

**ATTACHMENT 1**  
**WATERSHED ACTIVITY SUMMARY SHEETS**

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**TITLE: Pet Waste Bag Dispenser Program in County Parks**  
**ID NUMBER: TJ-001**

**ACTIVITY DESCRIPTION**

The County of San Diego provides pet waste bag dispensers at County parks. The County installs, maintains, and inventories pet waste dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

**ACTIVITY IMPLEMENTATION**

**FY 2007-08 ACTIVITY IMPLEMENTATION**

During the FY 2007-08 reporting period the County of San Diego maintained 12 dispenser stations at three parks within the Tijuana River Watershed.

**FY 2008-09 ACTIVITY IMPLEMENTATION**

During the FY09-10 reporting period the County of San Diego maintained 12 dispenser stations at three parks within the Tijuana River Watershed.

**FY 2009-10 ACTIVITY IMPLEMENTATION**

No additional stations were added in FY 2009-10. During this reporting period the County of San Diego continued to maintain 12 dispenser stations at three parks in the Tijuana River Watershed. The parks and the number of dispensers include:

- Lake Morena Park (4 dispensers)
- Pine Valley Park (2 dispensers)
- Potrero Park (6 dispensers)

**TMDL APPLICABILITY**

N/A

**TIME SCHEDULE FOR IMPLEMENTATION**

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

**PARTICIPATING WATERSHED COPERMITTEES**

- County of San Diego

**OTHER PARTICIPATING ENTITIES**

- None

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Nutrients

### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Bacteria and nutrients have been identified as priority water quality problems in the Tijuana River Watershed. Parks have been identified as potential sources of these pollutants. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

### **EXPECTED BENEFITS**

This activity will result in reductions of bacteria and nutrients from County parks.

### **EFFECTIVENESS MEASUREMENTS**

As described in the table below, activity effectiveness is measured by tracking the number of pet waste bags distributed at each County park on an annual basis (Level 1). Bacteria load reductions (Level 4) are estimated based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

<b>Facility Name</b>	<b># of Stations</b>	<b># of Bags Used</b>	<b>Waste Reduction Lbs.</b>
Lake Morena	4	10,760	2,152
Pine Valley	2	6,840	1,368
Potrero	6	18,500	3,700
<b>Total</b>	<b>12</b>	<b>36,100</b>	<b>7,200</b>

**TITLE: LAND ACQUISITIONS FOR TIJUANA RIVER WMA**  
**ID NUMBER: TJ-002**

**ACTIVITY DESCRIPTION**

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

**ACTIVITY IMPLEMENTATION FY2007-08**

During the FY2007-08 reporting period there was 5.52 acres of land acquired in the Tijuana River WMA.

**ACTIVITY IMPLEMENTATION FY2008-09**

During the FY2008-09 reporting period there was 113.39 acres of land acquired in the Tijuana River WMA.

**ACTIVITY IMPLEMENTATION FY2009-10**

During the FY2008-09 reporting period there was 187.00 acres of land acquired in the Tijuana River WMA.

<b>Property</b>	<b>Acres</b>	<b>Date</b>	<b>Watershed ID</b>	<b>APN(s)</b>
McCunney/Brown Mason Wildlife	187	7/22/2009	911.25	653-120-06
<b>TOTAL</b>	<b>187</b>			

**TMDL APPLICABILITY**

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

**TIME SCHEDULE FOR IMPLEMENTATION**

The County of San Diego acquires land on an ongoing basis from willing sellers.

### **PARTICIPATING WATERSHED COPERMITTEES**

- County of San Diego

### **OTHER PARTICIPATING ENTITIES**

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- All

### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

### **EFFECTIVENESS ASSESSMENT**

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

**TITLE: I Love a Clean San Diego Trash Cleanup Sponsorship**  
**ID #: TJ-003**

### **ACTIVITY IMPLEMENTATION**

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on April 24, 2010. The City of San Diego (City) sponsored the San Ysidro site in the Tijuana River Watershed Management Area (WMA). Approximately 72 volunteers removed 9,180 lbs of trash and debris and recycled 84 pounds of trash and debris over a two-mile area.

The City requests that the Regional Board accept this activity as a watershed water quality activity for FY 2010 as the effectiveness assessment below demonstrates that this activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period.

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL

### **TIME SCHEDULE FOR IMPLEMENTATION**

The Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the Tijuana River WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

### **OTHER PARTICIPATING ENTITIES**

- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

## **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria as a high priority water quality problem throughout the Tijuana River WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

## **EFFECTIVENESS ASSESSMENT**

<b>Watershed: Tijuana River</b>		
<b>ILACSD CREEK TO BAY CLEANUP SPONSORSHIP</b>		
<b>Assess the Efficiency and Effectiveness of Sponsoring ILACSD Cleanup Efforts to Remove Litter from Public Areas and Waterways</b>		
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What is the load reduction associated with sponsorship?</li> <li>• What is the efficiency of trash cleanup? (\$/person or \$/ton collected)</li> </ul>	
<b>Targeted Measurable Outcome(s)</b>	Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Tabulation (e.g., number of participants)</li> <li>• Quantification (e.g., pounds of trash collected)</li> </ul>	
<b>Data Recorded</b>	Pounds of trash removed (Outcome Level 4)	9,180 lbs
	Pounds of trash recycled (Outcome Level 4)	84 lbs
	Total pounds of trash removed and recycled (Outcome Level 4)	9,264 lbs
	Number of participants (Outcome Level 1)	120
	Amount of money spent on cleanups for all watersheds (Outcome Level 1)	\$30,000
	Estimated Amount of money spent on cleanups for the Tijuana River watershed management area (Outcome Level 1)	\$5,000*
	Activity Efficiency (Total Cost/ Total Pounds of Trash Removed and Recycled)	\$0.54/lb

\*Calculated by dividing total sponsorship cost by six watersheds.

