv Dbs bdlv) B
100-year storm event

Dm hhlph Q v pvlr B HIGH

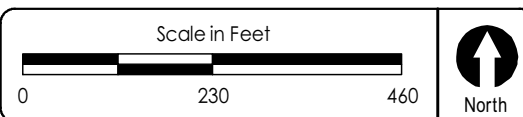
Cs s tr zlo bvf W hf vbr p
Dr yf tbf B MEDIUM

Vxtr xpelph Ctf b B Residential

lpgbutxdwxf Hblxtf uB
Broken concrete in channel bottom,
Broken fence
Vf Fybrxvbr p E bvf B
May 4, 2015

Pr vf u/Dr o o f pvuB
Based on the site photos taken by the
City of San Diego, vegetation has
grown down over the concrete side
slopes. Also there is evidence of
transient encampments. A high risk of
debris, such as mattresses, clogging
the culvert exists

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Hecrn

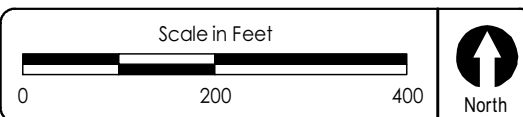
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- Agx Gnp B pMgn

M nsnr8



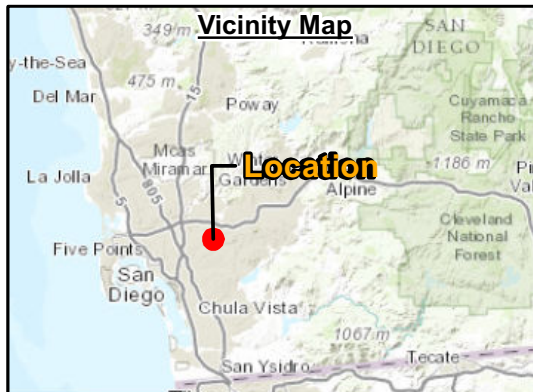
- : rrcrri cms Pct is**
- z Af Wmci Mnggy Wsgm Qnc8
86.5 out of 100
 - z Dnnb E Wp Gnc8
70.0 out of 75
 - z S WscpNt Wgx Qnc8
4 out of 10
 - z Anl I t mxx frnt s Qnc8
10 out of 10
 - z : crf csgn Qnc8
2.5 out of 5
 - z AWoWagx Mngpsn I WgrscnWtrac8
5-year storm event
 - z AWoWagx : dcpl WgrscnWtrac
(: r_ t gs AWoWagx) 8
100-year storm event
 - z Ainegre Mnsn W8HIGH
 - z : oopvlg Wsc Rcecs Wsgm
AnucpWec8HIGH
 - z Q pnt rbgre : p W8Commercial
 - z frp W sp ast p DWt pcr 8
None
 - z Qgc CuWt Wsgm B Wsc8
May 4, 2015
 - z L nscr/Anl I cnc8
Evidence of scour at outfall of culvert
under Fairmount Avenue (photo 37)
and along right toe of slope (looking
downstream) near middle of reach
(photo 35)

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Af Wmci8: t _t pncch (Qc asgm3 I I MI Wo # 50 nd3)

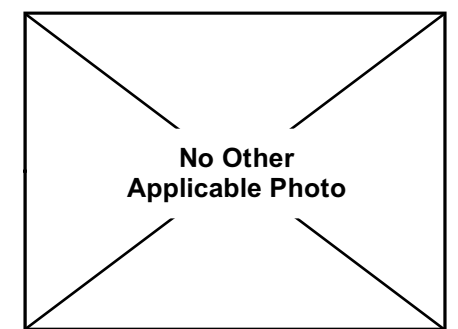
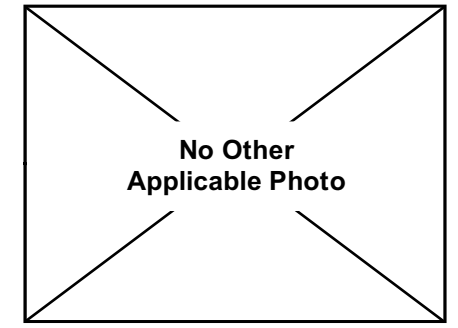
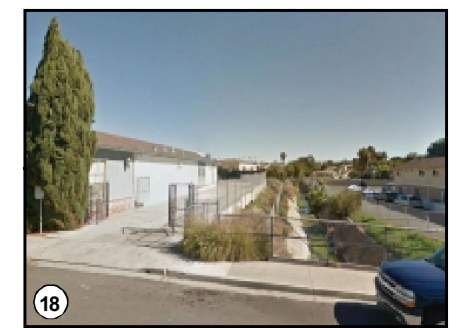
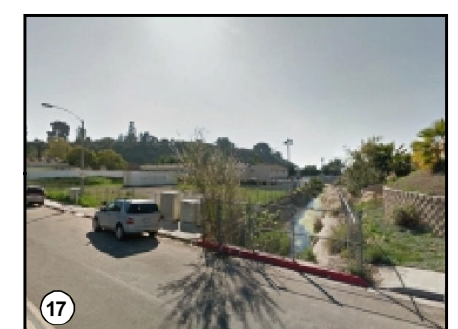
Af Wmci I WgrscnWtrac Mnggy Wsgm Q I I Wp Q ccs



Heccnb

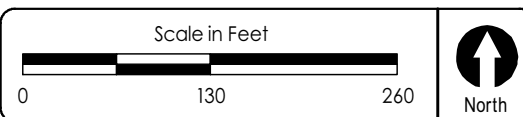
- M nsn HhaWsgm
- Af Wmci Q pux
- Agx Gnp B pMgnGst ast pc
- Agx Gnp B pMgn

M nsnr8

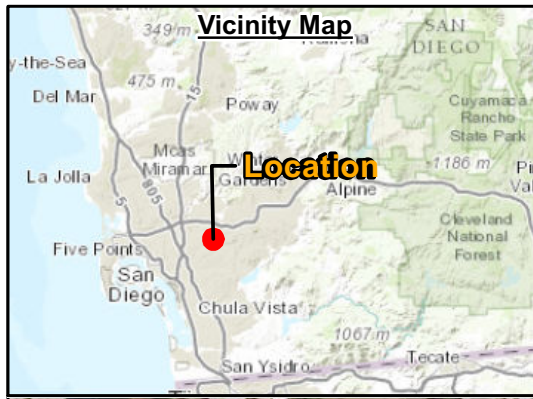


- z Af Wmci MnggyWsgmGpc8**
72.8 out of 100
- z Dnnb E WyWb Gpc8**
56.3 out of 75
- z S WscpNt Wgx Gpc8**
4 out of 10
- z Anl I t mxx frnt s Gpc8**
10 out of 10
- z : crf csg Gpc8**
2.5 out of 5
- z AWoWagx Mngpsn I WgrscnWtrac8**
100-year storm event
- z AWoWagx : dcpl WgrscnWtrac**
(: r_ t gs AWoWagx) 8
100-year storm event
- z Ainegre MscnsgW8HIGH**
- z : oopvlg Wsc RcecsWsgm**
AnucpWec8MEDIUM
- z Q pnt nbgre : pcW8Commercial**
- z frpWst ast pc DWt pcr8**
None
- z Gpc CuWt WsgmB Wsc8**
May 6, 2015
- z L nscr/Anl I cnsr8**
Based on site photos taken by the City of San Diego, heavier vegetation exists for a small segment of the channel immediately downstream of Roland Boulevard. A high risk of vegetation flowing downstream and clogging the culvert exists.

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Af Wmci8Af niW Apch | | MI Wb # 51 - PcWaf 1 Af Wmci | WgrscnWtrac MnggyWsgmG | | Wp G ccs

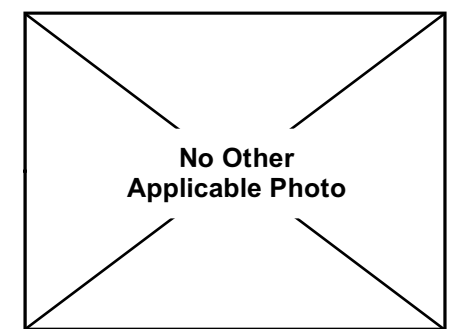
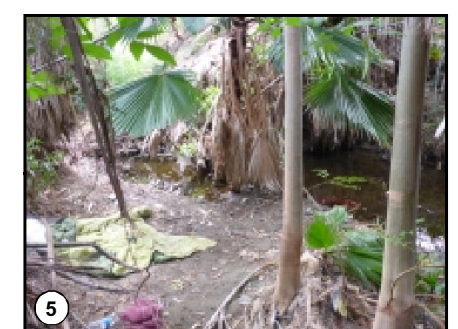


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Hecnb

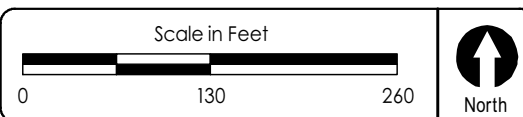
- M nsn HhaWsgm
- Af Wmci Q pux
- Agx Gnd B pMgn Gnd ast pc
- Agx Gnd B pMgn

