Master Storm Water System Maintenance Program

DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT

SCH. NO. 2005101032; Project No. 42891

APPENDIX B

Master Storm Water System Maintenance Program

July 2009

Prepared for:

City of San Diego
Storm Water Department
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Master Storm Water System Maintenance Program

Prepared by:

Operations and Maintenance Division
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IHA - Individual Historical Assessment

MC - Maintenance Contractor

MM - Mitigation Measures

MCC - Mitigation Monitoring Coordinator

PEIR - Program Environmental Impact Report

RE - Resident Engineer

SCR – Substantial Conformance Review

Executive Summary

Rather than just conveying excess flows to prevent flooding, today's drainage systems must meet multiple purposes including: protecting property from flooding, controlling stream bank erosion, protecting water quality, and sustaining the wildlife that use them. To that end, modern storm water facilities integrate conventional flood control strategies for large, infrequent storms with storm water quality control strategies and natural resource protection.

The City of San Diego's storm water facilities convey storm water flows to protect the life and property of its citizens and control stream bank erosion. They also convey urban runoff from development such as irrigation, driveways, and streets that flows into those facilities and ultimately the ocean. The storm water facilities also protect water quality and support natural resources. The long-term performance of those facilities is dependent upon on ongoing and proper maintenance. To maintain their effectiveness, a Master Maintenance Program (Master Program) is needed that includes specific maintenance activities and frequencies, and defines the parameters used to assess when "as needed" maintenance activities are required. This Master Program has been prepared to provide detailed methods for maintaining those storm water system facilities which are the responsibility of the City's Storm Water Department. In addition, the Master Program serves as the maintenance manual to perform authorized activities under master permits issued by the state and federal agencies with regulatory authority over aquatic resources that could be affected by maintenance activities.

This Master Program provides a comprehensive approach to storm water system maintenance. It governs future maintenance activities needed to maximize the effectiveness of the City's storm water system to provide for public safety and the protection of property, water quality and the natural resources associated with the drainage facilities. This Program establishes the methods and procedures to maintain the storm water system that balance its flood protection, aesthetic and biological values. It develops a Substantial Conformance Review (SCR) process that simplifies the authorization process required from state and federal regulatory agencies for annual maintenance activities in accordance with the proposed Master Program.

1.0 Introduction

The City of San Diego's drainage facilities convey storm water flows to protect the life and property of its citizens and control stream bank erosion. They also convey urban runoff from development sources such as irrigation, driveways, and streets that flows into those facilities and ultimately the ocean. The drainage facilities also protect water quality and support natural resources. The long-term performance of those facilities is dependent upon on ongoing and proper maintenance. To maintain their effectiveness, this Master Program has been formulated to identify specific maintenance activities and frequencies, and define the parameters used to assess when "as needed" maintenance activities are required. This Master Program has been prepared to provide detailed methods for maintaining those storm water system facilities which are the responsibility of the City's Storm Water Department. In addition, the Master Program serves as the maintenance manual to perform authorize activities under master permits issued by the state and federal agencies with regulatory authority over aquatic resources that could be affected by maintenance activities.

Storm water runoff follows rainfall on impervious surfaces such as streets and buildings. Since it can not infiltrate into the ground, that precipitation flows to the lowest point, collecting contaminants, sediment or debris along the way. Storm water runoff can erode unstable soil, contaminating it with sediment. Urban runoff is the surface water from irrigated landscapes, driveways, and streets that flows through the same drainage facilities. Urban runoff results from human activities rather than the natural hydrological cycle. Common urban runoff contaminants include: oil and grease from parking lots; pesticides, herbicides and fertilizers from lawns and landscaped areas; soapy water from carpet cleaning and vehicle washing; sediment from construction projects; trash such as cigarette butts and soda bottles, and many other sources associated with everyday activities.

The Operations and Maintenance Division of the City's Storm Water Department maintains storm water facilities that are located within the City of San Diego and are located within the public right of way or storm water easement dedicated to the City of San Diego. The City's storm water system is comprised of a number of different facility types which range from curb inlets to large flood control channels. Not all of these facilities require regular maintenance. The facilities that require regular maintenance, and are the subject of this Master Program, include: channels, detention basins and outfalls. It is estimated that there are approximately 50 miles of channels, of which approximately 75% include some degree of earthen material. There are approximately 12 storm water basins which are maintained by the Storm Water Department and nearly 5,000 outfalls.

During the early 20th century, because of its geography, climate, and low population density, the City relied on natural hydrology, allowing flood waters to flow by gravity through the City's vast network of naturally occurring gullies, canyons, rivulets, creeks and streams. The storm drain channel maintenance program began in 1933 under the Depression-era federal Works Project Administration. Channels and drains were manually cleaned using shovels and buckets. During World War II, the City witnessed exponential growth, including the construction of new streets and housing, and vast changes to its landscape to accommodate war-related facilities. Those activities increased the amount of impervious surface, changed storm water flow patterns, and altered the natural balance between runoff and natural absorption. This, in turn, substantially increased the volume, frequency, and velocity of storm water flows. Although the City constructed storm drain channels, the pace of growth still dictated the need for improved capacity and preventative maintenance.

Mechanized channel maintenance was first introduced after World War II. The City acquired surplus military equipment, power shovels, and farm tractors. Maintenance consisted of grading channels and pushing the waste material to the sides in a practice called sidecasting. By the mid-1950s, the City implemented annual inspections, completed the first mapping of its storm drain infrastructure, and adopted requirements for private construction of storm drain infrastructure associated with new commercial and residential developments. In subsequent decades, the number of storm drain structures increased paralleling population and economic growth trends generally. Likewise, the City modernized its equipment to include bulldozers, excavators, backhoes, and skid-steers, thus providing more efficient and flexible maintenance methods. The practice of sidecasting was also replaced with disposal of waste to landfills.

In the mid-1990s, after a state-wide initiative to educate local governments about the environmental regulations associated with the maintaining of urban storm water infrastructure, the City embarked on its first application for a master storm drain channel maintenance permit. In 2002, this effort was postponed after it was recognized that a programmatic approach to storm drain maintenance would provide a more thorough and comprehensive analysis of the environmental impacts of the proposed program.

This Master Program has been prepared in response to the goal of providing a comprehensive approach to storm water system maintenance. It is intended to achieve the following major objectives:

- Develop a comprehensive Master Program to govern future maintenance activities needed to maximize the effectiveness of the City's storm water system in order to provide for public safety and protection of property;
- Set forth a series of Maintenance Protocols to be implemented during storm water system maintenance which balance the flood protection function while maintaining, to the greatest degree possible, the aesthetic and biological value of the storm water system;
- Minimize the disruption of adjacent property from storm water system maintenance; and
- Develop a Substantial Conformance Review process to simplify the authorization process required from state and federal agencies with regulatory authority over wetlands for annual maintenance activities consistent with the proposed Master Program.

2.0 Storm Water System

The City's storm water system is composed of a variety of structures which ultimately transport surface runoff to the Pacific Ocean or other forms of containment (e.g. lakes). Urban runoff primarily starts on private property and public roadways. It makes its way to the gutter through surface flows or curb outlet systems. Larger projects may tie directly into a public storm drain system but a majority of the properties simply drain into the gutter fronting the property. The flow is then carried in the gutter until it becomes large enough to warrant the need for a curb inlet and undergrounding. The flow drops into the inlet and then enters a storm drain pipe (typically reinforced concrete pipe). As the flow moves down the storm water basin more and more pipes connect and the system gradually gets larger to handle the additional water.

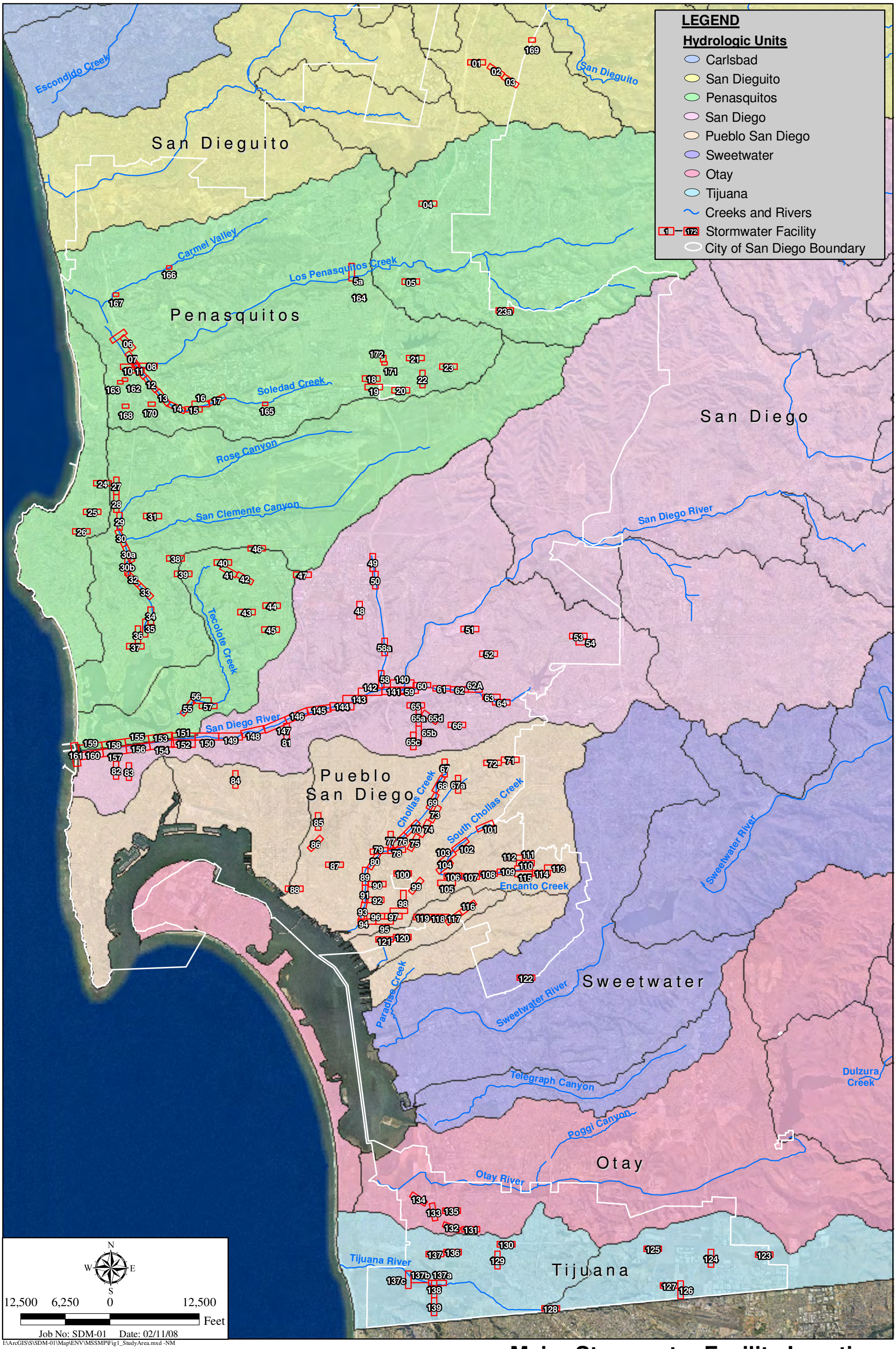
Eventually the storm drain pipes discharge their water into an open channel which could either be public or private. The discharge points for larger storm drain pipes are commonly referred to as outfalls. Outfalls consist of a variety of structures designed to reduce the discharge velocities to minimize erosion. Typical erosion control facilities include: revetments, rip rap or armored channel sides, headwalls and endwalls, flow/grade control and drop structures, and dissipation piles.