### **Objectives**

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant loads.

### **Analysis and Results**

On April 24, 2010, 120 participants removed approximately 9,180 pounds of trash and debris and recycled approximately 84 pounds of trash and debris from numerous sites in the Tijuana River WMA. The average estimated sponsorship cost was \$5,000 per watershed (\$30,000/6 watersheds). Thus, there was a 9,264 pound load reduction associated with sponsorship per yearly event, and an efficiency of \$0.54 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the Tijuana River WMA by the total pounds of trash removed and recycled.

### **Conclusions**



Implementation and assessment of load reduction and efficiency for the ILACSD Creek to Bay Cleanup will occur again in FY 2011. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

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**TITLE: Coastal Cleanup Day Sponsorship**  
**ID NUMBER: TJ-004**

### **ACTIVITY IMPLEMENTATION**

Each fall, San Diego Coastkeeper (SDCK) conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 19, 2009. The City of San Diego (City) sponsored the Tijuana River Valley site in the Tijuana River Watershed Management Area (WMA). Approximately 92 volunteers removed 3,680 pounds of trash and debris and recycled 400 pounds of trash and debris. Volunteers were asked to track the debris collected by filling out data cards provided by the Ocean Conservancy.

Based on the information above, the effectiveness assessment below, and the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, this trash cleanup activity fulfills credit as a watershed water quality activity for FY 2010.

### **TMDL APPLICABILITY**

- None

### **TIME SCHEDULE FOR IMPLEMENTATION**

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the Tijuana River WMA are included in the list for cleanups, and that proper sponsorship arrangements are made.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

### **OTHER PARTICIPATING ENTITIES**

- San Diego Coastkeeper
- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

## **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria as a high priority water quality problem throughout the Tijuana River WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

## **EFFECTIVENESS ASSESSMENT**

<b>Watershed: Tijuana River</b>		
<b>SDCK COASTAL CLEANUP DAY SPONSORSHIP</b>		
<b>Assess the Efficiency and Effectiveness of Sponsoring SDKC's Cleanup Efforts to Remove Litter from Public Areas and Waterways</b>		
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What is the load reduction associated with sponsorship?</li> <li>• What is the efficiency of trash cleanup? (\$/person or \$/pound collected)</li> </ul>	
<b>Targeted Measurable Outcome(s)</b>	Achieve load reduction due to reduction of trash due to trash cleanup sponsorship	
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Tabulation (e.g., number of participants)</li> <li>• Quantification (e.g., pounds of trash collected)</li> </ul>	
<b>Data Recorded</b>	Pounds of trash removed (Outcome Level 4)	3,680 lbs
	Pounds of trash recycled (Outcome Level 4)	400 lbs
	Total pounds of trash removed (Outcome Level 4)	4,080 lbs
	Number of participants (Outcome Level 1)	92
	Amount of money spent on cleanups for all six watersheds (Outcome Level 1)	\$30,000
	Estimated Amount of money spent on cleanups for the Tijuana River watershed management area (Outcome Level 1)	\$5,000*
	Activity Efficiency (Total Cost/ Total Pounds of Trash Removed and Recycled)	\$1.23/lbs

\*Calculated by dividing total sponsorship cost by six watersheds.

### **Objectives**

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant load.

### **Analysis and Results**

The event's debris removal was tracked using data cards provided by the Ocean Conservancy; 92 participants removed 3,680 pounds of trash and debris and recycled 400 lbs of trash and debris. The average estimated sponsorship cost was \$5,000 per watershed (\$30,000/6 watersheds); thus, there was a 4,080 pound load reduction and an efficiency of \$1.23 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the Tijuana River WMA by the total pounds of trash removed and recycled. It is anticipated that the sponsorship fee at that level would remain the same for subsequent years.

### **Conclusions**

Implementation and assessment of load reduction and efficiency for the Coastal Cleanup Day sponsorship will occur again in FY 2011. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

Based on the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, this trash cleanup activity fulfills a watershed water quality activity for FY 2010.

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**TITLE: Tijuana River Targeted Facility Inspections**  
**ID NUMBER: TJ-007**

### **ACTIVITY IMPLEMENTATION**

This activity is part of a larger study in the Mission Bay, San Diego Bay and Tijuana River Watershed Management Areas (WMA). The City of San Diego developed and implemented a focused inspection activity designed and implemented to answer the following management questions related to the implementation of commercial/industrial inspection programs:

- 1) What is the optimal frequency (within resource limitations) of inspections for Automotive Repair Facilities?
- 2) Does type of business ownership change the required inspection frequencies?
- 3) Based on information collected during inspections, can the inventory of specific source types, in this case automotive facilities, be feasibly prioritized?

This activity included three rounds of inspections and spanned both FY 2009 and FY 2010. In FY 2009, this activity was developed and implemented Round 1 inspections to establish the baseline data for future inspections. All automotive facilities selected to be part of this activity were inspected. In FY 2010, Round 2 and Round 3 inspections were performed. Round 2 inspections occurred at approximately half of the sites selected for inspection. The sites inspected in Round 2 were selected via random number generation. These sites received two inspections in FY 2010 (Round 2 and Round 3). Round 3 inspections occurred at all automotive facilities selected to be part of this activity. These sites received one inspection in FY 2010 (Round 3 only). Inspections under this activity were not counted toward the Jurisdictional Urban Runoff Management Program (JURMP) inspection requirements unless inspected facilities were high threat to water quality sites that the Permit requires be inspected annually.

### **TMDL APPLICABILITY**

- N/A

### **TIME SCHEDULE FOR IMPLEMENTATION**

This project was implemented in FY 2009 and FY 2010. Assessment and final reporting for this activity concluded in June 2010.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

### **OTHER PARTICIPATING ENTITIES**

- N/A

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

The Tijuana River WMA inspections target sources of heavy metals.

### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Tijuana River WMA identifies metals as a high priority water quality problem throughout the Tijuana River WMA, and recommends

implementing load reduction/source abatement activities to address them. Implementation of this targeted inspection activity would contribute to addressing discharges, correcting behaviors, and abating sources associated with metals.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Tijuana River</b>		
<b>TARGETED FACILITY INSPECTIONS</b>		
<b>Assess the Efficiency and Effectiveness of Automotive Inspections</b>		
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What is the optimal frequency of inspections for Automotive Repair Facilities?</li> <li>• Does type of business ownership change the required inspection frequencies?</li> <li>• Based on information collected during inspections, can the inventory of specific source types, in this case automotive facilities, be feasibly prioritized?</li> </ul>	
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Identification of sources of constituents of concern in the Tijuana Watershed</li> <li>• Source abatement due to inspections</li> <li>• Increased BMP implementation due to inspections</li> </ul>	
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections)</li> <li>• Quantification (e.g., use frequency of BMP implementation to estimate source abatement)</li> <li>• Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials)</li> <li>• Reporting (e.g., estimates of source abatement for BMPs from data)</li> </ul>	
<b>Data Recorded</b>	<b>Automotive Inspections (Round 2)</b>	
	Number of full inspections (Outcome Level 1)	12
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	2
	Number of sites needing corrective action (Outcome Level 1)	12
	Number of sites that implemented some corrective action during inspection (Outcome Level 3)	0
	Number of sites with source abatement (based on corrective actions taken) (Outcome Level 4)	N/A
	Total IC/IDs observed (Outcome Level 1)	0
	Total IC/IDs eliminated during inspection (Outcome Level 4)	N/A
	<b>Automotive Inspections (Round 3)</b>	
	Number of full inspections (Outcome Level 1)	16
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	7
	Number of sites needing corrective action (Outcome Level 1)	16
	Number of sites that implemented some corrective action during inspection (Outcome Level 3)	0
	Number of sites with source abatement (based on corrective actions taken) (Outcome Level 4)	N/A
Total IC/IDs observed (Outcome Level 1)	0	
Total IC/IDs eliminated during inspection (Outcome Level 4)	N/A	



## Objectives

The goal of this focused inspection activity on automotive facilities was to determine the most efficient frequency to ensure proper BMP implementation and reduce pollutant loads.

## Analysis and Results

For all rounds of inspections, facility BMP implementation was evaluated for 27 different BMPs at each inspected facility. Inspected facilities were assigned a rating to reflect the level of BMP implementation at the site, and a separate rating to reflect the facility manager/responsible party's level of storm water knowledge. Inspectors evaluated BMP assessment ratings based on the cleanliness of the site and the number of recommended corrective actions given to each facility. Table 2 presents a breakdown of the average knowledge and average BMP implementation scores for the inspected facilities during each period of implementation.

**Table 2 Breakdown of Average Knowledge and BMP Implementation Scores by Area (Automotive Inspections)**

Average Knowledge Round 1	Average BMP Implementation Score Round 1	Average Knowledge Score Round 2	Average BMP Implementation Score Round 2	Average Knowledge Score Round 3	Average BMP Implementation Score Round 3
1.1	2.6	2.4	3.3	1.8	2.6

There was no significant change in BMP implementation rates observed with increased inspections when comparing the facilities that received one inspection to facilities receiving two inspections in one fiscal year, or three inspections from FY 2009 data. In general, the violations for poor BMP implementation were related to outdoor activities, materials/parts storage and lack of good-housekeeping practices. Many of the issues would be resolved if the facilities had structural changes to cover the outdoor operations and activities. These changes would likely be economically infeasible for the businesses to implement.

Each inspected facility was evaluated for their potential to discharge specific pollutant types, such as sediment, metals, and trash. Results of the pollutant discharge potential assessment (PDPA) performed during each inspection were also compared; there were no significant differences in any PDPA constituents assessed during this activity.

## Conclusions

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area.

The increased inspection frequency did not yield improved compliance behavior at the inspected facilities. However, the inspection process is a viable mechanism for identifying non-compliance issues and potential discharge conditions at inspected facilities. Inspections have also proven to be an effective mechanism for identifying and prioritizing follow-up inspections, and contact necessary to further evaluate compliance and non-compliance issues at facilities. Inspections can be enhanced by having enforcement, with an option for an incentive, for achieving change in compliance behavior.

As a result of this activity, the City noted deficiencies at the facilities and made recommendations to the responsible parties at 28 sites. The increased inspections at the facilities increased knowledge and it was determined during a focus group study for automotive businesses that one of their sources of storm water knowledge came through inspections; thus, this activity raised awareness, Level Two. Additionally, the City noted nine sites that needed follow-up to verify that corrective actions/BMPs were implemented. However, no locations required immediate corrective actions to be taken. Also no illicit connections and no illicit discharges were found during the inspections. It can be inferred that the potential for discharges was avoided through this activity. This demonstrates both a Level Three (change in behavior/BMP implementation) and Level Four (source abatement/load reduction) outcome was achieved as a result of this activity.

**TITLE: Municipal Rain Barrel Installation and Downspout Disconnect Project**  
**ID NUMBER: TJ-009**

**ACTIVITY IMPLEMENTATION**

During FY 2010 the City of San Diego (City) completed a municipal rain barrel installation and downspout disconnect project that reduced pollutant loading at municipal facilities. The municipal rain barrel installation and downspout disconnect project consisted of installing rain barrel systems, including downspout disconnects and infiltration systems, within the Tijuana River Watershed Management Area (WMA) to reduce pollutant loading from urban runoff during storm events.

The project included site evaluations and selections, the purchase of rain barrel/downspout disconnect systems and planter boxes, system installation, wet-weather monitoring, and effectiveness assessments.