M nsnr8



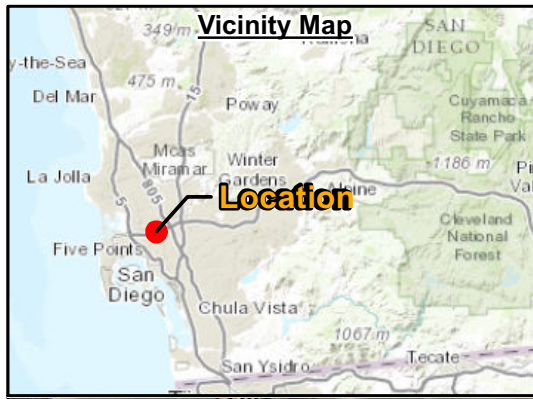
: rrcrri cms Pct is

- z Af Wmci MnggyWsgm Qnrc8
87.3 out of 100
- z Dnnb E WYwb Qnrc8
68.8 out of 75
- z S WscpNt Wgx Qnrc8
6 out of 10
- z Anl I t mnx frnt s Qnrc8
10 out of 10
- z : crsf csgr Qnrc8
2.5 out of 5
- z A WbWagx Mngpsn I WgrscnWtrac8
Less than 2-year storm event
- z A WbWagx : dcpl WgrscnWtrac
(: r_ t gs A WbWagx) 8
50-year storm event
- z Ainegre MnsrnyW8HIGH
- z : oopvlg Wsc RcecsWsgm
AnucpWec8HIGH
- z Q pnt rbgre : pcWBResidential
- z FrqW sp ast pc DWt pcr 8
None
- z Qgc CuWt WsgmB Wsc8
May 6, 2015
- z L nscr/Anl I cnsr 8
Palm trees exist along entire reach.



Af Wmci8Af niW Apch | I MI Wb # 51 - PcWaf 2

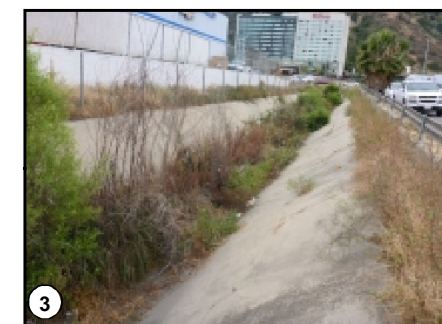
Af Wmci I WgrscnWtrac MnggyWsgm Q I I Wp Q ccs



Legend

- Ngnsn lnb_snm
- B_g_mmdi Rt pudx
- ⊗ B lxx Rsnpl Cp_lmrsp bst pd
- B lxx Rsnpl Cp_lm

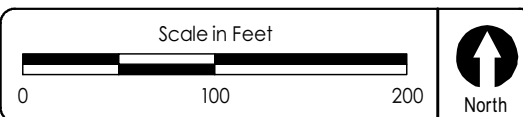
Ngnsnr:



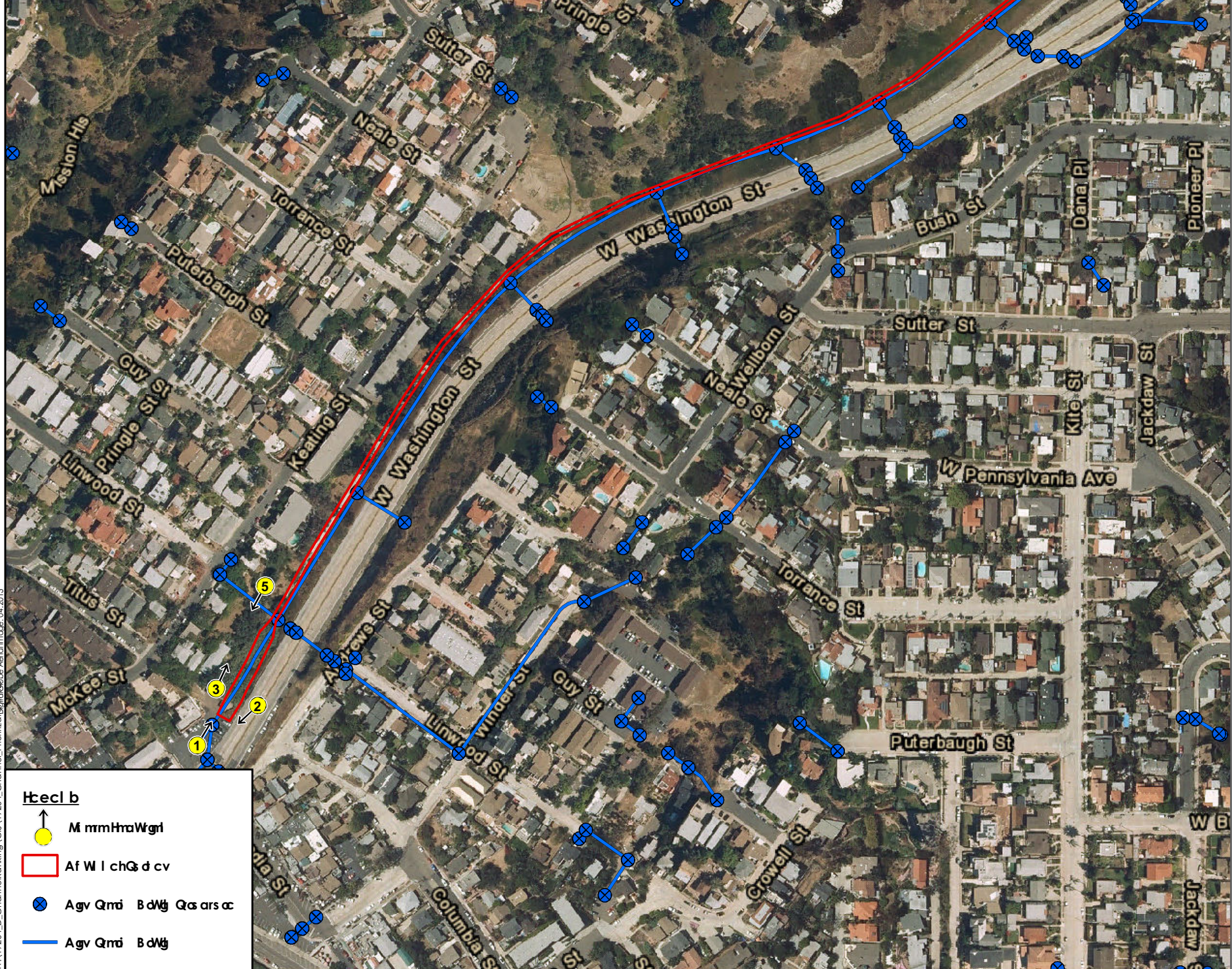
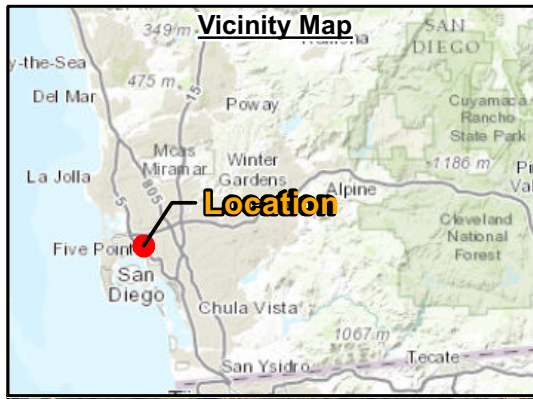
Arrdrri dms Qdrt is

- z B_g_mmdi Ngnpsly_snmRbnpd: 75.8 out of 100
- z Einnc F_y_pc Rbnpd: 62.5 out of 75
- z V_sdpP t_lisx Rbnpd: 4 out of 10
- z Bnl l t mxx Hrot s Rbnpd: 8 out of 10
- z Adrsqdsibr Rbnpd: 1.3 out of 5
- z B_o_blsx Ngnpsn L_lmsdm_rbd: 10-year storm event
- z B_o_blsx Aesdpl_lmsdm_rbd)Ar/at lis B_o_blsx, : 50-year storm event
- z Binff hmi Nnsdrsh_i: HIGH
- z Aoopvlt_sd Sdf ds_snm B nudp_f d: HIGH
- z Rt ppt mchmi Apd: Commercial
- z Htrp_rsp bst pd E_lit pd: Broken concrete
- z Rhd Du_it_snmC_sd: May 5, 2015
- z MnsdrOB nl l dnr: Based on the site photos taken by the City of San Diego there is dense vegetation in the majority of the channel reach, as well as a potential flooding issue at the culvert under Camino de la Reina.