Most of the larger channels are public while the smaller channels tend to be private. Depending on maintenance requirements and the proximity of development, many of the public channels are armored (the predominate method being concrete lined bottom and sides). These channels are the primary carrier of large flows and ultimately end up discharging into San Diego Bay, Mission Bay, or the Pacific Ocean.

Detention basins are incorporated into the storm water system at certain locations to capture and retain runoff temporarily and release it to receiving waters at predevelopment flow rates. These structures provide short-term impoundment of storm water runoff followed by controlled release. The primary purposes of these basins are to reduce peak storm water discharges, control floods and prevent downstream channel scouring. Detention Basins also provide some water quality treatment by removing a limited amount of pollutants.

Extended detention basins, or retention basins, capture runoff and retain it between storms. They contain permanent pools of water between storm events. Water held in the basin is displaced by the next significant rainfall event. Pollutants settle-out of the water column. Because the water remains in the system for a period of time, retention systems benefit from biological and biochemical removal mechanisms provided by their aquatic plants and microorganisms and provide more water quality treatment than Detention basins.

As illustrated in Figure 1, the City's major channels and detention basins facilities occur within eight separate storm water basins (referred to as Hydrologic Units) as established by the Regional Water Quality Control Board. Figures 2a through 2e illustrate the location of these facilities on larger scale aerial photographs. Table 1 (see Appendix A) identifies the major channel and detention basin facilities which are the subject of this Master Program. This table identifies a variety of characteristics for each major channel or basin including channel type (earthern vs. concrete), year constructed, and anticipated maintenance procedure. Although the City intends to maintain outfalls, they are too numerous to effectively list in the table or display on a graphic.

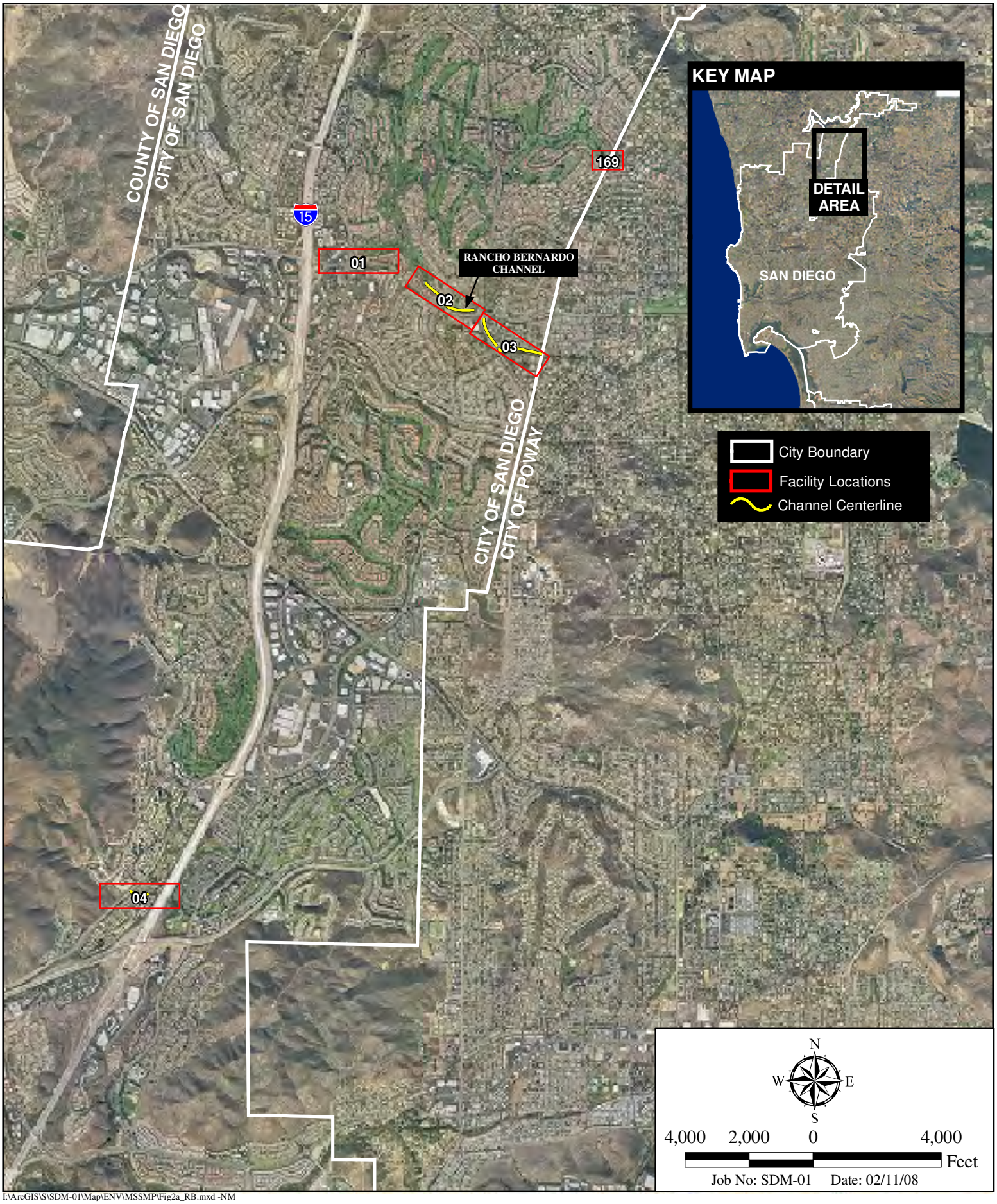


Major Stormwater Facility Locations

CITY OF SAN DIEGO MASTER STORMWATER SYSTEM MAINTENANCE PROGRAM

HELIX

Figure 1



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Stormwater Facilities - Rancho Bernardo Area

CITY OF SAN DIEGO MASTER STORMWATER SYSTEM MAINTENANCE PROGRAM

HELIX

Figure 2a

SOLEDAD CREEK CHANNEL

LOS PENASQUITOS CHANNEL

SOLEDAD CREEK CHANNEL

ROSE CREEK CHANNEL

COUNTY OF SAN DIEGO JURISDICTION

KEY MAP

DETAIL AREA

SAN DIEGO

City Boundary

Facility Locations

Channel Centerline

N

W E

S

4,000 2,000 0 4,000

Feet

Job No: SDM-01 Date: 02/11/08

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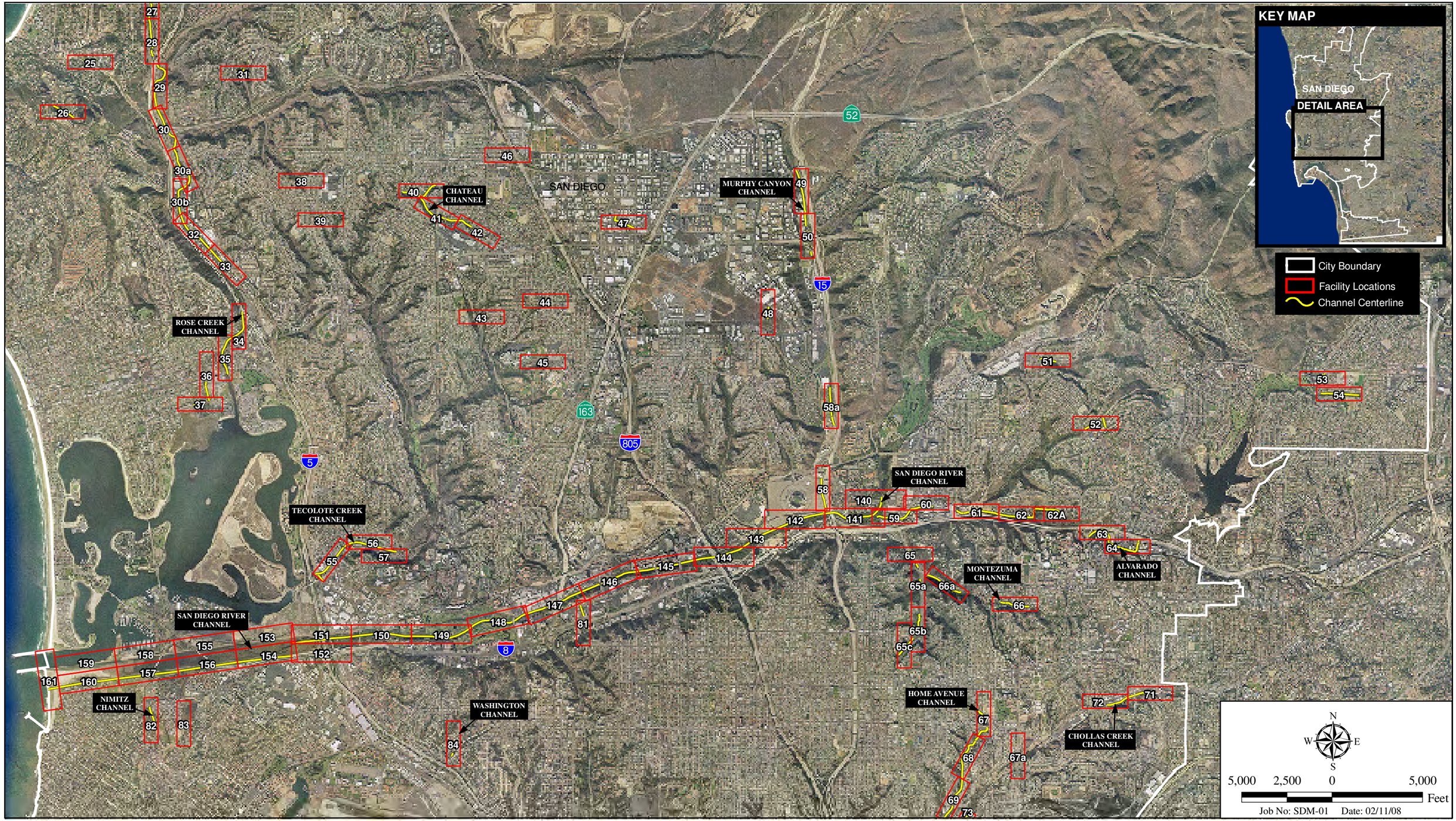
Stormwater Facilities - Soledad Area