In order to select appropriate sites for this pilot project, the City used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the Tijuana River WMA. The site selection process was long and iterative. Field reconnaissance was required to identify sites within the Tijuana River WMA with adequate roof gutters, downspouts, and locations where rain barrels would be installed to capture flow. Sites were assessed for sources of electrical power for use with automated systems and for adjacent vegetated areas where captured water could be discharged. Sites were also selected for education/outreach opportunities.

Based on the prioritization plan and field reconnaissance, the San Ysidro Library was selected because it is located in one of the highest priority sectors of the Tijuana River WMA for potential pollutant loading. The recreation center is also a publically accessible City facility, making education and outreach opportunities easily implementable.

In April 2009, a City-approved contractor installed two rain barrel systems at the library. One 55-gallon rain barrel was installed and connected to an existing downspout directly adjacent to the main entrance of the library. This system utilizes a gravity release mechanism to deliver captured runoff to nearby landscaping. In addition, one 75-gallon rain box was installed and connected to an existing downspout along the back side of the building. This system will also use a gravity release mechanism to deliver captured water to nearby landscaping.



**Rain Barrel at front entrance**



**Rain Box**

A one page informational flyer regarding the rain barrel pilot project was developed in June 2009. The flyer was distributed to all participating municipal sites to be made available to the public. In addition, a brief description of the pilot project and a PDF version of the informational flyer were posted on the City's *Think Blue* website during the first quarter of FY 2010.

During FY 2010, the City assessed the effectiveness of the rain barrel/rain harvesting systems at the San Ysidro Library. Ultimately, the City would like to incorporate the use of these LID techniques into a residential program that may include incentives for implementing these systems on a larger scale. However, this phase of the project is now complete, and will no longer be included in future reporting updates.

### **TMDL APPLICABILITY**

- None

### **TIME SCHEDULE FOR IMPLEMENTATION**

Project planning, including site selection, began in July 2007 and was completed by the first quarter of FY 2008. Initially, the project was scheduled for completed by the fourth quarter of FY 2008. However, planning, site selection, and procurement of the rain barrels took longer than expected. Product screening for the rain barrels and concrete planters was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes and rain chains concluded by the second quarter of 2009. The installation contract was awarded and approved by City Council during the second quarter of FY 2009. A pre-construction meeting was held with the contractor in March 2009. Installation of all systems occurred in April 2009. Wet-weather monitoring was preformed from October 2009 to April 2010. Assessment and final reporting for this program concluded in June 2010.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- None

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Both the City’s *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria as a high priority water quality problem, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity addressed both high priority water quality problems by reducing runoff volume via capture, retention and infiltration.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Tijuana River</b>		
<b>MUNICIPAL RAIN BARREL INSTALLATION PROGRAM</b>		
<b>Assess the Efficiency and Effectiveness of Rain Barrel Water Collection Containers at Reducing Runoff</b>		
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What is the effectiveness of rain barrel/downspout disconnect systems in reducing pollutant loads and storm water runoff volume?</li> <li>• What are the potential pollutant load and volume reductions for the three system configurations tested?</li> <li>• Which system configuration is the most cost-efficient?</li> </ul>	
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Pollutant load reductions due to rain barrel/downspout disconnect installation</li> <li>• Runoff reduction due to rain barrel/downspout disconnect installation</li> </ul>	
<b>Data Recorded</b>	Cost of site preparation, installation and start-up	\$25,400
	Cost of operation and maintenance evaluation	\$1,186
	Cost of effectiveness monitoring	\$20,526
<b>Recommended Data</b>	<ul style="list-style-type: none"> <li>• Number/type of barrels installed (Outcome Level 1)</li> <li>• Volume of storm water captured/attenuated (Outcome Level 4)</li> <li>• Average concentrations of metals in rainwater or runoff (µg/L) (Outcome Level 4)</li> <li>• Pollutant load reductions for metals for each system configuration (grams) (Outcome Level 4)</li> </ul>	

**Objectives**

The goal of the rain barrel and rain harvesting assessment was to determine whether rain barrel/rain-harvesting systems reduce storm water runoff, thereby reducing metals and bacteria loads, and if so which system is most effective and efficient.

## **Analysis and Results**

The pilot project was assessed in FY 2010 based on monitoring data from two storm events collected over one wet-weather season.

The two systems at the San Ysidro Library captured and attenuated 53.09 cu ft of rainwater over the two monitored storm events. The average pollutant concentrations of the runoff from the galvanized downspouts were 26 µg/L for copper, 8 µg/L for lead, and 291 µg/L for zinc. Over the two monitored storm events, the 55-gallon capacity gravity-flow system configuration at the San Ysidro Library (SY-1) resulted in load reduction of 0.003 grams of copper and 0.039 grams of zinc. During the same two storm events, the 75-gallon capacity gravity-flow system configuration at the San Ysidro Library (SY-2) resulted in a load reduction of 0.014 grams of copper and 0.212 grams of zinc.

The four systems at the South Bay Wastewater Treatment Plant captured and attenuated 156 cu ft of rainwater over the two monitored storm events. The average pollutant concentrations of the runoff from the copper roof and galvanized downspouts were 5 µg/L for copper, 3 µg/L for lead, and 945 µg/L for zinc. Over the two monitored storm events, the 75-gallon capacity gravity-flow system configuration at the South Bay Wastewater Treatment Plant (SB-1) resulted in load reduction of 0.250 grams of zinc and no measurable reduction in copper. During the same two storm events, the 75-gallon capacity gravity-flow system configuration at the South Bay Wastewater Treatment Plant (SB-2) resulted in load reduction of 0.250 grams of zinc and no measurable reduction in copper. During the same two storm events, the 75-gallon capacity gravity-flow system configuration at the South Bay Wastewater Treatment Plant (SB-3) resulted in load reduction of 0.250 grams of zinc and no measurable reduction in copper. During the same two storm events, the 75-gallon capacity gravity-flow system configuration at the South Bay Wastewater Treatment Plant (SB-4) resulted in load reduction of 0.250 grams of zinc and no measurable reduction in copper.