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B_g_mmdi: B_l_lmm cd l_Qdmm (L L NL_o # 82 B_g_mmdi L_lmsdm_rbd Ngnpsly_snmRt l l_px Rgdds

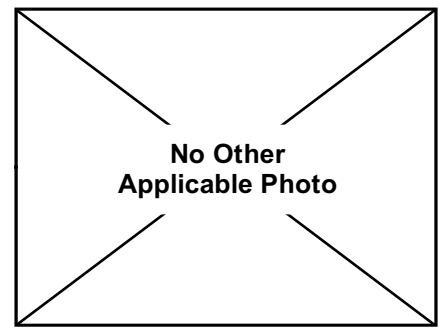


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Legend

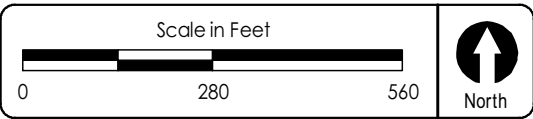
- ▲ M mrmHraWgrl
- Af W I chQ d cv
- ⊗ Agv Qmri B dWg Qs ars ac
- Agv Qmri B dWg

M mmp8



Summary:

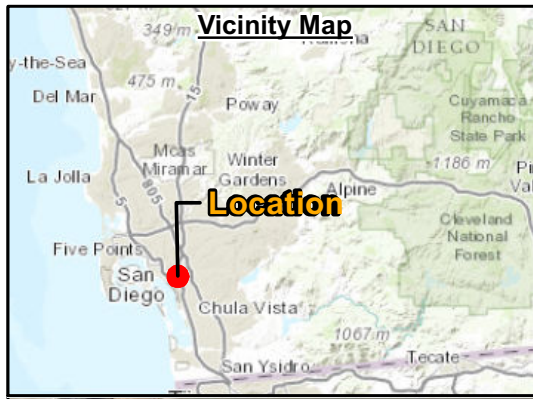
- Af W I chQ d cv**: 83.3 out of 100
- Dimb E Wk Wb**: 71.3 out of 75
- S WcoNs Wrgv**: 4 out of 10
- Ani i sl gv fl nsr**: 8 out of 10
- cpf crp**: 0 out of 5
- AWhWagv Mgrorml Wj rcl W ac8**: Less than 2-year storm event
- AWhWagv : dcol Wj rcl W ac** (p_s gr AWhWagv) 8: 100-year storm event
- Almeeg e Mtrcl rW8HIGH**
- nnoug Wc RcecrWgrl Ant cdWec8HIGH**
- Qs ars l bge : acWBResidential**
- fl dWras ars ac DWs acp8**: None
- Qgc G Ws Wgrl B Wc8**: May 5, 2015
- L mcp/Ani i cl rp8**: Based on site photos taken by the City of San Diego, heavy vegetation exists in the downstream end of the channel. A high risk of vegetation clogging the downstream culvert exists.



Af W I chQ d cv

I I MI Wh # 73

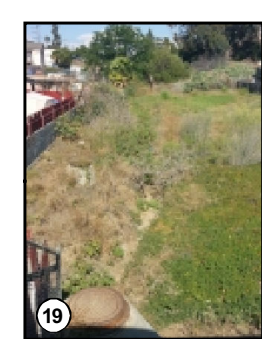
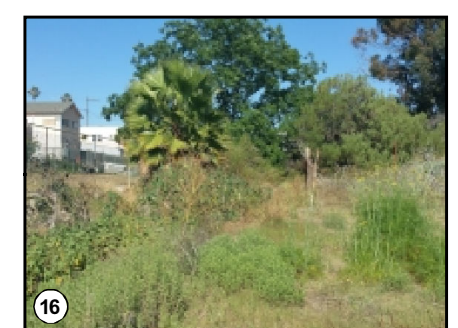
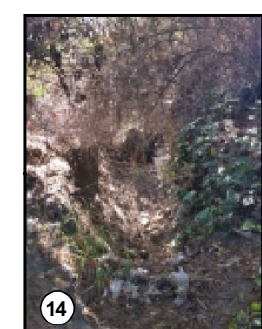
Af W I chl Wj rcl W ac Mgrorml Wg i i Wv Q ccr



Nbi gpf

- Rl r v Necvmp
- El cpggnWkyg•
- E m W r to F t c p W i x e w t g
- E m W r to F t c p

Rl r v uC



Duuguu gpvVguxnu

El cpggnRl r v Necvmp W r t gC
59.4 out of 100

l m r f L c: c t f W r t gC
54.4 out of 75

a c v g t S x c m m W r t gC
3 out of 10

E r o o x p m m s x v W r t gC
2 out of 10

D g u l g v a u W r t gC
0 out of 5

E c s c e m R l r v P c r p g p c p e g C
Less than 2-year storm event

E c s c e m D h g t P c r p g p c p e g
) D u / d x m m E c s c e m , C
Less than 2-year storm event

E m i i r p i R r v g p v a r C M E D I U M

D s s t r z r a c v g _ g i g v c v m p
E r y g t c i g C H I G H

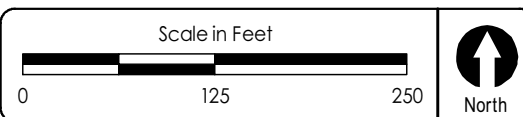
W k t r x p f r p i D t g c C R e s i d e n t i a l

M h c u t x e w t g l c n x t g u C
None

W a g H y c r x c v m p F c v g C
July 17, 2015

Q r v g u l E r o o g p w C

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El cpggnC58v W0(P c t v p D y g 0

P P R P c s # B 4

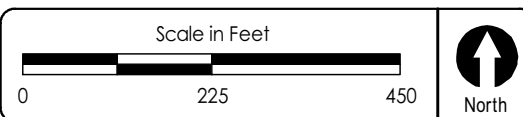
El cpggnP c r p g p c p e g R l r v Necvmp W k o o c t • W g g v



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Legend

- Ngoto l ob_tlon
- B g_nndl Rurvy
- B lly Rform Cr_in Rtruburd
- B lly Rform Cr_in

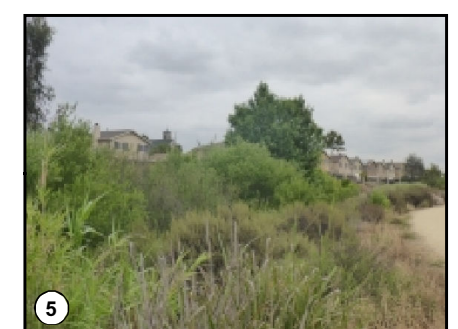


B g_nndl: Routg B goll_s B rddi

L L NL _p # 84

B g_nndl L _mntdn_nbd Nrlrhlz_tlon Rumm_ry Rgddt

Ngotos:



Assdssmnt Qdsults

- B g_nndl Nrlrhlz_tlon Rbord: 75.0 out of 100
 - Elooc F_z_rc Rbord: 65.0 out of 75
 - V_tdr P_u_lly Rbord: 2 out of 10
 - B ommunity Htput Rbord: 8 out of 10
 - Adstgdltbs Rbord: 0 out of 5
- B_p_bly Nrlr to L _mntdn_nbd: 5-year storm event
- B_p_bly Aedr L _mntdn_nbd (As-ault B_p_bly): 25-year storm event
- B lof f mf Notdnth_l: HIGH
- Approxm_td S df dt_tlon B ovdr_f d: HIGH
- Rurrounchmf Ard_: Residential
- Hre_struburd E_hurds: None
- Rhtd Dv_lu_tlon C_td: May 5, 2015
- Motds/B ommdnts: Moderate erosion in west end of channel near the foot bridge

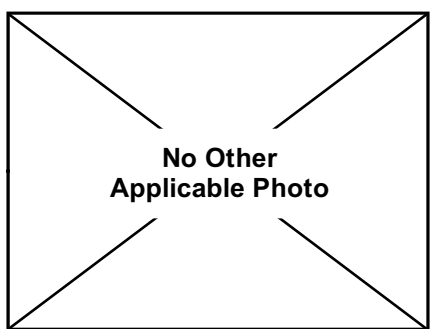
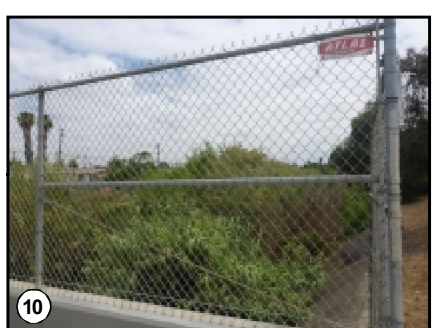


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Legend

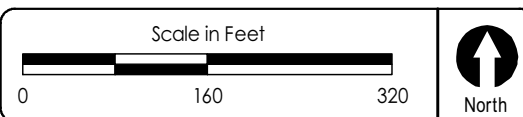
- Ngoto l o b _ t i o n
- B g _ n n d l R u r v d y
- B h y R t o r m C r _ i n R t r u b t u r d
- B h y R t o r m C r _ i n

Ngotos:



Assessment Results

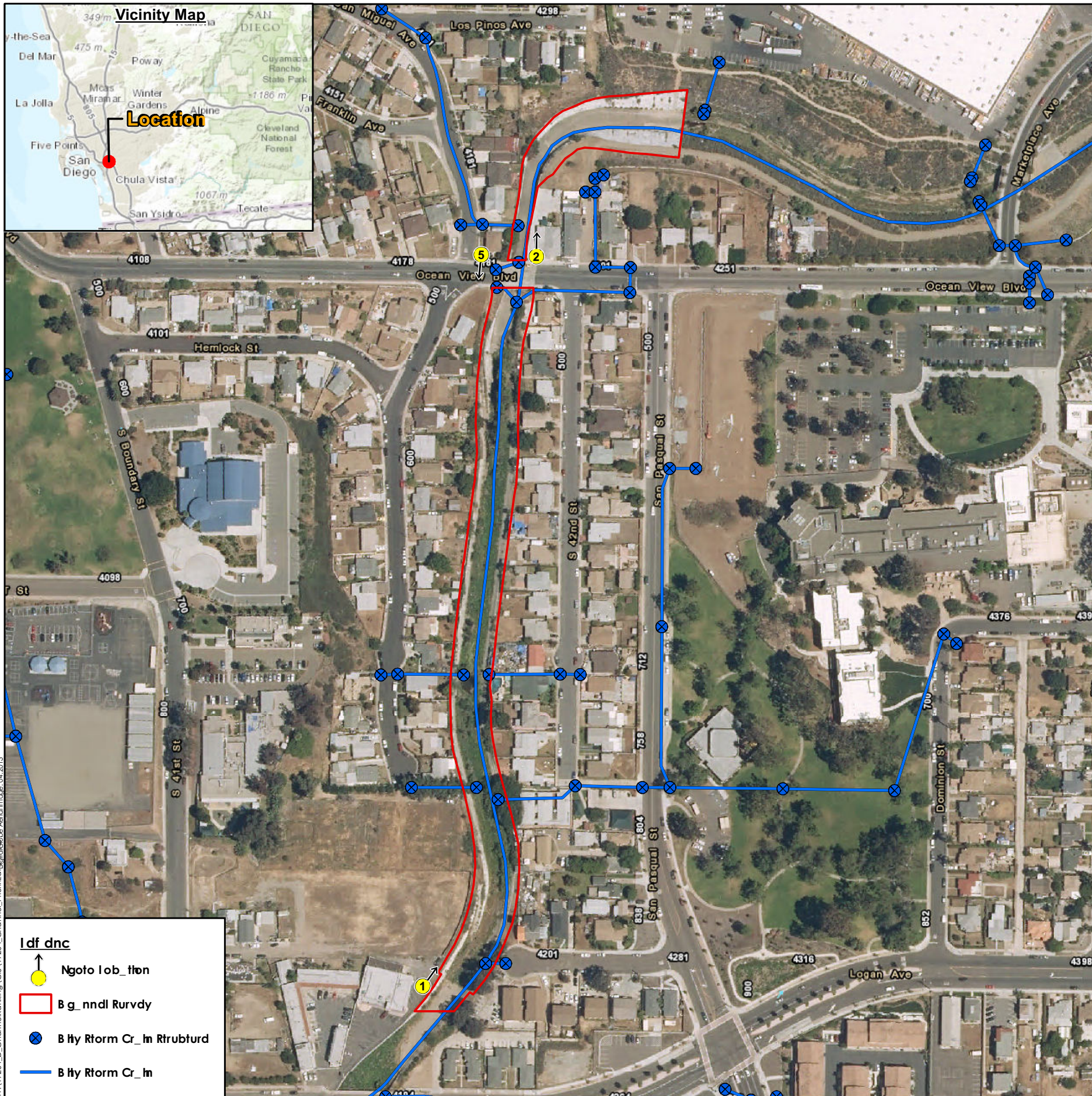
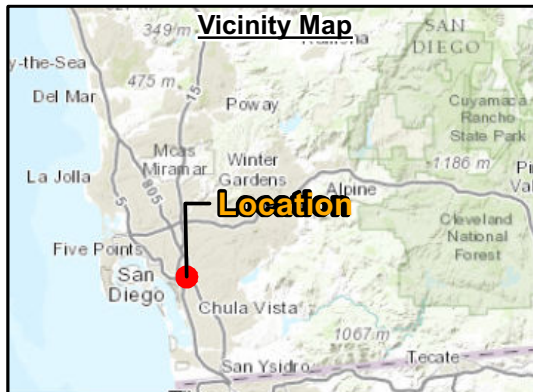
- **B g _ n n d l N o r t h _ t i o n R b o r d:**
74.8 out of 100
 - **E l o o c F _ z _ r c R b o r d:**
63.8 out of 75
 - **V _ t d r P u _ l t y R b o r d:**
3 out of 10
 - **B o m m u n i t y H i p u t R b o r d:**
8 out of 10
 - **A d s t g d t t b s R b o r d:**
0 out of 5
- **B _ p _ b l t y N o r t o L _ i n t d n _ n b d:**
10- to 25-year storm event
- **B _ p _ b l t y A e d r L _ i n t d n _ n b d (A s - a u l t B _ p _ b l t y):**
50- to 100-year storm event
- **B l o f f i n f N o t d n t h l:** HIGH
- **A p p r o x i m _ t d S d f d t _ t i o n B o v d r _ f d:** HIGH
- **R u r r o u n c h m f A r d _:** Residential
- **H e _ s t r u b t u r d E _ h u r d s:** NONE
- **R t d D v _ l u _ t i o n C _ t d:** May 5, 2015
- **M o t d s / B o m m d n t s:**
A high risk of vegetation flowing downstream and clogging the culvert exists. It was noted on the O&M Channel Maintenance Inspection Form completed for the channel by the City of San Diego that there is broken gunite near the foot bridge to the park.



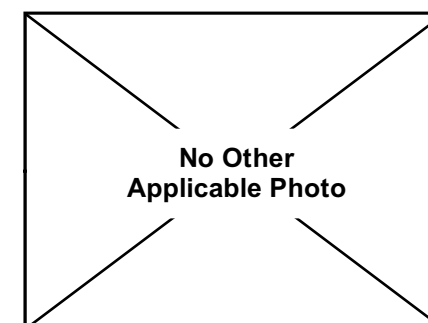
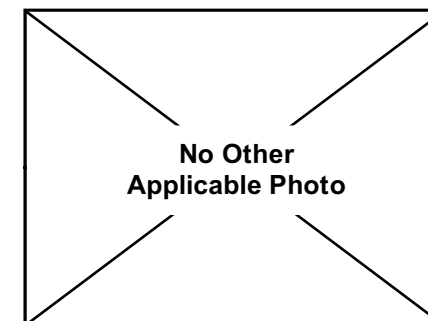
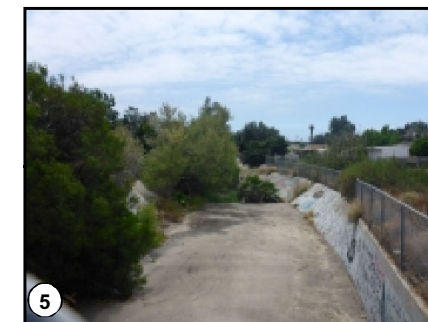
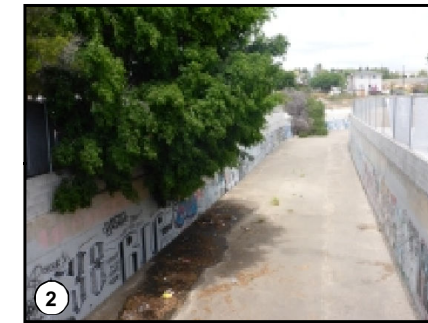
B g _ n n d l: R o u t g B g o l l _ s B r d d i

L L N L _ p # 85

B g _ n n d l L _ i n t d n _ n b d N o r t h _ t i o n R u m m _ r y R g d d t



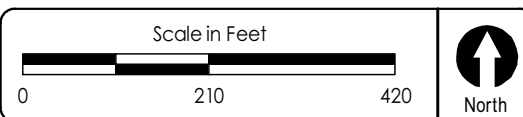
Ngotos:



Assdssmnt Qdsults

- B g_ nndl Ntortlz_ tton Rbord: 80.0 out of 100
 - Elooc F_ z_ rc Rbord: 65.0 out of 75
 - V_ tdr P_ u_ lthy Rbord: 6 out of 10
 - B ommunity Htput Rbord: 9 out of 10
 - Adstgdthb Rbord: 0 out of 5
- B_ p_ bly Ntort to L_ mtdn_ nbd: 10-year storm event
- B_ p_ bly Aedr L_ mtdn_ nbd (As-ault B_ p_ bly): 100-year storm event
- Blof f mf Notdnt h_ l: HIGH
- Approxm_ td S df dt_ tton B ovdr_ f d: HIGH
- Rurrounchmf Ard_ : Residential
- Ht_ struburd E_ Hurds: None
- Rhtd Dv_ lu_ tton C_ td: May 5, 2015
- Motds/B ommdnts: Debris accumulation on pipe near Alpha Project