CITY OF SAN DIEGO MASTER STORMWATER SYSTEM MAINTENANCE PROGRAM

HELIX

Figure 2b



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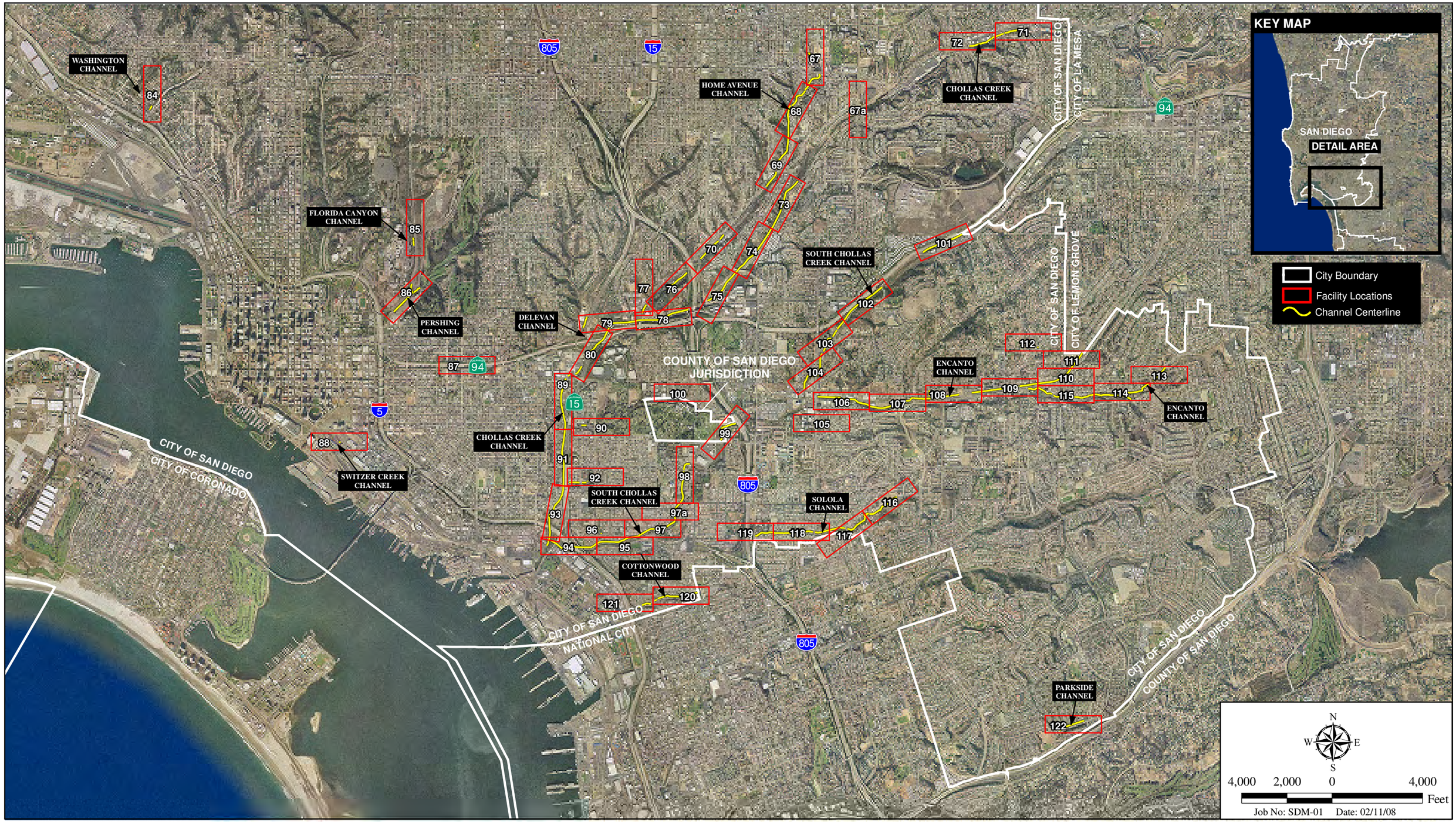
Stormwater Facilities - I-8 Corridor

CITY OF SAN DIEGO MASTER STORMWATER SYSTEM MAINTENANCE PROGRAM

HELIX

Figure 2c



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Stormwater Facilites - Central San Diego Area

CITY OF SAN DIEGO MASTER STORMWATER SYSTEM MAINTENANCE PROGRAM

HELIX

Figure 2d

KEY MAP

SAN DIEGO

DETAIL AREA

City Boundary
Facility Locations
Channel Centerline

CITY OF CHULA VISTA
CITY OF SAN DIEGO

134
133
135
132
131
NESTOR CREEK CHANNEL
805
TOCAYO CHANNEL
137
136
SMYTHE CHANNEL
130
905
129
125
124
COUNTY OF SAN DIEGO
CITY OF SAN DIEGO
123
SANYO CHANNEL
CITY OF IMPERIAL BEACH
CITY OF SAN DIEGO
5
137c
137b
137a
138
SMUGGLERS GULCH CHANNEL
139
127
126
VIRGINIA CHANNEL
128
CITY OF SAN DIEGO
MEXICO

N
W
E
S

4,000 2,000 0 4,000
Feet

Job No: SDM-01 Date: 02/11/08

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Stormwater Facilities - Otay Mesa Area

CITY OF SAN DIEGO MASTER STORMWATER SYSTEM MAINTNANCE PROGRAM

HELIX

Figure 2e

3.0 Maintenance Program

On an annual basis, the Storm Water Department shall determine which storm water facilities require maintenance in the coming year. Once the facilities have been identified, the Storm Water Department shall undertake the following series of actions for each proposed maintenance activity carried out in accordance with this Master Program.

3.1 Engineering and Design Phase

Individual Maintenance Plan

An Individual Maintenance Plan (IMP) will be prepared for each maintenance activity. The IMP will identify the following: width of channel clearing, maintenance method(s) to be used; equipment type; access roads/paths; staging areas; spoils storage sites; and schedule. As appropriate, the IMP shall incorporate construction Best Management Practices (BMPs) required by the Regional Water Quality Control Board to prevent pollutants from further conveyance by the storm system, the protocols defined in Section 5.1 of this Master Program, and compensatory mitigation identified in the Final Program EIR (PEIR). The maintenance requirements shall be based on empirical and/or quantitative evaluation of what is required to achieve the desired flood control capacity of the subject storm water facility. The goal of the IMP shall be to, wherever possible, minimize the amount of clearing in order to reduce impacts on biological resources while provide adequate flood control capacity.

Pursuant to Council Policies 700-13 and 14, the IMP will utilize existing access paths within environmentally sensitive lands which serve other utilities including sewer, water, natural gas and power to minimize the need for creating new access paths. As an alternative, the IMP may propose alternative access to replace existing utility access paths when that new access can reduce effects on environmentally sensitive lands.

An IMP Report Form (Appendix B) will be completed for each maintenance activity.

Individual Biological Assessment

The site of each proposed activity shall be inspected by a qualified biologist to determine whether sensitive biological resources could be affected by the proposed maintenance. An Individual Biological Assessment (IBA) shall be prepared for each facility where the biologist determines that the proposed maintenance could affect sensitive biological resources. The IBA will include: a summary of the biological resources associated with the storm water facility, quantification of impacts to sensitive biological resources, and mitigation measures required to compensate for those impacts. The IBA shall also identify which Master Program maintenance protocols should be incorporated into the proposed maintenance activity.

An IBA Report Form (Appendix C) will be completed for each maintenance activity.

Individual Historical Assessment

Each proposed maintenance activity shall be evaluated by a qualified historical resource specialist to determine the potential for cultural resources to be impacted by maintenance. If the specialist concludes that there is a moderate to high potential for significant cultural resources to be impacted,

the specialist shall conduct a foot survey of the maintenance area to determine whether historic or prehistoric resources could be impacted by the proposed maintenance. An Individual Historical Assessment (IHA) shall be prepared for each facility that the historical resource specialist determines to have a moderate to high potential for significant historic or prehistoric resources. The IHA will include: a description of the potential historical resources and the mitigation measures needed to reduce adverse impacts.

3.2 Implementation

IMP Plan Approval

Prior to commencing any maintenance activity that has been determined in the IBA or IHA to potentially impact biological or historical resources, the City's Development Services Department (DSD) shall review the IMP, IBA and/or IHA. DSD must verify that the proposed impacts and mitigation measures are consistent with the analysis contained in the Program Environmental Impact Report (PEIR) for the Master Program before maintenance commences.

Prior to commencing any maintenance activity, the Engineering and Capital Projects Department, Park and Recreation Department, Real Estate Assets Department, Metropolitan Wastewater Division, and Water Utilities Department shall also review the IMPs to determine if the maintenance activities may adversely impact land or facilities within their jurisdiction. No maintenance will be undertaken until these departments have indicated their approval of the relevant IMP.

Environmental Resource Protection

Prior to commencing any maintenance activity that has been determined in the IBA or IHA to potentially impact biological or historical resources, the mitigation measures identified in those documents shall be carried out. In general, the boundaries of sensitive biology or historical resources which are to be avoided must be clearly delineated with flagging, signage and/or fencing.

Pre-Maintenance Meeting

Prior to commencing any maintenance activity that has been determined in the IBA or IHA to potentially impact biological or historical resources, a pre-maintenance meeting shall be held on site with representatives from the following departments: Storm Water Department, Mitigation Monitoring Coordinator (MCC), Maintenance Manager (MM) and/or Maintenance Contractor (MC). As appropriate, the biologist and/or historical specialist selected to monitor the activities shall be present. At this meeting the monitoring biologist and/or historical specialist will review the Master Program maintenance protocols that apply to the maintenance activities; and review the monitoring protocols to be followed.