The total cost of installation, operation, maintenance, and effectiveness assessment for the six systems in the Tijuana River WMA was approximately \$47,112.

Assessment data at this site shows that the gravity-flow system configuration, consisting of a rain barrel and/or downspout disconnect that discharges to adjacent landscaping, is more effective and reducing pollutant loads and attenuating wet weather flows than other systems tested. Overall, the study found that gravity-flow systems can attenuate and infiltrate up to six times their capacity in storm water runoff, in addition to capturing and redirecting pollutants away from the MS4. Furthermore, this configuration was the least expensive of the three tested, which makes it the most cost-efficient. Water quality monitoring data also confirmed that buildings with copper or galvanized metal roofs represent significant sources of copper and zinc, respectively.

## **Conclusions**

Assessment data shows that rain barrels and downspout disconnects are a low-cost, effective BMP for both attenuating storm water flows and reducing pollutant loads. Although less effective than gravity-flow systems at addressing pollutant loads, rain

barrel and/or downspout disconnect systems with planter boxes are a viable option for sites lacking adjacent pervious areas. Based on an analysis that demonstrates that the activity resulted in a measureable pollutant load reduction (Outcome Level 4) during the reporting period, the Copermittees request that the Regional Board accept this activity as a watershed water quality activity for FY 2010.

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**TITLE: City-Wide Clean-Up Events**  
**ID NUMBER: TJ-010**

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### **ACTIVITY IMPLEMENTATION**

Imperial Beach participates in a number of city-wide sponsored clean-up events including ILACSD Creek-to-Bay clean up, local community group sponsored events, and the annual Home Front Clean-Up event. The largest event in terms of participation is the annual Home Front Clean-Up, which the City has been implementing since the 2001-01 municipal permit. These annual City-wide activities serve both as an encouragement and a means for residents to eliminate waste that could otherwise contribute the release of contaminants into the storm water conveyance system.

### **TMDL APPLICABILITY**

This activity is not specifically targeted for TMDLs in the Tijuana WMA.

### **TIME SCHEDULE FOR IMPLEMENTATION**

City-wide clean up events will continue to be held throughout the duration of Municipal Permit R9-2007-0001. The City intends to sponsor ILACSD for the annual Creek-to-Bay clean up and continue the highly successful City-wide Home Front Clean Up event for the complete cycle of the current permit. The activity will be assessed and refined as necessary.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of Imperial Beach

### **OTHER PARTICIPATING ENTITIES**

- EDCO Waste and Recycling Services

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Bacteria are identified as a priority water quality problem in the Tijuana WMA. The accumulation of waste by residents such as trash, green waste, and large bulky items are potential sources of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

## EXPECTED BENEFITS

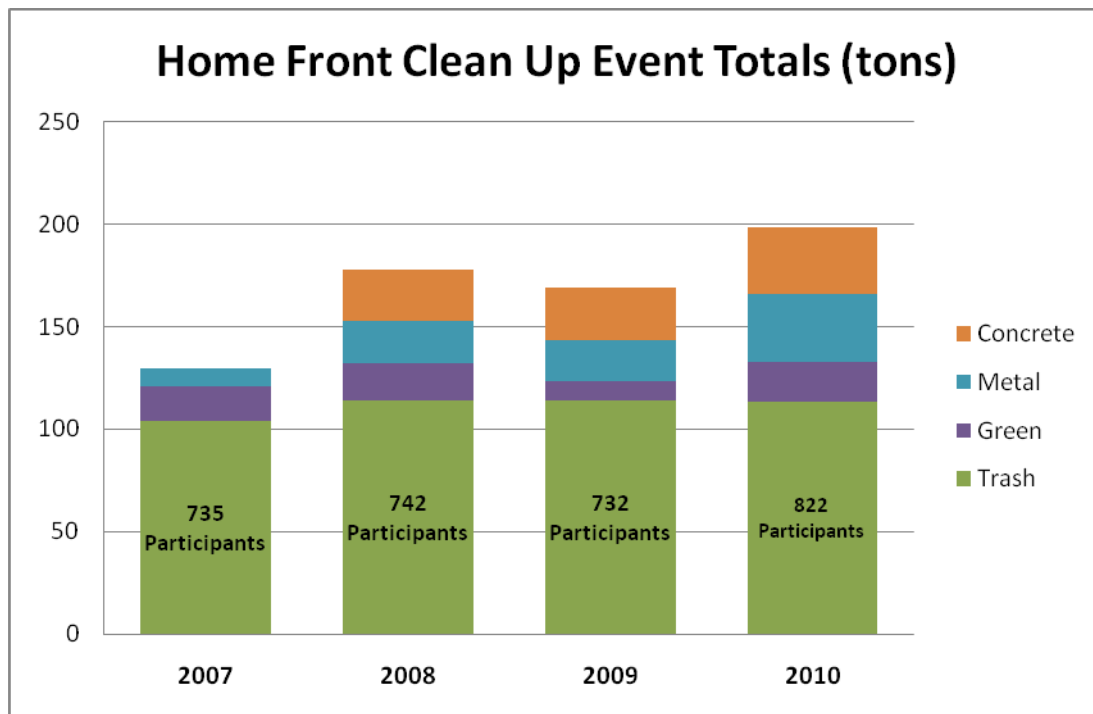
Expected benefits of implementing City-wide clean-up activities include compliance with permit requirements, changes in attitudes, knowledge, and awareness of the community, and lead to reductions in urban runoff and discharge quality by removing wastes that may have otherwise ended up in the storm drain system. City-wide clean-up events serve both as education and water quality activities. Reducing the amount of trash in the storm drain system also has the co-benefit of reducing bacteria which is identified as a water quality problem in the Tijuana WMA.