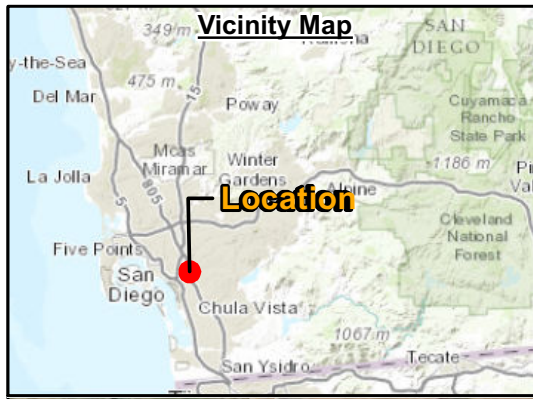
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B g_ nndl: Routg B goll_ s B rddi

L L NL _ p # 87

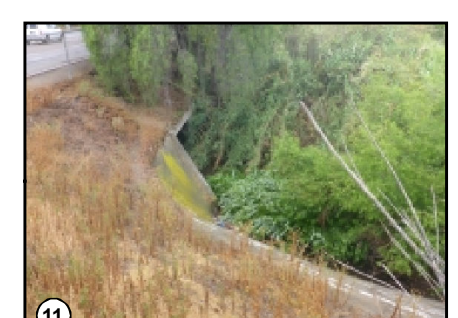
B g_ nndl L_ mtdn_ nbd Ntortlz_ tton Rumm_ ry Rgddt



Legend

- Ngoto l ob_ tlon
- B g_ nndl Rurvy
- B lty Rform Cr_ ln Rtruburd
- B lty Rform Cr_ ln

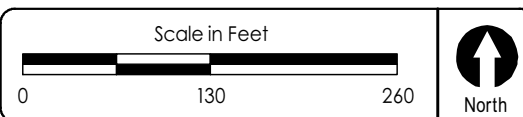
Ngotos:



Assdssmnt Qdults

- B g_ nndl N l_ rthz_ tlon Rbord: 60.4 out of 100
 - Elooc F_ z_ rc Rbord: 49.4 out of 75
 - V_ tdr P_ u_ lly Rbord: 3 out of 10
 - B ommunity H_ p_ ut Rbord: 8 out of 10
 - Adstgd t_ l_ s Rbord: 0 out of 5
- B_ p_ bly N l_ r to L_ _ mtdn_ nbd: 50-year storm event
- B_ p_ bly A_ d_ r L_ _ mtdn_ nbd (As-ault B_ p_ bly): 100-year storm event
- B l_ o_ f_ m_ f_ N_ o_ t_ d_ n_ t_ h_ l_ : HIGH
- Approxm_ td S_ d_ f_ d_ t_ l_ o_ n B_ o_ v_ d_ r_ f_ d_ : HIGH
- Rurrounch_ m_ f_ A_ r_ d_ : Commercial
- H_ e_ _ struburd E_ _ h_ u_ r_ d_ s_ : None
- R_ l_ d_ D_ v_ _ l_ u_ _ t_ l_ o_ n C_ _ t_ d_ : May 9, 2015
- M_ o_ t_ d_ s_ / B_ o_ m_ m_ d_ n_ t_ s_ :

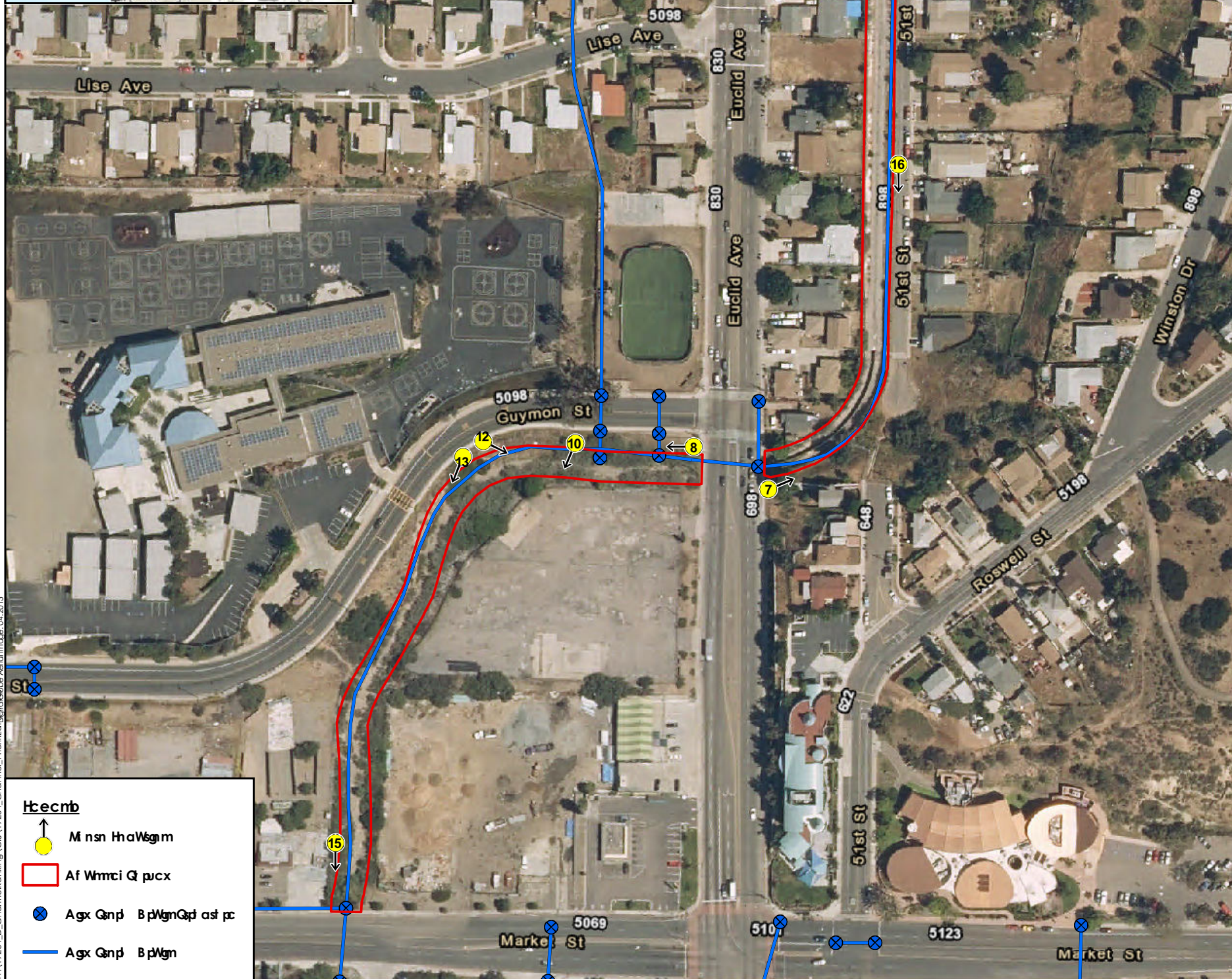
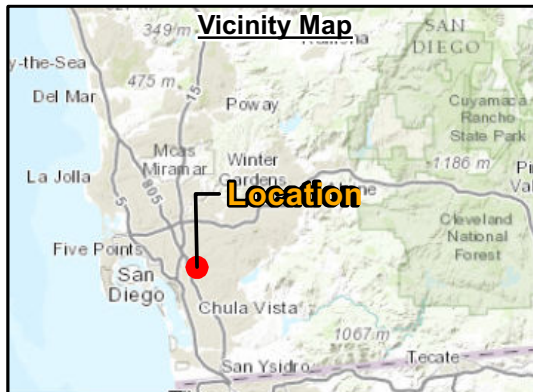
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B g_ nndl: Routg B goll_ s B rddi

L L NL _ p # 88

B g_ nndl L _ mtdn_ nbd N l_ rthz_ tlon Rumm_ ry Rgddt

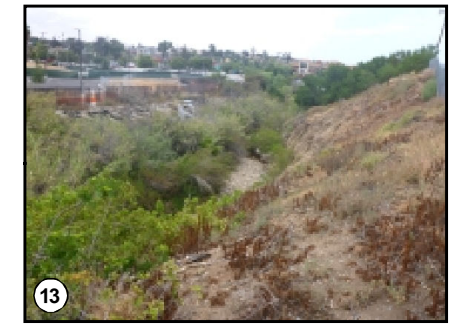
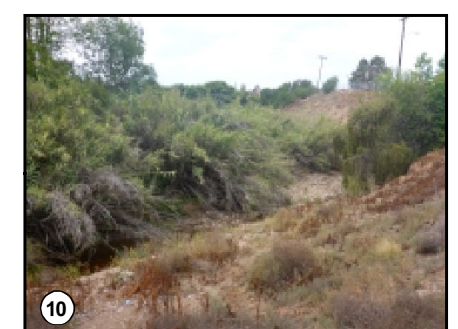


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Hecrb

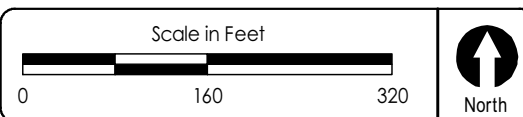
- M nsn HhaWsgm
- Af Wmci Q pux
- Agx Gnp B pWgnGst ast pc
- Agx Gnp B pWgn

M nsnr8



: rrcrri cms Pct is

- z Af Wmci MnggyWsgmGnp8
72.3 out of 100
- z Dnnb E WyWb Gnp8
56.3 out of 75
- z S WscpNt Wgx Gnp8
4 out of 10
- z Anl I t mxx frnt s Gnp8
7 out of 10
- z : crsf csgr Gnp8
5 out of 5
- z AWoWagx Mngpsn I WngscnWtrac8
100-year storm event
- z AWoWagx : dcpl WngscnWtrac
(: r_ t gs AWoWagx) 8
100-year storm event
- z Ainegre MnsrnyW8MEDIUM
- z : oopvlg Wsc RcecsWsgm
AnucpWec8MEDIUM
- z Q pnt rbgre : pcW8Commercial
- z FrpW sp ast pc DWt pcr 8
Slope failure
- z Gpc CuWt WsgmB Wsc8
May 9, 2015
- z L nscr/Anl I cnsr 8
One of the side slopes has failed and blocked part of the culvert entrance at the downstream end of the channel.