Environmental Monitoring

As required, qualified biologists and historical resource specialists shall be onsite during maintenance activities, where these resources are determined to be present, to assure that required mitigation measures are followed. Prior to initiating any maintenance activity which could impact a sensitive resource, the boundaries of the sensitive resource areas shall be marked in the field by flagging, signage and/or fencing. At the end of the monitoring, the specialist(s) shall prepare a letter report summarizing the results of the monitoring and any remedial actions which were carried out.

4.0 Maintenance Methods

This section describes the typical maintenance methods that would be utilized in maintaining the Storm Water Department's storm water facilities. Table 1 presents the generally anticipated maintenance method and frequency for the major channel and detention basins which are actively maintained by the Storm Water Department. The selection of techniques and equipment to be employed depend largely on the site-specific characteristics of each storm water facility, including size (width, depth), flow-characteristics, surrounding land uses and vegetation, availability of access, and whether the storm water facility is concrete-lined or natural bottom.

Depending on the conditions associated with each storm water facility, different types of equipment would be utilized using different maintenance techniques. The decision as to which technique and/or equipment would be used will ultimately be based upon the density and volume of accumulated material, the size of the storm water facility, its flow-characteristics, and access conditions.

4.1 Equipment Types

The types of equipment used in the course of maintenance will include, but not be limited to, skid-steers, backhoes, Gradalls, excavators, loaders, dump trucks, and bulldozers. Smaller equipment such as skid-steers is typically used for drainage ditches, with the larger equipment used in channels.

In most cases, equipment, such as a skid-steer or bulldozer, will operate within the channel itself. Equipment would enter the storm water facility via an access road and/or lowered into the channel from the bank using a crane or Gradall. The equipment would push the accumulated material with a bucket to a central site within the facility. From there, the material will be scooped up with a loader operating in the facility, and loaded into a dump truck which would also be located in the facility. The loaded dump truck will then leave the facility and transport the material to an approved offsite disposal area.

Where access exists or can be constructed along the edge of the storm water facility, maintenance activities will rely on a Gradall or excavator that will scoop up the accumulated material from outside the facility. This method will be limited by the width and depth of the facility, which may exceed the reach of the equipment.

4.2 Maintenance Techniques

Depending on the characteristics of the storm water facility to be maintained, maintenance would affect the entire channel including bottom and banks (referred to as "full maintenance") or affect only that portion of the channel required to achieve the necessary flood control capacity (referred to as "selective maintenance". A description of each of these techniques including a discussion of the conditions under which they would be appropriate follows.

Full-width Maintenance

Many of the storm water facilities in the urbanized areas were not designed to support vegetation. As a result, retention of any amount of vegetation would impede the flow of flood water and cause flooding on adjacent property. In these circumstances, full removal of vegetation on the banks as well as channel bottom would be the only way to avoid or, at least, minimize the risk of flooding along these facilities. In these cases, mechanized equipment would be used to remove above-ground vegetation and sediment would be excavated from the channel. In most cases, the root systems of vegetation would be likely removed in the course of full channel maintenance. This would be particularly true on the channel bottoms because the root systems are commonly associated with the sediment that must also be removed to restore flood conveyance capacity. Scraping would be limited to the amount of excavation required to remove plant material and sediment needed restore the original channel condition.

Selective maintenance would be based on a combination of empirical evidence and hydraulic analysis. These two methods would be used to determine the amount minimum amount of sediment and vegetation which must be removed to enable a storm water facility to safely convey flood water. A number of approaches may be used achieve the necessary flood capacity. These are described below.

Parallel-strip Maintenance. This approach would rely on clearing a strip of vegetation along the centerline of the channel parallel to the direction of flow; this area is commonly referred to as a "pilot channel". Mechanized equipment would remove the quantity of vegetation and sediment which is necessary to transport flood water. This form of maintenance would optimize the flow of flood water by creating sufficient area free of vegetation and sediment. While portions of the channel cleared of vegetation would promote the capacity of the storm water facility to convey flood water, under certain circumstances, the removal of plant material and the root system could encourage scouring which could cause downstream sedimentation.

Perpendicular-strip Maintenance. This approach would involve removing strips of vegetation perpendicular to the direct of flow. Mechanized equipment would excavate vegetation and sediment in alternating strips ranging in width from 10-25 feet. As with the parallel maintenance approach, the width of the strips would be designed to provide adequate flood control capacity. Each strip would be excavated to a depth required to remove vegetation and accumulated sediment. This technique would create a series of depressions that would function as a individual sediment basins. The intervening vegetation would intercept debris and trash carried in runoff. Implementation of this approach would be limited to channels where access allows equipment to create these strips while not impacting intervening vegetation. Normally, this would require continuous access from at least one bank of the channel.

While this approach would provide water quality benefits during periods of low flow, this approach could create water quality impacts during periods of high flows. As discussed in a letter from Rick Engineering (see Appendix B), the excavated strips would increase the velocity of water as it drops into the excavated strip would cause scouring that could create downstream sediment deposition. In addition to the increased potential for sediment production during high flows, the tendency of the intervening vegetation to intercept trash and debris during low flow could actually be disadvantageous during high flows. The vegetation and debris collected in the vegetation could slow the water which could cause flooding because the floodwater would not be allowed to move out of the channel as quickly as with an unvegetated channel.

Half and Half Maintenance. Under this approach, storm water facilities would be cleared parallel to the direction of flow. However, in this case, half of the channel would cleared in alternating sequence using mechanized equipment. Although the amount of vegetation and sediment to be removed would be essentially the same as parallel-strip technique, the half and half approach would affect different sides of the channels during maintenance rather than constantly affecting the centerline of the channel.

Above-Ground Vegetation Removal Maintenance. This approach would be used in storm water facilities where the primary reason for decreased flood control capacity is related to vegetation rather than sediment accumulation. In these circumstances, the above-ground vegetation would be periodically mowed with mechanized equipment or removed by hand where mowing equipment access is unavailable. If the cut vegetation would not interfere with flood capacity, it would be left within the channel. Where this would not be possible, the cut vegetation would be collected and disposed in a suitable off-site location. With mowing or hand clearing, the root system would remain in place to hold the channel substrate.

4.3 Access

The majority of storm water system maintenance segments have existing access such as utility roads and/or concrete or earthen ramps. However, in some cases, new access could be required. Access for smaller equipment would require a minimum width of four feet while the heaviest equipment would require a width of up to 18 feet. While hand clearing would only require footpaths, more substantial access would be required for equipment. Initial access (external) will be required from a public street to reach the storm water facility. The terrain and vegetation through which the access road would pass will determine the amount of grading and vegetation removal necessary to achieve the necessary access. Whenever new access roads are required, efforts should be made to select routes which minimize the disturbance to biological and historical resources as well as minimize grading. The location of new access will be identified on the IMPs and subject to Resource Agency approval.

In addition to external access, internal access will be required within and around the maintenance area. Internal access requirements will be determined by whether the maintenance would be carried out partially or entirely within the channel or from its edge, as described earlier.

Access for "In-channel" maintenance could require construction of a permanent or temporary ramp into the storm water facility from the external access. Where possible, access to a storm water maintenance segment, which may include a combination of natural and concrete-lined areas, will be taken within the concrete-lined area to avoid and/or minimize impacts to sensitive habitat. Internal access for "edge" maintenance will require a pathway for equipment adjacent to the facility.

4.4 Stockpiling

Maintenance operations that include the removal of soils will utilize existing stockpile sites, whenever possible. New stockpile sites will be located in areas with low biological resource value and away from residential areas. Stockpile sites will be used for dewatering and processing of spoils prior to transport. Processing will include removal of tires, large rocks, trash, and other debris. BMPs identified in Chapter 5.0 of this Master Program will be carried out around the perimeter of stockpile sites.

4.5 Runoff Control

Although maintenance activities will typically occur during the dry months, a few facilities such as Sorrento Creek, carry sufficient amounts of urban runoff during the dry months to preclude or hinder maintenance. In those few cases, temporary by-pass operations may be necessary. Maintenance activities that can not be contained by simple BMPs, such as gravel bags or silt fencing, may require temporary check-dams. Check-dams may consist of a combination of water bladders, sand bags, straw bails, and other materials. They will be installed at the upstream and downstream boundaries of the segment to be maintained. The check-dams will prevent the flow of water, sediment, vegetation, and debris into and out of the maintenance area. Depending upon the flow within the storm water facility, water pumps may be used to transport water from the upstream check-dam to below the downstream check-dam. Dewatering of the site may also be necessary to permit equipment operations within the maintenance area. All temporary runoff and erosion control features implemented during maintenance shall be removed upon completion of the maintenance.

5.0 Maintenance Guidelines

In order to minimize the impact of storm water maintenance on the environment, the following design and implementation measures will carried out.

5.1 Maintenance Protocols

In order to minimize the impact of storm water maintenance on the environment, the maintenance activities will incorporate the following protocols, as appropriate.

Erosion Control Protocols

#1 Minimize new ground disturbance to the maximum extent feasible, through efforts such as limiting grading to the minimum area required, and restricting vehicle access and maneuvering to designated areas (with an emphasis on using existing roads).

#2 Minimize maintenance operations during the rainy season (October 1 to April 30).

#3 When maintenance cannot be avoided during the rainy season, prepare and implement a "weather triggered" action plan for activities to provide enhanced erosion and sediment control measures prior to predicted storm events (i.e., 40 percent or greater chance of rain).

#4 Schedule grading, earth disturbing and restoration activities as far in advance of the start of the rainy season as feasible, to maximize the opportunity for vegetation to reestablish prior to the advent of storm runoff.

#5 Stabilize access roads (or other graded areas) proposed to be permanently retained through the use of measures such as permeable protective surfacing (e.g., grasscrete), storm water diversion structures (e.g., brow ditches or berms), or crossing structures (e.g., culverts).

#6 During maintenance, use sediment controls within channels, access paths and staging areas to prevent off-site sediment transport, including measures such as silt fence, fiber rolls, gravel bags, temporary sediment basins, stabilized construction access points (e.g., shaker plates), containment barriers (e.g., silt fence, fiber rolls and/or berms) for material stockpiles, and properly fitted covers for material transport vehicles. Remove temporary erosion control measures upon completion of maintenance.

#7 Store BMP materials on-site to provide "standby" capacity adequate to provide complete protection of exposed areas and prevent off-site sediment transport.

#8 Provide appropriate training for personnel responsible for BMP installation and maintenance.