## EFFECTIVENESS MEASUREMENTS

The effectiveness of this project meets the requirements of Outcome Level 1, Level 2, and Level 4 compliance with activity based permit requirements. Community wide clean-up events raise awareness of the connectivity of trash, urban runoff, storm drain systems, and receiving waters.

During FY 2009-10 Imperial Beach sponsored I Love a Clean San Diego for its 8<sup>th</sup> Annual Creek-to-Bay clean up event on April 30<sup>th</sup>, 2010. The annual Creek-to-Bay cleanup engages the community through public participation and increases awareness on the connectivity of the receiving waters to the urban environment. Assessments are also made across the region on the level of participation and characteristics of the waste collected.

The City also held its annual Home Front clean up event on May 1<sup>st</sup>, 2010. The Home Front clean up event had 822 participants and resulted in the proper disposal of 175.6 tons of waste including 33.4 tons of metals, 32.4 tons of concrete, and 19.7 tons of green waste that were recycled.



**TITLE: Large Special Event Inspection and Clean-Up**  
**ID NUMBER: TJ-011**

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### **ACTIVITY IMPLEMENTATION**

The City hosts the annual U.S Open Sandcastle Competition that draws close to one million visitors to Imperial Beach in the month of July. The City also hosts additional special events during the year that draw a large number of visitors to the City. Along with the visitors are a number of mobile businesses, food vendors, and increased volume of trash that can potentially contribute to the problem of urban runoff. Starting in 2008 the City enhanced its special event application process to further target urban runoff and recycling during the planning and implementation stages for the special event. Program enhancements include providing storm water education for street vendors, providing education for the general public whenever possible, and inspections of street vendors for storm water violations. The City also enhanced its recycling and trash collection service for the Annual U.S. Open Sandcastle Competition.

### **TMDL APPLICABILITY**

This activity is not specifically targeted for TMDLs in the Tijuana WMA.

### **TIME SCHEDULE FOR IMPLEMENTATION**

Implementation of the activity has begun under the previous storm water permit 2001-01 and since been reviewed and enhanced for the new R9-2007-0001 permit. The activity was in active implementation over the last three reporting years and has become standard work procedure for managing storm water and recycling at special events. The City annually reviews effectiveness after the U.S. Open Sandcastle competition and makes changes as necessary.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of Imperial Beach

### **OTHER PARTICIPATING ENTITIES**

- EDCO Waste and Recycling Services
- Set Free Baptist Fellowship

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

## **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Bacteria are identified as a priority water quality problem in the Tijuana WMA. The increased number of visitors, larger volumes of waste, and water quality threat from mobile food vendors during large special events are potential sources of bacteria and urban runoff pollution. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

## **EXPECTED BENEFITS**

Expected benefits of enhancing large special event clean up and inspections include compliance with permit requirements, changes in attitudes, knowledge, and awareness of mobile businesses and local community, and reductions in urban runoff and discharge quality by enhancing recycling and pollution prevention efforts and implementing storm water BMPs. Enhancing recycling efforts, increasing education on urban runoff, and verifying the implementation of BMPs through inspections may lead to lower levels of bacteria and trash reaching the storm drain system.

## **EFFECTIVENESS MEASUREMENTS**

The effectiveness of this project meets the requirements of Outcome Level 1, Level 2, Level 3, and Level 4 compliance with activity based permit requirements. Community wide clean-up events raise awareness of the connectivity of trash, urban runoff, storm drain systems, and receiving waters.

During FY 2009-10 Imperial Beach required the proper disposal of recycled waste and implementation of pollution prevention measures at all large special events. During the year the City held 32 large special events requiring conditions for storm water BMPs and recycling from the Public Works Department. The largest of these events was the annual U.S. Open Sandcastle Competition, which during the weekend of July 17<sup>th</sup>-18<sup>th</sup> drew an estimated crowd of over 800,000 visitors to the beach. In preparation for the U.S. Open Sandcastle event the City provided additional storm water BMP information to all street vendors before the event and then followed up with storm water inspections during the event, which resulted in 1 Notice of Violation. The City also enhanced its recycling efforts at the Sand Castle Competition by sponsoring a local Baptist Church group who worked with the City to enhance its recycling program implementation during the event. The recycling efforts resulted in a total of 1320 pounds of mixed recyclables and 930 pounds of cardboard being recycled. The City also provided a storm water education both at the Sandcastle event where knowledge was assessed through a survey. The survey showed that 69% of the individuals surveyed correctly identified the difference between the sanitary sewer and storm drain system.

### **Sandcastle Event Waste Disposal Totals**

	<b>Mixed Recycling</b>	<b>Cardboard</b>	<b>Trash</b>
<b>2009</b>	1320 lbs.	930 lbs.	8.11 tons
<b>2008</b>	1280 lbs.	960 lbs.	7.83 tons
<b>2007</b>	610 lbs.	990 lbs.	14.24 tons

**TITLE:** Smuggler's Gulch Sediment and Debris Removal  
**ID NUMBER:** TJ-012

**ACTIVITY DESCRIPTION**

The County performs routine flood control maintenance activities on improved and unimproved channels pursuant to its Regional General Permit (RGP) 53. This activity is traditionally performed every two to four years depending on annual rainfall. The extent of the project includes the channel from the Mexican border, north approximately 5,400 feet to the confluence of the Tijuana River. Historically as much as 80,000 cubic yards of sediment can be removed from the channel. Trash is separated on site and recycled accordingly.

The sediment removal project is necessary to return the drainage facility to historic conditions and to convey flow properly, which will eliminate the potential for sediment and debris to build up causing future flooding events.

**ACTIVITY IMPLEMENTATION 2007-08**

There were no sediment and debris removal during the FY2007-08.

**ACTIVITY IMPLEMENTATION 2008-09**

There were no sediment and debris removal during the FY2008-09.