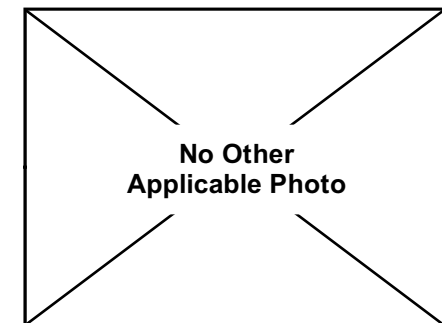
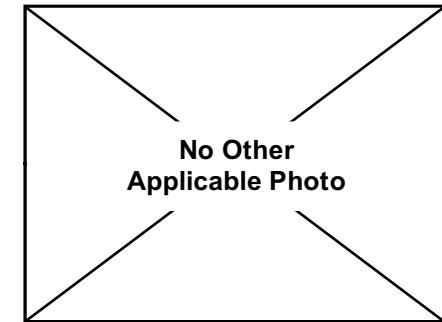
Af Wmci8Qt sf Af niW Apch | I | MI Wo # 103 Af Wmci I WngscnWtrac MnggyWsgmG I | Wp Q ccs



Legend

- Ngnsn lnb_snm
- B_g_mmdi Rt pudx
- B lxx Rsnpl Cp_lmrsp bst pd
- B lxx Rsnpl Cp_lm

Ngnsnr:



Arrdrri dms Gdrt is

- z B_g_mmdi Ngnsnly_snmRbnpd: 51.9 out of 100
- z Einnc F_y_pc Rbnpd: 46.9 out of 75
- z V_sdpP t_lisx Rbnpd: 4 out of 10
- z Bnl l t mlsx Hrot s Rbnpd: 1 out of 10
- z Adrsgdslbr Rbnpd: 0 out of 5
- z B_o_blsx Ngnsn L_lmsdm_rbd: 100-year storm event
- z B_o_blsx Aesdpl_lmsdm_rbd)Ar/at lis B_o_blsx, : 100-year storm event
- z Binf f hmi Nnsdsh i: HIGH
- z Aoopvlt _sd S df ds_snm B nudp f d: MEDIUM
- z Rt ppt rrc hmi Apd_ : Residential
- z Htrp_rsp bst pd E_lit pd: None
- z Rhod Du_it_snmC_sd: May 9, 2015
- z MnsdrOB nl l dms: The culvert entrance at the downstream end of the channel is protected by a grate. This grate is partially clogged and recommended for maintenance to prevent the grate from fully clogging.

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Scale in Feet

B_g_mmdi: Df bilc (B_rs_m

L L NL_o # 215

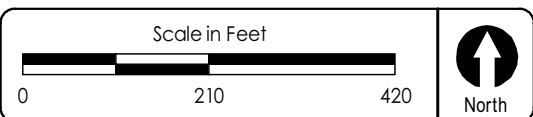
B_g_mmdi L_lmsdm_rbd Ngnsnly_snmRt l l_px Rgdds



W:\17204_D_ChannelRanking\GIS\17204_Channel_Prioritization\MapDocs\Aerial\MapDocs_04_2013

Heccl b

- M mrmHraWgrl
- Af W I chQ d cx
- Agx Qmri B dWg Qs ars ac
- Agx Qmri B dWg

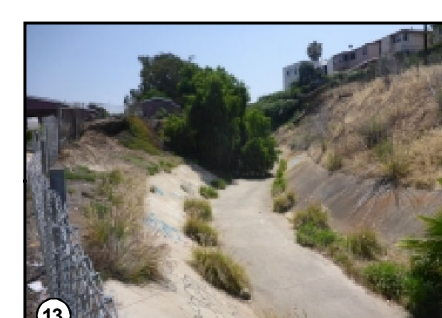
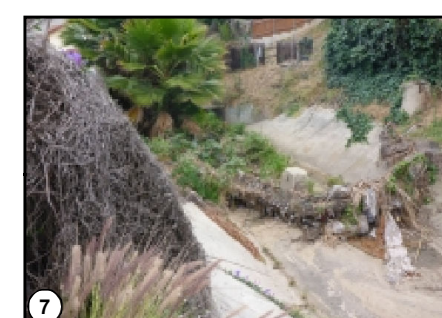
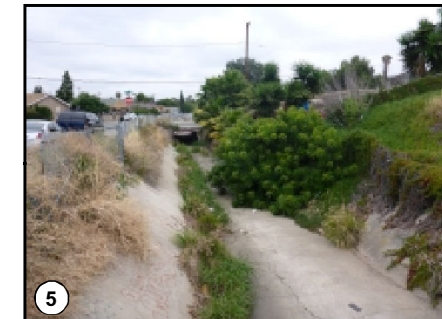
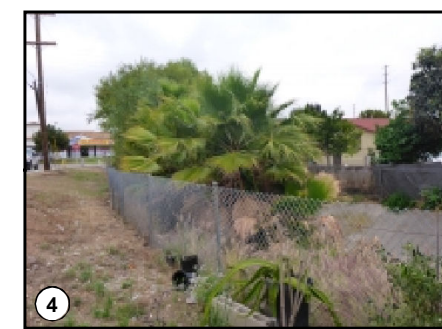