#9 As appropriate, implement revegetation efforts on all slopes, access paths and staging areas using native or naturalized vegetation, non-invasive plant material as soon as

feasible during or after maintenance operations. Revegetated areas shall be monitored and maintained for a period of not less than 25 months.

#10 Monitor erosion control measures during the rainy season to ensure their effectiveness.

#11 Implement sampling and analysis, monitoring and reporting, and post-construction management programs per NPDES and/or City requirements.

#12 Comply with local dust control requirements, including measures such as material stockpile and transport vehicle control (as noted above), regular watering or use of soil binders, and restriction of grading during high winds.

Water Quality Protocols

#13 Minimize the amount of hazardous materials stored on-site, and restrict storage and use locations to areas at least 50 feet from storm drains and surface waters.

#14 Store construction-related trash in areas at least 50 feet from storm drains and surface waters, and implement regular (at least weekly) removal of trash by a licensed operator for disposal at an approved site.

#15 Cover and/or enclose storage facilities for hazardous materials and trash, and maintain accurate and up-to-date written hazardous material inventories.

#16 Store hazardous materials off the ground surface (e.g., on pallets) and in their original containers, with the legibility of labels protected. Replace damaged labels.

#17 Use berms, ditches and/or impervious liners (or other applicable methods) in material storage and vehicle/equipment maintenance and fueling areas to provide a containment volume of 1.5 times the volume of stored materials and prevent discharge in the event of a spill.

#18 Place warning and information signs in areas of hazardous material use or storage to identify the types of materials present, as well as applicable use restrictions and containment and clean-up procedures.

#19 Mark storm drains (or other appropriate locations) to discourage inappropriate hazardous material or trash disposal.

#20 Provide training for applicable employees in the proper use, handling and disposal of hazardous materials, as well as appropriate action to take in the event of a spill.

#21 Store readily accessible absorbent and clean-up materials in applicable locations such as hazardous material storage and vehicle and equipment maintenance areas.

#22 Post regulatory agency telephone numbers and a summary guide of clean-up procedures in a conspicuous location at or near the job site trailer.

#23 Monitor and maintain hazardous material use and storage facilities and operations to ensure proper working order on at least a monthly basis.

Biological Resource Protection Protocols

#24 Retain wetland vegetation during maintenance when retention would not interfere with the goal of facilitating the conveyance of floodwaters, and protecting adjacent life and property.

#25 Vehicles shall use existing and/or approved access roads to access storm water facilities.

#26 The size and number of equipment used for maintenance shall be selected to minimize disturbance.

#27 All sensitive biological resource areas shall be flagged in the field prior to initiation of maintenance activities. Where necessary, a qualified biologist shall be present to monitor the work to ensure impacts to the resource are avoided.

#28 Physical erosion control measures (e.g. fiber mulch, rice straw, etc.) shall not introduce seed from invasive species.

#29 Maintenance activities within areas potentially supporting sensitive wildlife should be avoided, whenever possible. Preconstruction surveys shall be conducted to determine the presence of any sensitive animal species and to determine appropriate protection measures to be implemented during maintenance.

#30 If mechanized maintenance activities must occur near active raptor nests, necessary setbacks must be maintained during active nest use.

Historical Resource Protection

#31 All historical resource areas shall be flagged, capped or fenced, as appropriate, prior to initiation of maintenance activities. Where necessary, a qualified historical resource specialist shall be present to monitor the work to ensure that impacts are avoided.

Waste Management

#32 Compostable green waste material shall be taken to an approved composting facility, if available.

#33 Soil, sand and silt shall be screened to remove waste debris and, wherever possible, re-used as fill material, aggregate or other raw material.

#34 Waste tires shall be separated and transported to an appropriate disposal facility. If more than nine tires are in a vehicle or waste bin at any one time, they shall be transported under a completed Comprehensive Trip Log (CTL) to document that the tires were taken to an appropriate disposal facility.

#35 Hazardous materials encountered during maintenance shall be logged and transported under a hazardous materials manifest to an approved hazardous waste storage, recycling, treatment or disposal facility. Personnel handling hazardous materials shall have appropriate training. Hazardous materials (e.g machine oil, mercury switches and refrigerant gases) shall be removed from appliances and disposed in accordance with this protocol.

5.2 PEIR Mitigation Measures

Biology

Mitigation Measure 4.3.1: Prior to commencement of any activity within a specified annual maintenance program, the SWD shall identify all proposed maintenance activities. An IMP shall be prepared for each activity. The IMP shall identify the following: maintenance method(s) to be used, equipment type, appropriate BMPs, proposed access, staging areas, spoils storage sites, and schedule. In addition, the IMP shall incorporate relevant maintenance protocols as well as specific mitigation measures identified in the IBA for the activity.

Mitigation Measure 4.3.2: Prior to commencement of any activity within a specific annual maintenance program, a qualified biologist shall prepare an IBA for each area proposed to be maintained. Based on the IMP, the biologist shall determine the extent of impact which would occur to sensitive biological resources. The biologist also shall specify compensation which shall be required to mitigate impacts to biological resources (e.g., invasives removal, wetland creation/enhancement/restoration, or off-site upland habitat acquisition). The results of this survey shall be summarized in an IBA. At a minimum, the IBA shall include:

- Description of maintenance to be performed including length, width, and depth;
- Protocol surveys, as needed;
- Detailed vegetation mapping;
- Wetland delineation in compliance with applicable local, state, and federal regulations;
- Location of sensitive plant species;
- Quantification of impacts to all sensitive biological resources;
- Two, digital, date-stamped photos of affected area;
- Specific maintenance protocols from the MSWSMP which should be implemented as part of the IMP;
- Specific biological monitoring required during maintenance; and
- Specific compensation which would be required to mitigate impacts to biological resources (e.g., wetland creation/enhancement/restoration or offsite upland habitat acquisition).

Mitigation Measure 4.3.3: Wetland mitigation plans shall be consistent with the Conceptual Wetland Mitigation Plan contained in Appendix H of the Biological Technical Report, included as Appendix B.3 of the PEIR and shall include:

- Conceptual planting plan including planting zones, grading, and irrigation;
- Seed mix/planting palette;
- Planting specifications;

- Monitoring program including success criteria; and
- Long-term maintenance and preservation plan.

Mitigation which involves habitat acquisition and preservation shall include the following:

- Location of proposed acquisition;
- Description of the biological resources to be acquired including support for the conclusion that the acquired habitat compensates for the specific maintenance impact; and
- Documentation that the mitigation area would be adequately preserved and maintained in perpetuity.

Mitigation which involves the use of mitigation credits shall include the following:

- Location of the mitigation bank;
- Description of the credits to be acquired including support for the conclusion that the acquired habitat compensates for the specific maintenance impact; and
- Documentation that the credits are associated with a mitigation bank which has been approved by the appropriate Resource Agencies.

Mitigation which involves payment of funds into the City's Habitat Acquisition Fund would be based on the required per acre cost in effect at the time of the project impact plus a 10 percent administration fee.

Mitigation Measure 4.3.4: Loss of habitat for the coastal California gnatcatcher shall be mitigated through the acquisition of suitable habitat or mitigation credits at a ratio of 1:1. Mitigation shall take place within the MHPA and shall be accomplished within six months of the date maintenance is completed. (Appendix B.1 MM 7.1.5a)

Mitigation for gnatcatcher impacts shall be considered initiated if one of the following conditions is met:

- A mitigation plan (e.g., habitat creation, enhancement, and/or restoration plan) is submitted to DSD for review. Additionally, work must be initiated within 3 months (weather permitting) of mitigation plan approval.
- Debiting credits from an appropriate mitigation bank. If mitigation occurs via debiting credits from an appropriate mitigation bank, all money initially deposited as part of the project submittal shall be rolled-over for use by subsequent projects.
- Withdrawing an appropriate sum of money from the mitigation account to pay into the Habitat Acquisition Fund.

Mitigation Measure 4.3.5: High frequency maintenance wetland impacts shall be compensated with "permanent" wetland mitigation (restoration and/or enhancement or mitigation credits) in accordance with ratios in Table 4.3-10. Restoration/enhancement/creation activities that include an endowment for long-term management are included as a type of permanent mitigation. Mitigation through up-front

establishment of the mitigation or through purchase of mitigation credits shall be at a 1:1 ratio. No maintenance shall commence until the following has occurred:

- A mitigation plan (e.g. enhancement and/or restoration plan), consistent with Appendix H of the Biological Technical Report contained in Appendix B.3 of the PEIR, has been approved by DSD and sufficient evidence exists for DSD to conclude that the mitigation shall commence within six months of the date that the related maintenance has been completed; and/or
- Debiting credits have been obtained from an appropriate mitigation bank.

Table 5-1 WETLAND MITIGATION RATIOS	
WETLAND TYPE	**MITIGATION RATIO[1]**
Southern riparian forest	3:1
Southern sycamore riparian woodland	3:1
Riparian woodland	3:1
Coastal saltmarsh	3:1
Coastal brackish marsh	3:1
Southern willow scrub	2:1
Mule fat scrub	2:1
Riparian scrub	2:1
Freshwater marsh	1:1
Cismontane alkali marsh	1:1
Disturbed wetland	1:1
Streambed/natural flood channel	NA

[1]Mitigation done in advance or through purchase of mitigation credits would be at a 1:1 ratio.

Mitigation Measure 4.3.6: Low frequency maintenance wetland impacts shall be compensated through an invasives removal program at the ratios noted in Table 4.3-10 each time the maintenance occurs. In accordance with the Conceptual Wetland Mitigation Plan contained in Appendix H of the Biological Technical Report contained in Appendix B.3 of the PEIR, removal of invasives (e.g., giant reed, pampas grass) shall be followed by a maintenance program, which would assure that invasives would not re-establish for a period of two years after the removal has occurred. The initial removal of invasive plant material shall be completed within six months of the date the related maintenance has been completed. (Appendix B.3 MM 7.1.3b)

Mitigation Measure 4.3.7: Upland impacts shall be compensated through payment into the City's Habitat Acquisition Fund or acquisition and preservation of specific land in accordance with the ratios identified in Table 4.3-11. Upland mitigation shall be completed within six months of the date the related maintenance has been completed. (Appendix B.1 MM 7.1.2a)

Table 5-2 UPLAND HABITAT MITIGATION RATIOS[1]			
Vegetation Type	Tier	Location of Impact with Respect to the MHPA	
		Inside	Outside
Coast live oak woodland	I	2:1	1:1
Scrub oak chaparral	I	2:1	1:1
Southern foredunes	I	2:1	1:1
Beach	I	2:1	1:1
Diegan coastal sage scrub	II	1:1	1:1
Coastal sage-chaparral scrub	II	1:1	1:1
Broom baccharis scrub	II	1:1	1:1
Southern mixed chaparral	IIA	1:1	0.5:1
Non-native grassland	IIIB	1:1	0.5:1
Eucalyptus woodland	IV	--	--
Non-native vegetation/ornamental	IV	--	--
Disturbed habitat/ruderal	IV	--	--
Developed	IV	--	--

[1]Assumes mitigation occurs within an MHPA

Mitigation Measure 4.3.8: No maintenance activities within a proposed annual maintenance program shall be initiated before the City's Assistant Deputy Director (ADD) Environmental Designee and state and federal agencies with jurisdiction over maintenance activities have approved the IMPs and IBAs including proposed mitigation for each of the proposed activities. In their review, the ADD Environmental Designee and agencies shall confirm that the appropriate maintenance protocols have been incorporated into each IMP.