**ACTIVITY IMPLEMENTATION 2009-10**

During FY09-10 County Parks removed 18,000 cubic yards of sediment, 40 cubic yards of trash, and 200 tires from Smuggler's Gulch. The dredging occurred from Monument Road south to the boundary of Federal property. All sediment was recycled as construction aggregate, while the trash and tires were disposed of as appropriate.

**TMDL APPLICABILITY**

N/A.

**TIME SCHEDULE FOR IMPLEMENTATION**

Typically removal takes place every other year but is dependent on precipitation patterns, intensity of precipitation, and funding. Currently, sediment removal is expected to occur in FY10-11. Since the FY09-10 dredging, approximately 12,000 cubic yards of sediment have migrated into the channel.

**PARTICIPATING WATERSHED COPERMITTEES**

- County of San Diego

**OTHER PARTICIPATING ENTITIES**

- California Department of Fish and Game
- California State Parks

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Sediment
- Trash

### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Sediment and trash have been identified as high priority water quality problems in the Tijuana River WMA. This activity results in a direct load reduction of these pollutants, and is therefore consistent with the collective watershed strategy.

### **EFFECTIVENESS ASSESSMENT**

This activity is considered a load reduction that can be measured. As reported above, 18,000 cubic yards of sediment, 40 cubic yards of trash, and 200 tires were removed from Smuggler's Gulch during FY 2009-10.

**TITLE: TIJUANA RIVER WATERSHED BACTERIAL SOURCE IDENTIFICATION STUDY**

**ID NUMBER: TJ-013**

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### **ACTIVITY IMPLEMENTATION**

The City of Imperial Beach initiated a Bacteria Source Identification study in November 2007 to identify and quantify sources of bacterial contamination in the U.S. portion of the Tijuana River Watershed. On December 15, 2008 the project was placed on hold due to budgetary constraints in the State of California. Funding for the project was reinstated in February 2010 and the study is underway again. Work is scheduled to be complete March 2012. The goals of the study include the following:

- Identify anthropogenic sources of bacteria;
- Identify non-anthropogenic sources of bacteria;
- Assess annual bacteria loads into the Tijuana River;
- Identify point sources (PSs) and non-point sources (NPSs) of bacterial pollutants; and
- Better understand mitigation strategies aimed at the reduction of bacteria loads.

The project uses standard culturing of fecal indicator bacteria and molecular tests (including the presence of Bacteroides as an indicator of recent human fecal pollution) to assess the presence of fecal indicator bacteria within the watershed during both dry weather and wet weather to identify PSs and NPSs of elevated bacteria concentrations, which may lead to beach postings at adjacent recreational beaches. Specific assessments focus on areas such as residential, commercial, agricultural and ranches, and groundwater transport as well as sewage flows from Mexico.

### **TMDL APPLICABILITY**

While it may be supportive of TMDL goals, this activity is not specifically part of a TMDL compliance program.

### **TIME SCHEDULE FOR IMPLEMENTATION**

- Information gathering from various stakeholders – Ongoing
- Meet with stakeholders to discuss project goals and objectives – Ongoing
- Review existing literature and data, and conduct field reconnaissance to determine sources of bacterial inputs – Completed
- Conduct sanitary surveys and collect samples from flowing storm drains – Ongoing
- Targeted wet weather monitoring – Ongoing
- Study to be completed – March 2012

### **PARTICIPATING WATERSHED COPERMITTEES**

- County of San Diego
- City of San Diego
- City of Imperial Beach

### **OTHER PARTICIPATING ENTITIES**

- State Water Resources Control Board
- Clean Beaches Initiative Task Force
- Regional Water Quality Control Board, San Diego
- U.S. Fish and Wildlife Service
- International Boundary and Water Commission (IBWC)
- California Department of Fish and Game
- Private land owners
- Conservation groups
- NGOs
- National Oceanic and Atmospheric Administration (NOAA)
- Tijuana River National Estuarine Research Reserve (TJNERR)

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Bacteria are identified as a priority water quality problem in the Tijuana River Watershed. Trash, parks, and pet waste are potential sources of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

### **EXPECTED BENEFITS**

Limited data are available regarding bacterial loads from sources and activities on the U.S. side of the Tijuana River Watershed (TRW). In addition, detailed information regarding the impact of certain land uses, and the input of pollutants from point and nonpoint sources have not been assessed for the U.S. portion of the TRW. This study aims to quantify bacterial loads from potential sources and propose solutions to reduce the impact of bacterial loads in the TRW and Pacific Ocean. The implementation of successful best management practices will result in a reduction in beach postings and closures.

### **EFFECTIVENESS MEASUREMENTS**

The effectiveness of this project meets the requirements of Outcome Level 1 compliance with activity based permit requirements. Information gained from this study will help in developing other programs or specific BMPs that will further address changes in knowledge and behavior, load reductions, and improvements to water quality.

The project also achieved Level 3 and Level 4 compliance through the implementation of two sanitary surveys. The first sanitary survey in 2008 identified two locations as sources of bacteria from ponding water. Maintenance BMPs cleaned the areas and during a follow up sanitary survey in 2010 water was no longer ponding and samples did not have significant bacteria levels.



**TITLE:** Public Service Announcement: Karma, Karma Second  
Chance, Karma Tourist  
**ID NUMBER:** TJ-015

### **ACTIVITY IMPLEMENTATION**

The City of San Diego (City) retained a contract with a film production company to create three Think Blue Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma*, *Karma Second Chance*, and *Karma Tourist* and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

These PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the Tijuana River Watershed Management Area (WMA) from August 2008 to April 2009. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

The City will continue to run the *Karma* public service announcements; however, this activity will no longer be included in future reporting updates.