Af W I ch8Amrm u mrb

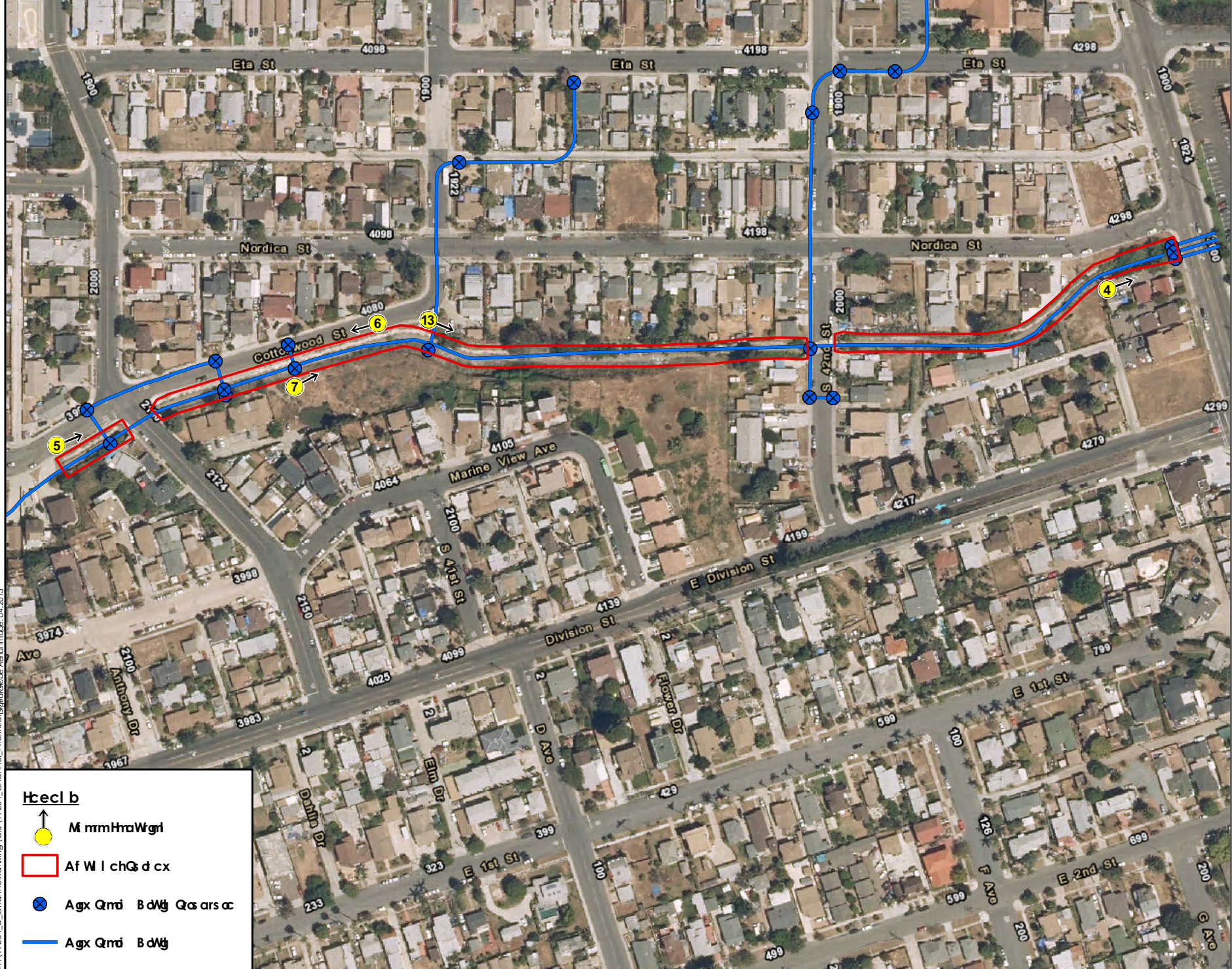
I I MI Wh # 120

Af W I chl Wgrcl W ac MmrgyWgrl Gi i Wx Q ccr

M mrm8



- : ppcpi cl r Pcps hlp
- z Af W I chMmrgyWgrl Qmrc8
82.0 out of 100
- z Dmrb E WyWb Qmrc8
70.0 out of 75
- z S WcoNs Wgrx Qmrc8
6 out of 10
- z Ani i sl gx fl nsr Qmrc8
6 out of 10
- z : cpf crgp Qmrc8
0 out of 5
- z AWhWagx Mmrgmrl Wgrcl W ac8
Less than 2-year storm event
- z AWhWagx : dcol Wgrcl W ac
(: p_s gr AWhWagx) 8
25- to 50-year storm event
- z Almeeg e Mmrci rW8HIGH
- z : nncvg Wc RcecrWgrl
Ant cdWec8HIGH
- z Gsarsl bge : acW8Residential
- z fl dWpars ac DWg acp8
None
- z Ggc G Ws Wgrl B Wc8
May 27, 2015
- z L mrcp/Ani i cl rp8
Vegetation has grown down from the top of the channel banks over the concrete side slopes. A high risk of vegetation flowing downstream and clogging the culvert exists.

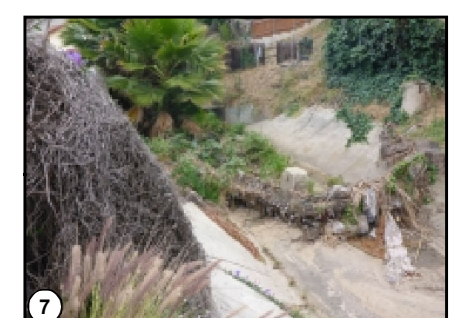
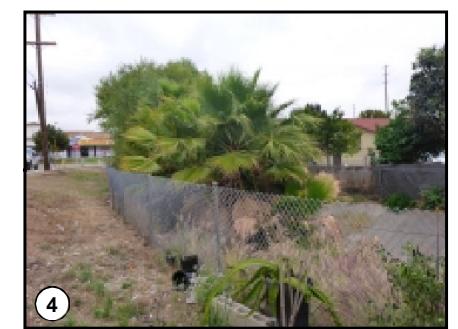


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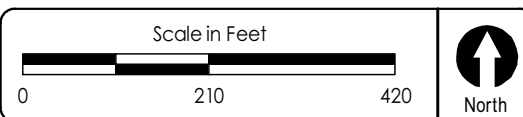
Hecl b

- M mrmHraWgrl
- Af W I chQ d cx
- Agx Qmri B dWg Qs ars ac
- Agx Qmri B dWg

M mrm p8



- : ppcpi cl r Pcps hlp
- z Af W I chMmrgyWgrl Qamc8
82.0 out of 100
- z Dmmb E WyWb Qamc8
70.0 out of 75
- z S WcoNs Wgq Qamc8
6 out of 10
- z Ani i sl gx fl nsr Qamc8
6 out of 10
- z : cpf crgp Qamc8
0 out of 5
- z AWhWagx Mmrgmrl Wg rcl W ac8
Less than 2-year storm event
- z AWhWagx : dcol Wg rcl W ac
(: p_s gr AWhWagx) 8
25- to 50-year storm event
- z Almeeg e Mmrl rW8HIGH
- z : nnavg Wc RcecrWgrl
Ant cdWec8HIGH
- z G ars l bge : acWBResidential
- z fl dWras ars ac DWs ac p8
None
- z Ggc G Ws Wgrl B Wc8
May 27, 2015
- z L mrcp/Ani i cl rp8
Vegetation has grown down from the top of the channel banks over the concrete side slopes. A high risk of vegetation flowing downstream and clogging the culvert exists.



Af W I chMmrgyWgrl

I I Ml Wh # 120

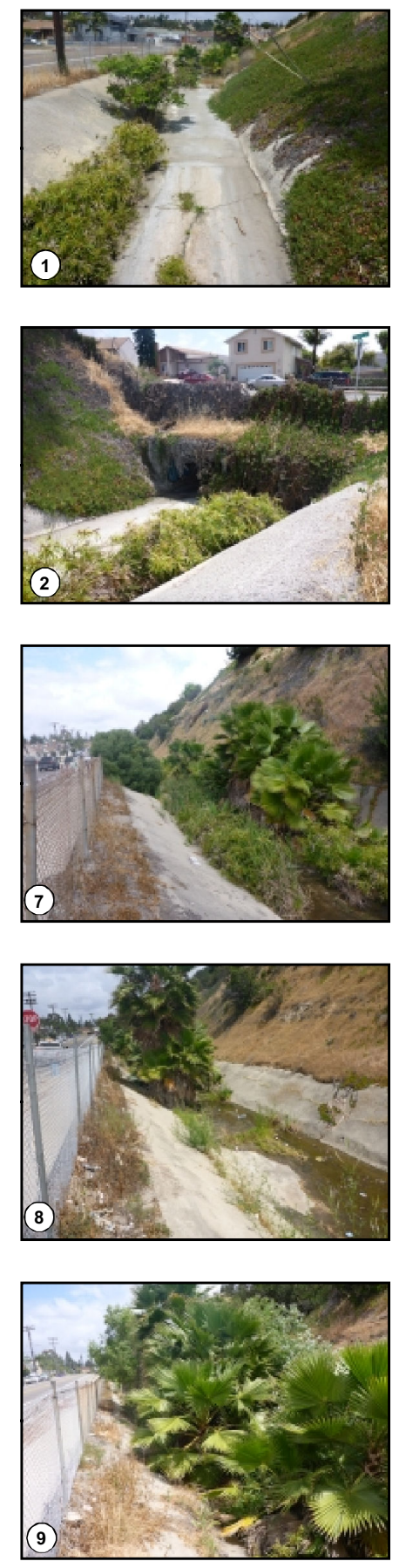
Af W I chl Wg rcl W ac MmrgyWgrl G i i Wx G ccr



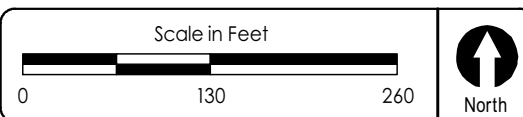
Hecnb

- M nsn HhaWsgm
- Af Wmci Q pxc
- Agx Gnp B pMgnCst pc
- Agx Gnp B pMgn

M nsnr8



- : rrcrri cms Pct is**
- z Af Wmci MnggyWsgmCnrc8
80.3 out of 100
 - z Dnnb E WyWb Cnrc8
71.3 out of 75
 - z S WscpNt Wgx Cnrc8
3 out of 10
 - z Anl I t mxx frnt s Cnrc8
6 out of 10
 - z : crsf csgn Cnrc8
0 out of 5
 - z AWoWagx Mngpsn I WgrscnWtrac8
Less than 2-year storm event
 - z AWoWagx : dcpl WgrscnWtrac
(: r- t gs AWoWagx) 8
100-year storm event
 - z Ainegre MnsnsgW8HIGH
 - z : oopvlg Wsc RcecsWsgm
AnucpWec8MEDIUM
 - z Q pnt rbgre : pcWBResidential
 - z frpWsp ast pc DWt pcr 8
None
 - z Gpc CuWt WsgmB Wsc8
May 7, 2015
 - z L nscr/Anl I cnrc8
Vegetation has grown down from the top of the downstream culvert entrance as well as over the channel banks. A high risk of vegetation flowing into the culvert and clogging it exists. It is recommended that this vegetation be maintained.