Mitigation Measure 4.3.9: No maintenance activities within a proposed annual maintenance program shall be initiated until the City's ADD Environmental Designee and Mitigation Monitoring Coordinator (MMC) have approved the qualifications for biologist(s) who shall be responsible for monitoring maintenance activities which may impact sensitive biological resources.

Mitigation Measure 4.3.10: Within six months of the end of an annual storm water facility maintenance program, the monitoring biologist shall complete an annual report which shall be distributed to the following agencies: the City of San Diego DSD, CDFG, RWQCB, USFWS, and Corps. At a minimum, the report shall contain the following information:

- Tabular summary of the biological resources impacted during maintenance and the mitigation carried out as compensation;
- 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.

Mitigation Measure 4.3.11: Impacts to floodplains within the MHPA shall be minimized, to the greatest extent practicable, through project design and coordination with the regulating agencies.

Mitigation Measure 4.3.12: Placement of new riprap, concrete, or other unnatural material into channels in the MHPA would be minimized to the maximum extent practicable. These materials would be used only in the event of severe erosion of earthen banks that cannot feasibly be repaired with the use of natural materials.

Mitigation Measure 4.3.13: Construction of temporary access and staging along channels shall be restricted to those areas where no such facilities currently exist. Impacts to sensitive habitat and/or sensitive species shall be minimized to the greatest extent practicable through project design measures, such as locating the facilities in the least sensitive habitat possible. (Appendix B.1 MM 7.1.6c)

Mitigation Measure 4.3.14: Prior to commencing any activity where the IBA indicates significant impacts to biological resources may occur, a pre-maintenance meeting shall be held on site with following in attendance: SWD Maintenance Manager (MM), MMC, and Maintenance Contractor (MC). The biologist selected to monitor the activities shall be present. At this meeting the monitoring biologist shall review the maintenance protocols that apply to the maintenance activities, and review the monitoring protocol to be followed.

At the pre-maintenance meeting, the monitoring biologist shall submit to the MMC and MC a copy of the site/grading plan (reduced to 11"x17") that identifies areas to be protected, fenced, and monitored. This data shall include all planned locations and design of noise attenuation walls or other devices. The monitoring biologist also shall submit a construction schedule to the MMC and MC indicating when and where monitoring is to begin and shall notify the MMC of the start date for monitoring.

Mitigation Measure 4.3.15: Prior to commencing any maintenance activity which may impact sensitive biological resources, the monitoring biologist shall verify that the following actions have been taken, as appropriate:

- Fencing, flagging, signage, or other means to protect sensitive resources have been implemented;
- Noise attenuation measures needed to protect sensitive wildlife are in place and effective; and/or
- Nesting raptors have been identified and necessary maintenance setbacks have been established if maintenance is to occur between February 1 and August 1.

The designated biological monitor shall be present throughout the first full day of maintenance whenever mandated by the associated IBA. Thereafter, through the duration of the maintenance activity, the monitoring biologist shall visit the site weekly to confirm that measures required to protect sensitive resources (e.g., flagging, fencing, noise barriers) continue to be effective. The monitoring biologist shall document monitoring events via a Consultant Site Visit Record. This record shall be sent to the MM each month. The MM will forward copies to MMC.

Mitigation Measure 4.3.16: Within three months following the completion of mitigation monitoring, two copies of a written draft report summarizing the monitoring shall be prepared by the monitoring biologist and submitted to the MMC for approval. The draft monitoring report shall describe the results including any remedial measures that were required. Within 90 days of receiving comments from the MMC on the draft monitoring report, the biologist shall submit one copy of the final monitoring report to the MMC.

Mitigation Measure 4.3.17: Prior to commencing any activity that could impact wetlands, evidence of compliance with other permitting authorities is required, if applicable. Evidence shall include copies of permits issued, letters of resolution issued by the Responsible Agency documenting compliance, or other evidence documenting compliance and deemed acceptable by the ADD Environmental Designee.

Mitigation Measure 4.3.18: Access roads and staging areas shall be monitored for presence of exotic species, and exotic species would be removed as appropriate. Maintenance clearing of storm water facilities also would remove non-native species. Mitigation for direct impacts from the proposed project also may involve the removal of invasive non-native species in and adjacent to storm water facilities within the MHPA. (Appendix B.1 MM 7.2.1a)

Mitigation Measure 4.3.19: Physical erosion control measures such as fiber mulch, hay bales, etc., shall not harbor seeds from invasive species. (Appendix B.1 MM 7.2.1b)

Mitigation Measure 4.3.20: Prior to undertaking any maintenance activity included in an annual maintenance program, the SWD shall create a mitigation account to provide sufficient funds to implement all biological mitigation associated with the proposed maintenance activities. The fund amount shall be determined by the ADD Environmental Designee. The account shall be managed by the SWD, with quarterly status reports submitted to DSD. The status reports shall separately identify upland and wetland account activity. Based upon the impacts identified in the IBAs, money shall be deposited into the account, as part of the project submittal, to ensure available funds for mitigation.

6.0 Substantial Conformance Review (SCR) Process

It is anticipated that future maintenance activities would be approved through the SCR process on an annual basis by the City of San Diego departments with a specific interest in channel maintenance as well as the Resource Agencies which have issued master wetland permits. The overall goal of the SCR process is to allow annual maintenance activities to proceed under the terms of the general permits as long as appropriate mitigation measures either have been or would be accomplished as part of the proposed annual maintenance activities.

While the SCR process may vary with each general permit, the overall process is expected to include the following steps.

6.1 Annual Maintenance Needs Assessment

On an annual basis, the City's Storm Water Department shall determine which storm water facilities require maintenance in the coming fiscal year.

6.2 Individual Maintenance Plans

The City's Storm Water Department shall prepare an Individual Maintenance Plan (IMP) for each storm water facility that is proposed to undergo maintenance. The IMP shall identify the following: maintenance method(s) to be used; equipment type; access roads/paths; staging areas; spoils storage sites; and schedule. As appropriate, the IMP shall incorporate Best Management Practices (BMPs) required by the Regional Water Quality Control Board as well as Master Program maintenance protocols and PEIR environmental mitigation measures. The maintenance requirements shall be based on empirical and/or quantitative evaluation of what is required to achieve the desired flood control capacity of the subject storm water facility. Wherever possible, the maintenance requirements shall be minimized to reduce impacts on biological resources while provide adequate flood control capacity.

6.3 Individual Resource Assessments

Individual Biological Assessment

Once an IMP has been prepared for a specific storm water facility, a qualified biologist shall visit the affected storm water facility to determine the extent and condition of biological resources and determine the extent of impact on those resources. The results of this survey will be summarized in an Individual Biological Assessment (IBA). The IBA shall identify specific BMPs, Master Program maintenance protocols and PEIR mitigation measures should be implemented as part of the IMP. When maintenance activities are determined to potentially affect an endangered bird species, the IBA shall include a noise analysis to determine the potential for maintenance activities to generate noise in excess of 60 dB(A) L_{eq}. The IBA shall also specify compensation required to mitigate impacts to biological resources (e.g. wetland enhancement/restoration, equipment noise limitations during sensitive bird breeding seasons, and/or offsite upland habitat acquisition).

Individual Historical Assessment

An Individual Historical Assessment (IHA) will be completed by a qualified archaeologist. The IHA shall be conducted in two phases. Phase One will involve an initial assessment of the potential for a maintenance activity to affect a significant historical resource. This determination would be primarily

based on the age of any structures which may be affected and/or the occurrence of undisturbed areas which have a moderate to high potential for exhibiting pre-historic or historic resources. If a moderate to high potential for significant historical resources is determined to exist, a Phase Two assessment would be done which includes the following:

- Description of maintenance to be performed;
- Record search;
- Foot survey; and
- Preparation of a report containing: (1) description of historic resources which may be affected; (2) discussion of the resource value including research potential; and (3) recommendations for protection and/or salvage of affected resources.

6.4 SCR Determination

City of San Diego

The City shall compile the IMPs, IBAs, IHAs and any other relevant information into a single package of information referred to as the "SCR Package". The SCR Package shall be submitted to the following City Departments for review and comment: Engineering and Capital Projects Department, Park and Recreation Department, Real Estate Assets Department, Metropolitan Wastewater Division, and Water Utilities Department. The SCR determination by the City shall be made through Process One, as defined by the City's Land Development Code.

Based on the information provided with the notification package, each consulted City department shall provide the Stormwater Division written comments or concerns regarding the proposed maintenance. If the consulted City department fails to respond within 30 days, the Storm Water Department will consider the annual maintenance proposal confirmed. If the City department has concerns, the Storm Water Department shall work with the concerned department to reach a consensus on the approach to maintenance.

State and Federal Agencies

Concurrent with the review by City departments, the SCR Package shall be submitted to the California Department of Fish and Game, California Regional Water Quality Control Board, and U.S. Army Corps of Engineers for approval under the terms of their respective general wetland d permits. As appropriate, the U.S. Army Corps of Engineers may request input from the U.S. Fish and Wildlife Service. The SCR determination process shall be in accordance with the procedure established by each agency as part of its master wetland permit approval.

State and federal agencies shall review the SCR Package to determine whether the proposed maintenance activities are in substantial conformance with the analysis contained in the PEIR and the specific terms of the master permit issued by the affected agency. Where a state or federal agency determines that one or more of the maintenance activities are not in substantial conformance, the Storm Water Department shall work with the concerned agency to identify additional measures which would be needed to bring those activities into compliance with the PEIR and the master permit conditions.

The City shall not implement an IMP without approval through the City's Process One and a favorable SCR determination from the state or federal agency with jurisdiction over the biological resources affected by the IMP.