Af Wmci8Mhr dpc

I I MI Wo # 122

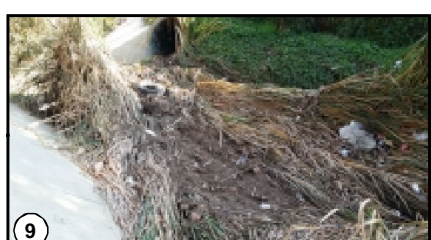
Af Wmci I WgrscnWtrac MnggyWsgmQ I I Wp Q ccs



Legend

- Photo Location
- Channel Survey
- City Storm Drain Structure
- City Storm Drain

Photos:



Assessment Results

- **Channel Prioritization Score:**
94.0 out of 100
 - Flood Hazard Score:
75.0 out of 75
 - Water Quality Score:
5 out of 10
 - Community Input Score:
9 out of 10
 - Aesthetics Score:
5 out of 5
- **Capacity Prior to Maintenance:**
Less than 2-year storm event
- **Capacity After Maintenance (As-built Capacity):**
100-year storm event
- **Clogging Potential:** HIGH
- **Approximate Vegetation Coverage:** HIGH
- **Surrounding Area:** Residential
- **Infrastructure Failures:** None
- **Site Evaluation Date:** June 12, 2015
- **Notes/Comments:**
There is noticeable sediment and dense vegetation throughout channel reach. Since the channel has a concrete bottom a high risk of vegetation detaching from the channel bottom and flowing downstream, clogging the culvert exists.

RICK ENGINEERING COMPANY

Scale in Feet
0 100 200

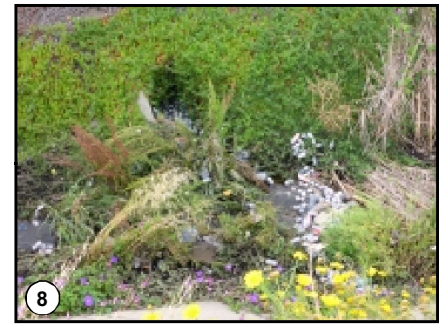
North



Lf hf oe

- Pi pup Lp dbupo
- Ci boof nšvsxf z
- Cluz Spsn Dsblo Susvdvsf
- Cluz Spsn Dsblo

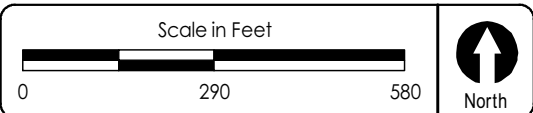
Pi pup t A



Bttf ttn f ouRf tvrd

- : Ci boof nšpslš • bupo Sdpsf A
75.0 out of 100
- : Frrpe Hb • bse Sdpsf A
65.0 out of 75
- : _ bšf s Qvbrtš Sdpsf A
4 out of 10
- : Cpn n voluz lor vu Sdpsf A
6 out of 10
- : Bf tšf šdt Sdpsf A
0 out of 5
- : Cbr bdluz Pšps up Mbloš obodf A
Less than 2-year storm event
- : Cbr bdluz B šf s Mbloš obodf
(Bš-cvlnš Cbr bdluz) A
2- to 5-year storm event
- : Crphhloh Ppš oubrš **A MEDIUM**
- : Br r spyn bšf Wf hf ubupo
Cpxf sbhf **A MEDIUM**
- : Svsspvveloh B šf b **A Residential**
- : logbt usvdvsf Fblmšf t A
None
- : Slš Exbmbšupo D bšf A
May 16, 2015
- : Npš t / Cpn n f ošf A

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Ci boof nšvsxf z

MMP Mbr # 137

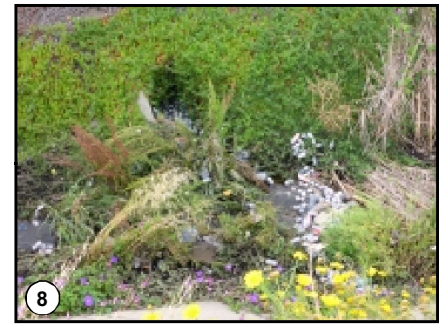
Ci boof nšvsxf z Pspslš • bupo Svn n bsz Si f f u



Lf hf oe

- Pi pup Lp dbupo
- Ci boof nsvsf z
- Cluz Spsn Dsblu Svsvdvsf
- Cluz Spsn Dsblu

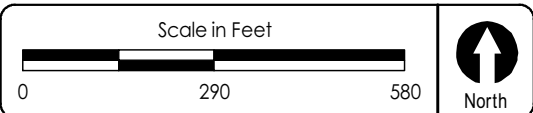
Pi pup t A



Bttf ttn f ouRf tvrd

- : Ci boof nsvsf • bupo Sdpsf A
75.0 out of 100
- : Frppe Hb • bse Sdpsf A
65.0 out of 75
- : _ bnf s Qvbrtuz Sdpsf A
4 out of 10
- : Cpn n voluz lor vuSdpsf A
6 out of 10
- : Bf tñ f ùdt Sdpsf A
0 out of 5
- : Cbr bdluz Psps up Mblof obodf A
Less than 2-year storm event
- : Cbr bdluz Bgf s Mblof obodf
(Bt-cvln Cbr bdluz) A
2- to 5-year storm event
- : Crphhloh Ppú oubr AMEDIUM
- : Br r spyn bú Wf hf ubupo
Cpxf sbhf AMEDIUM
- : Svsspvoeloh Bsf b Residential
- : logbt usvdvsf Fblmsf t A
None
- : Slú Exbmbupo Dbú A
May 16, 2015
- : Npú t / Cpn n f out A

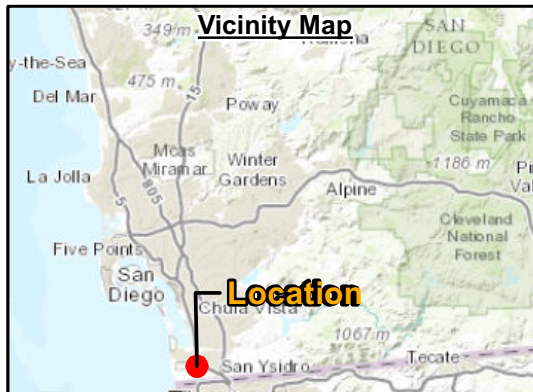
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Ci boof nsvsf z

MMP Mbr # 137

Ci boof nsvsf z Psps up Mblof obodf Psps up Mblof obodf Sv n n bsz Si f f u



Photos:



Assessment Results

- **B channel Nioritization Rcore:**
72.8 out of 100
 - Flood Fazard Rcore:
63.8 out of 75
 - Water P uality Rcore:
3 out of 10
 - B ommunity Hput Rcore:
6 out of 10
 - Aesthetics Rcore:
0 out of 5
- **B apacity Nior to L aintenance:**
Less than 2-year storm event
- **B apacity After L aintenance (As-built B apacity) :**
Less than 2-year storm event
- **B logging Notential:** MEDIUM
- **Approximate Vegetation B overage:** MEDIUM
- **Rurrounding Area:** Residential
- **Hnfrastructure Eailures:**
None
- **Rite Dvaluation Cate:**
May 16, 2015
- **Notes/B omments:**
There are sporadic patches of sediment and vegetation overhanging onto the side slopes throughout the channel. It is recommended that these be maintained in order to increase overall capacity of the channel.

Legend

- Photo location
- B channel Survey
- B city Storm Drain Structure
- B city Storm Drain

RICK ENGINEERING COMPANY

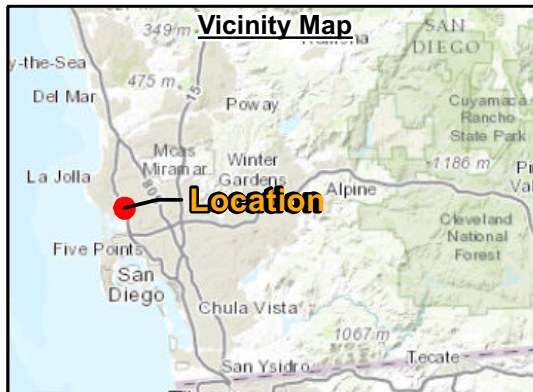
Scale in Feet
0 140 280

North

B channel: Socayo

L L NL ap # 137

B channel L aintenance Nioritization Rummary Rheet



Legend

- Photo Location
- Channel Survey
- City Storm Drain Structure
- City Storm Drain

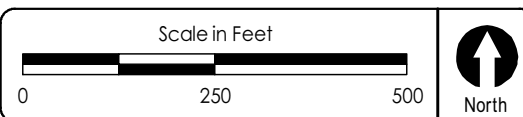
Photos:



Assessment Results

- Channel Prioritization Score: **56.1 out of 100**
 - Flood Hazard Score: **38.1 out of 75**
 - Water Quality Score: **6 out of 10**
 - Community Input Score: **7 out of 10**
 - Aesthetics Score: **5 out of 5**
- Capacity Prior to Maintenance: **5-year storm event**
- Capacity After Maintenance (As-built Capacity): **100-year storm event**
- Clogging Potential: **HIGH**
- Approximate Vegetation Coverage: **HIGH**
- Surrounding Area: **Commercial**
- Infrastructure Failures: **NONE**
- Site Evaluation Date: **May 29, 2015**
- Notes/Comments: **Based on site photos taken by the City of San Diego, heavy vegetation exists in the channel. A high risk of vegetation flowing downstream and clogging the culvert exists.**

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Channel: 4300 Mission Bay Drive #4300 Mission Bay Dr

Channel Maintenance Prioritization Summary Sheet