APPENDIX A

STORM WATER FACILITIES

Table 1
STORM WATER SYSTEM CHANNELS AND DETENTION BASINS

	City Equipment No.	Hydrologic Unit	Facility Description	Type	Maintenance Method	Estimated Disturbance Width (feet)
Channel						
1	88000504	San Dieguito	Rancho Bernardo Rd & Bernardo Center Dr	C	4	12
2-3	88000192 88000194 88000196 88000198	San Dieguito	Rancho Bernardo	C	2	10
4	88000505	Peñasquitos	11044 Via San Marco	C	2	4
5	NA	Peñasquitos	Scripps Poway Pkwy & Scripps Summit Dr	C	1	10
6	88000321	Peñasquitos	11689 Sorrento Valley Rd	C	2	20
6a	NA	Peñasquitos	3000 Industrial Court	C	1	12
7-8	88000138 88000317	Peñasquitos	Los Peñasquitos Channel	E	3	50
9	88000251	Peñasquitos	11000 Roselle St / 11100 Flinkote Ave	C	1/2	8
10	88000250	Peñasquitos	Dunhill St & Roselle St	E	4	4
11-12	88000247 88000249 88000250 88000251	Peñasquitos	Soledad Creek Channel	Part E, Part C	1	20
13-17	88000247 88000249 88000250 88000251	Peñasquitos	Soledad Creek Channel	E	1	20
18	88000321	Peñasquitos	Maya Linda & Via Pasar	E	4/1	8
19	88000502	Peñasquitos	Candida & Via Pasar	C	2	8
20	88000502	Peñasquitos	10205 Pomerado Rd	C	4	10
21	88000502	Peñasquitos	10249 Pinetree Dr	C	3	20
22	88000321	Peñasquitos	NE Corner Pomerado Rd & Scripps Ranch Blvd	C	1	4
23	NA	Peñasquitos	Pomerado Rd & Avenida Magnifica	C	1	6
24	88000748	Peñasquitos	Scenic Pl & Cliff Ridge	E	1	10

Table 1
STORM WATER SYSTEM CHANNELS AND DETENTION BASINS

	City Equipment No.	Hydrologic Unit	Facility Description	Type	Maintenance Method	Estimated Disturbance Width (feet)
Channel						
25	88000321	Peñasquitos	Ardath Rd from Esterel to Ardath Ln	C	4	4
26	88000321	Peñasquitos	Hillside Dr from Rue Adriane to Via Capri	C	4	4
27	88000199	Peñasquitos	Rose Creek Channel	E	1/4	60
28	88000199 88000201	Peñasquitos	Rose Creek Channel	E except south of Gilman is C	1 or 4	68
29-30 30a-30b	88000203 88000205 88000206 88000207	Peñasquitos	Rose Creek Channel	½ E, ½ C	1	20-100
31	88000321	Peñasquitos	3053 Renault Way	C	4	7.5
32	88000207 88000208	Peñasquitos	Rose Creek Channel	E west of railroad, remainder is C	1	90
33	88000209	Peñasquitos	Rose Creek Channel	C	1	100-130
34	88000210 88000211	Peñasquitos	Rose Creek Channel	Approx 375 linear feet C, remainder is E	1	50-150
35	88000211	Peñasquitos	Rose Creek Channel	E	1	80
36	88000502	Peñasquitos	Mission Bay High School	C	2	4
37	88000321	Peñasquitos	Pacific Beach Dr & Olney St	E	4	10
38	80025515	Peñasquitos	Drain Structures – Lakehurst Ave	E	1	9
39	80025600	Peñasquitos	Drain Structures – Clairemont Dr	E	5	15
40-42	88000024 88000026 88000029 88000031 88000033	Peñasquitos	Chateau Channel	C	2	30
43	88000502	Peñasquitos	Thornwood St & Mario Pl	C	2	5
44	80025801	Peñasquitos	Drain Structures – Beal St	E	1	9
45	80025988	Peñasquitos	Drain Structures – Mesa College Way	E	3	2

Table 1
STORM WATER SYSTEM CHANNELS AND DETENTION BASINS

	City Equipment No.	Hydrologic Unit	Facility Description	Type	Maintenance Method	Estimated Disturbance Width (feet)
Channel						
46	NA	Peñasquitos	Clairemont Mesa & 805 behind Hotel	E	5	2
47	88000321	San Diego	7969 & 7971 Engineer Rd	E in middle; C either end	2	3
48	NA	San Diego	3860 Calle Fortunada	E	1	4
49-50	88000146 880001481	San Diego	Murphy Canyon Channel	E	3	80
51	NA	San Diego	Red River Dr & Conestoga Dr	C	1	50
52	88000321	San Diego	Camino del Arroyo	C	1/2	4
53	88000065	San Diego	Cowles Mtn Channel	C	2	15
54	88000212 88000214	San Diego	San Carlos Channel	C	1 & 2	30
55	80031810	Peñasquitos	West Morena Blvd	E	1 & 2	40-50
55-57	88000295 88000296 88000298	Peñasquitos	Tecolote Creek Channel	C	2	40-50
58	88000155 88000156	San Diego	Murphy Canyon Channel	E	1	70
58a	88000150	San Diego	Murphy Canyon	E	2	40
58a	88000151	San Diego	Murphy Canyon	E	1	40
58a	88000152	San Diego	Murphy Canyon	C	3	30
59-60	88000019 88000020 88000022	San Diego	Alvarado Channel	½ E, ½ C	1	45
61-62	88000009 88000011 88000013 88000015 88000016	San Diego	Alvarado Channel	C	1	60
62a	88000008	San Diego	Alvarado Channel	E	1	70
63	88000004	San Diego	Alvarado Channel	E	4	12-40
64	88000002 88000003 88000004	San Diego	Alvarado Channel	½ E, ½ C	1 & 2	12-35
65	88000085	San Diego	Fairmont Channel	E	2	8

Table 1
STORM WATER SYSTEM CHANNELS AND DETENTION BASINS

	City Equipment No.	Hydrologic Unit	Facility Description	Type	Maintenance Method	Estimated Disturbance Width (feet)
Channel						
65a	88000087	San Diego	Fairmont Channel	C	1	10
65a	88000089	San Diego	Fairmont Channel	C	2	5
65b	88000091	San Diego	Fairmont Channel	E	2	20
65b	88000093	San Diego	Fairmont Channel	C	3	5
65b-c	88000095	San Diego	Fairmont Channel	E	3	4
66	88000142 88000143 88000145	San Diego	Montezuma Channel	C	1 & 2	20
66a	88000140	San Diego	Montezuma Channel	E	1	16
67	88000104 88000106	Pueblo San Diego	Home Avenue Channel	E	1	8
67a	88000044 88000046	Pueblo San Diego	Chollas Creek	E	1	10
68	88000108 88000110 88000112	Pueblo San Diego	Home Avenue Channel	½ E, ½ C	2	12
69	88000112 88000114	Pueblo San Diego	Home Avenue Channel	C	1	20
70	88000117 88000119	Pueblo San Diego	Home Avenue Channel	Approx. 994 linear ft E, 430 linear ft C	1	40
71-72	88000037 88000039 88000041 88000042	Pueblo San Diego	Chollas Creek Channel	Approx 806 linear ft E, remainder C	2	40
73-75	88000048	Pueblo San Diego	Chollas Creek Channel	E	3	20-70

Table 1
STORM WATER SYSTEM CHANNELS AND DETENTION BASINS

	City Equipment No.	Hydrologic Unit	Facility Description	Type	Maintenance Method	Estimated Disturbance Width (feet)
Channel						
76-77	88000121 88000123 88000125	Pueblo San Diego	Home Avenue Channel	E	2 & 3	40
78-80	88000050 88000051	Pueblo San Diego	Chollas Creek Channel	C, except approx 1200 linear ft on Map 80 is E	2	70
79	88000066	Pueblo San Diego	Delevan Dr	E	1	30
81	88000502	San Diego	Camino de la Reina & Camino del Arroyo	C	4	4
82	88000181 88000182	San Diego	Nimitz Channel	Approx 188 linear ft earthen bottom, 320 linear ft C	4	10
82	88000183	San Diego	Nimitz Channel	E	1	5
83	88000183	San Diego	Famosa Blvd & Valeta St	C	2	10
84	88000312 88000313 88000314	Pueblo San Diego	Washington Channel	Approx. 150 linear ft E, 56 linear ft C	1	15
85	88000102 88000103	Pueblo San Diego	Florida Canyon Channel	E	1	50
86	88000189 88000190 88000191	Pueblo San Diego	Pershing Channel	C	2	35
87	80028073	Pueblo San Diego	Drain Structures – between 26th St and 27th St	E	4	12
88	88000293	Pueblo San Diego	Switzer Creek Channel	C	1	50
89	88000051 88000053	Pueblo San Diego	Chollas Creek Channel	C	2	70
90	NA	Pueblo San Diego	Imperial Ave & Gillette St	E	4	12
91	88000053	Pueblo San Diego	Chollas Creek Channel	C	1	70
92	80039275	Pueblo San Diego	35th St & Martin Ave	E	4	12

Table 1
STORM WATER SYSTEM CHANNELS AND DETENTION BASINS

	City Equipment No.	Hydrologic Unit	Facility Description	Type	Maintenance Method	Estimated Disturbance Width (feet)
Channel						
93	88000053 88000054 88000055	Pueblo San Diego	Chollas Creek Channel	Part E, part C	1	60
94-95	88000055 88000292	Pueblo San Diego	South Chollas Creek Channel	Concrete sides, E bottom	1	70
96	80028356	Pueblo San Diego	Drain Structures – Boston Ave & Z St	E	1	15
97a, 97-99	88000282 88000285 88000287 88000288 88000289 88000290 88000291 88000292	Pueblo San Diego	South Chollas Creek Channel	Concrete sides, E bottom	1	50
100	88000321	Pueblo San Diego	42nd & J St	E	4	3
101-104	88000261 88000262 88000266 88000268 88000270 88000272 88000274 88000276	Pueblo San Diego	South Chollas Creek Channel	Part E, part C	2 & 3	20-50
105	NA	Pueblo San Diego	Euclid & Castana	E	4	12
106-107	88000079 88000080 88000081	Pueblo San Diego	Encanto Channel	Part E, part C	1 & 2	30-65

Table 1
STORM WATER SYSTEM CHANNELS AND DETENTION BASINS

	City Equipment No.	Hydrologic Unit	Facility Description	Type	Maintenance Method	Estimated Disturbance Width (feet)
Channel						
108-111	88000069 88000071 88000073 88000075 88000077 88000079	Pueblo San Diego	Encanto Channel	C	2	20
109	88000136	Pueblo San Diego	Jamacha Channel	E	4	15
112	880038398	Pueblo San Diego	Madera & Broadway	C	2	20
113-115	88000126 88000128 88000130 88000132 88000134 88000136	Pueblo San Diego	Jamacha Channel	E	1 & 2	30
116	88000253 88000255	Pueblo San Diego	Solola Channel	E	1	30
117	88000255 88000256 88000258	Pueblo San Diego	Solola Channel	Part E, part C	2	30
118-119	88000258 88000260	Pueblo San Diego	Solola Channel	C	2	30
120-121	88000056 88000058 88000060 88000062 88000064	Pueblo San Diego	Cottonwood Channel	C	2	30
122	88000188	Sweetwater	Parkside Channel	C	2	35
123	88000229	Tijuana	Sanyo Channel	C	2	50
124	NA	Tijuana	La Media & Airway	E	4	25
125	NA	Tijuana	Camino Maquiladora & Cactus	C	2 & 4	20
126	88000321 88000502	Tijuana	Siempre Viva & Bristow	E	4	12-25

Table 1
STORM WATER SYSTEM CHANNELS AND DETENTION BASINS

	City Equipment No.	Hydrologic Unit	Facility Description	Type	Maintenance Method	Estimated Disturbance Width (feet)
Channel						
127	NA	Tijuana	Britannia & Bristow	E	4	20
128	88000308 88000309 88000311	Tijuana	Virginia Channel	E	2 & 4	15
129	88000238 88000239 88000240 88000242 88000244	Tijuana	Smythe Channel	C, except southernmost 110 linear ft is E	2	30-50
130	88000233	Tijuana	Smythe Channel	E	2	60
131	88000157 88000159 88000160 88000163	Otay	Nestor Creek Channel	Part E, part C	1 & 2	30
132-133	88000167 88000169 88000174 88000176	Otay	Nestor Creek Channel	E	1 & 2	30-50
134	88000178 88000180	Otay	Nestor Creek Channel	C	1 & 2	30-50
135	88000322	Otay	Elm & Harris	C	4	4
136-137	88000301 88000303 88000305	Tijuana	Tocayo Channel	C except for westernmost 55 linear ft	2	35
137a-c	88000300	Tijuana	Tijuana River	E	1	24
138-139	88000232	Tijuana	Smugglers Gulch Channel	E	1	50
140-161	88000217 88000219 88000221 88000223 88000225 88000227 88000228	San Diego	San Diego River	E	NA	NA

Table 1
STORM WATER SYSTEM CHANNELS AND DETENTION BASINS

	City Equipment No.	Hydrologic Unit	Facility Description	Type	Maintenance Method	Estimated Disturbance Width (feet)
Channel						
Basins						
162-163	NA	Peñasquitos	Tower Road	E	1	100
164	NA	Peñasquitos	Black Mountain Road south of Westview	E	1	80
5a	NA	Peñasquitos	12350 Black Mountain Road n/o Mercy Road	E	1	50
165	NA	Peñasquitos	9262 Camino Santa Fe	E	1	10
166	NA	Peñasquitos	Carmel Country Rd Bridge south of SR 56	E	1	200
167	NA	Peñasquitos	Westside El Camino Real south of SR 56	E	1	50
168	NA	Peñasquitos	Northside Genesee east of Science Center Dr	E	1	100
169	NA	San Dieguito	13153 Paseo del Verano	C	1	140
170	NA	Peñasquitos	Roselle Street (Deadend)	E	1	100
171-172	NA	Peñasquitos	Scripps Lake Drive west of Treena Street	E	1	15-20
23a	NA	Peñasquitos	12660 Legacy Road	E	1	100
131	NA	Otay	30th & Del Sol Blvd	E	1	300

C- Concrete lined
E- Earthen

Method 1 - Equipment such as a skid-steer or bulldozer enters the drainage using existing access and pushes the accumulated material with a bucket to a site within the drainage. The material is scooped up with a loader in the drainage or a Gradall along the top of the drainage bank, and loaded into a dump truck. Alternatively, a loader enters the drainage, scoops up material, and loads it into a dump truck.

Method 2 - This method is the same as Method 1 except that no access ramp is available. Equipment is lowered into the channel with a larger piece of equipment (crane or Gradall).

Method 3 - This method is the same as Method 1 except that a temporary ramp is constructed and removed after maintenance.

Method 4 - No equipment enters the channel. A Gradall or excavator operates from the bank to scoop up the accumulated material from outside the drainage and load it onto dump trucks for offsite disposal.

NA - Unknown or not applicable

APPENDIX B

INDIVIDUAL MAINTENANCE ACTIVITY REPORT FORM

MAINTENANCE ACTIVITY REPORT

Site/Facility# _____
Date _____
Storm Water Department Representative _____

Instruction: This form must be completed whenever any work is done at a storm water facility. Attach additional sheets if needed.

Description of Work (e.g., routine, re-occurring; also note general frequency maintenance at this site)	
Street Name: _____ Latitude: _____ Longitude: _____	Work Orientation from Street (N, S, E, W): Location Between Street _____ and Street _____
Maintenance Facility Type: Stream ____ Roadside Ditch ____ Spillway ____ Detention Basin ____ Culvert ____ Other: ____	Additional Description:
Work within drainage/creek Length:_____ (How many feet were cleared)	Name of drainage/creek: Width: _____ Area (SQ FT):_____ Depth (FT):_____
Is the creek lined: ___Yes ___ No Notes:	Lining Type: Concrete lined both sides, bottom ____ Earthen, both sides, bottom ____ Riprap sides, earth bottom ____ Concrete sides, earth bottom ____ Other type: _____
Silt/Sand Removal Length:_____ (How many linear feet were cleared of silt/sand): _____	Describe cause of silt/sand:
Debris Removal Length:_____ (How many feet were cleared of debris)	Describe debris and cause:
Was any toxic materials found: ___Yes ___ No List toxics: Hazardous Material Manifest: _____	Were more than 9 tires recovered? ___Yes ___ No CTL Number: _____
Access via previously disturbed area: : ___Yes ___ No	Access route: _____ Maintenance Equipment Used: _____
Vegetation Removal Length:_____ (How many linear feet were cleared of vegetation)	Types of Vegetation Removed: _____ (Indicate bush, trees, plants, grasses, list diameter of trunk at 4' height)
Ground Disturbing Activities Length:_____	Upland Vegetation Removed - Types & Area:

(How many linear feet were disturbed by activity)	
Were erosion controls necessary?: ___Yes ___ No	Describe interim erosion control measures:
Work within nesting breeding season (Feb-August)?: ___Yes ___ No	Biologist/Monitor/Archaeologist present: ___Yes ___ No Names:_____
Was any water quality sampling required?: ___Yes ___ No	

Additional Maintenance Activity Description:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Describe surrounding land use within work area (assume 500-foot buffer area):

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Identify temporary/permanent impacts to habitat by area (acres/square footage) as determined by Biologist:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Reviewer Recommendations (Avoidance, Minimization, and Mitigation Measures):

Additional Comments (Describe any unusual conditions, situations or special requirements needed to do the work such as diversion of water, construction of staging area, replacement of bank material, presence of utilities, etc.):

SITE PHOTOS

Attach 1st of 2 pictures **BEFORE** work, include upstream and downstream views. **Note**: if resources at site are flagged or staked to limit impacts to sensitive areas, also include pictures showing the measures that were installed.	Attach 2nd of 2 pictures **BEFORE** work, include upstream and downstream views.

PHOTO NOTES:

_____

_____

_____

Attach 1st of 2 pictures **AFTER** work, include upstream and downstream views.	Attach 2nd of 2 pictures **AFTER** work, include upstream and downstream views.

PHOTO NOTES:

_____

_____

_____

APPENDIX C

INDIVIDUAL BIOLOGICAL ASSESSMENT REPORT FORM

INDIVIDUAL BIOLOGICAL ASSESSMENT REPORT

Site Name/Facility _____

Date_____

BiologistName_____

• **Instruction**: This form must be completed for each target facility following the completion of the Individual Maintenance Plan (IMP) report form and prior to any work being conducted in the facility. Attach additional sheets if needed.

Habitat description (vegetation communities present, including adjacent uplands; general habitat quality/level of disturbance):

Animal species observed/detected during the field visit, including habitat in which they were detected:

Types/amount of wetland vegetation to be removed (determine amount of impact in acres or square feet):

Riparian Forest or Riparian Woodland
_____

Riparian Scrub, including Southern Willow Scrub and Mule Fat Scrub
_____

Freshwater Marsh or Emergent Wetland
_____

Cismontane Alkali Marsh
_____

Coastal Salt Marsh or Coastal Brackish Marsh
_____

Giant Reed-dominated Disturbed Wetland
_____

Other Disturbed Wetland
_____

Streambed/Unvegetated Drainage
_____

Types/amount of upland vegetation to be removed/disturbed for facility access (if access route currently exists, state as such):

Sensitive Plant Species Observed (circle one): __Yes __ No
If yes, what species were observed and where?

Sensitive Animal Species Observed/Detected (circle one): Yes No
If yes, what species were observed/detected and where?

Is there moderate or high potential for listed animal species to occur in or adjacent to the impact area (circle one): ___Yes ___ No

If yes, which species (check all that apply):

_____ Least Bell's vireo
_____ Southwester willow flycatcher
_____ Arroyo toad
_____ Coastal California gnatcatcher
_____ San Diego fairy shrimp
_____ Riverside fairy shrimp
_____ California least tern
_____ Light-footed clapper rail
_____ Western snowy plover
_____ Other: _____

Could work be conducted during the avian breeding season (February – August) without the need for pre-construction nesting surveys (circle one): ___Yes ___ No

If yes, provide justification:

Maintenance Protocols (list the applicable maintenance protocols based on the biological resources occurring or likely to occur on site):

_____
_____
_____
_____
_____
_____

Habitat Compensation Requirements (including wetland enhancement, restoration, creation, and/o purchase of wetland credits in a mitigation bank; off-site upland habitat acquisition/payment into the City's habitat acquisition fund):

_____
_____
_____
_____
_____
_____

Additional Biologist Recommendations:

_____
_____
_____
_____
_____

Additional Comments:

_____
_____
_____
_____
_____

SITE PHOTOS

PHOTO NOTES:

_____
_____
_____

PHOTO NOTES:

_____
_____
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