### **TMDL APPLICABILITY**

- N/A

### **TIME SCHEDULE FOR IMPLEMENTATION**

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the Tijuana River WMA in FY 09 and FY 10.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

### **OTHER PARTICIPATING ENTITIES**

- Various Television and Radios Stations in San Diego

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Gross Pollutants (Trash)

### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria as high priority water quality problems in the WMA. The *Karma*, *Karma Second Chance*, and *Karma Tourist*

Public Service Announcements will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

**EFFECTIVENESS ASSESSMENT**

The City will continue to run the *Karma* public service announcements to educate the public, but no longer plans to use television advertising as part of its watershed program, therefore no assessment was conducted in FY 2010.

**TITLE: Invasive Species Removal Project in the Tijuana River Park**  
**ID NUMBER: TJ-017**

### **ACTIVITY DESCRIPTION**

The SANDAG Transnet Environmental Mitigation Program (EMP) funded a grant to the Southwest Wetlands Interpretive Association (SWIA) to continue the Tijuana River Valley Invasive Plant Control Program (Phase IV) begun in 2002 in the extreme southwest part of San Diego County within a few miles from the mouth of the river. The program includes work in the County of San Diego's Tijuana River Valley Regional Park (TRVRP), California State Parks' Border Field State Park, and the U.S. Fish and Wildlife Services' Tijuana Estuary. Three invasive plant species are targeted within the Tijuana River Valley: giant reed (*Arundo donax*), castor bean (*Ricinus communis*) and salt cedar (*Tamarix ramosissima*). These species degrade the habitats they invade by displacing native vegetation, lowering insect food supply for birds, reducing groundwater, and increasing flood and fire hazards. The invasive removal program includes replanting with native species, a project that, coupled with natives returning naturally, will serve to filter pollutants and decrease sedimentation in the long term. The County cooperated with the SWIA in seeking grants, by writing letters of support and serving on a technical advisory group (TAG) for the program. In the implementation of the program, the County continues to serve on the TAG and provides SWIA with right-of-entry permits to County property. SWIA is committed to seeking grants for the on-going funding of this project and the County plans to continue its long-term cooperation with the association.

### **ACTIVITY IMPLEMENTATION FY2007-08**

The following tasks were implemented as part of invasive plant removal program in the Tijuana River Valley Regional Park:

- Treated arundo and castor bean on 100 acres;
- Performed follow-up treatment of arundo and castor bean on old 511 acres;
- Treat tamarisk on 61 acres around Dairy Mart ponds;
- Maintained and planted native cuttings.
- Attended TAG meeting and provided right of entry letters to SWIA.

### **ACTIVITY IMPLEMENTATION FY2008-09**

The following tasks were implemented as part of invasive plant removal program in the Tijuana River Valley Regional Park:

- 07/20/08 TAG Meeting.
- Development and adoption of a "Declaration of Intent".

### **ACTIVITY IMPLEMENTATION FY2009-10**

SANDAG's Transnet Environmental Mitigation Program (EMP) provided funding to SWIA to continue its treatments of the worst invasive plant species at Dairy Mart Ponds and at Hollister Bridge. The targeted invasive plant species included: giant reed (*Arundo donax*), castor bean (*Ricinus communis*) and tamarisk (*Tamarix ramosissima*). These species degrade the habitats they invade by displacing native vegetation, lowering insect food supply for birds, reducing groundwater, and increasing flood and fire hazards. Native recruitment and restoration are included for cleared sites.

During FY09-10 the following tasks were implemented as part of invasive plant removal program in the Tijuana River Valley Regional Park:

- Treated giant reed, castor bean and tamarisk within 86 acres in the Dairy Mart Ponds area;
- Restored 1.5 acres in the Hollister Bridge area;
- County representatives attended the annual TAG meeting; and
- County provided right of entry letters to SWIA.

#### **TMDL APPLICABILITY**

N/A.

#### **TIME SCHEDULE FOR IMPLEMENTATION**

During FY10-11 funding from the US Fish and Wildlife Service's Coastal Programs will be used in the TRVRP to treat invasive plant species within the riparian forests near Hollister Bridge.

The following tasks have been (or will be) implemented relating to the invasives program:

- Treat giant reed, castor bean and tamarisk within 27 acres in the Hollister Bridge area;
- County representatives attended the annual TAG meeting; and
- County provided right of entry letters to SWIA.
- Project completion expected during FY10-11

Further treatments are dependent upon new funding.

#### **PARTICIPATING WATERSHED COPERMITTEES**

- County of San Diego

#### **OTHER PARTICIPATING ENTITIES**

- Southwest Wetlands Interpretive Association,
- U.S. Fish & Wildlife Service,
- California State Parks

#### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Sediment
- Pesticides
- Bacteria

#### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Sediment, pesticides, and bacteria are high priority water quality problems in the Tijuana River WMA. Therefore, this activity is consistent with the collective watershed strategy.

#### **EFFECTIVENESS ASSESSMENT**

Activity effectiveness will be measured by ensuring completion of all project elements (Level 1). Each invasive plant area will be monitored to determine which control methods would be most effective in the TJRV. Although no water quality monitoring is proposed for this project, water quality improvements may be able to be assessed qualitatively based on results from similar projects.

**TITLE: Tijuana River and Estuary Trash and Sediment Characterization Study**  
**ID NUMBER: TJ-018**

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### **ACTIVITY DESCRIPTION**

Trash and sediment deposition in the Tijuana River and Estuary continue to threaten public health, safety, and the environment throughout the Tijuana River Valley. Public contact with trash, waste tires, and other solid wastes, including contaminated soil and sediments, is potentially injurious to human health. Moreover, excessive sedimentation has in recent years contributed to the loss and impairment of valuable estuarine habitat. Past efforts have removed some of the trash and sediment; however, they have been insufficient to address the entire area. The extent of trash and sediment deposition has not been adequately characterized to date and comprehensive alternatives to solve the problem remain elusive.

The objective of this project is to characterize trash and sediment in the Tijuana River and Estuary and to identify comprehensive remediation alternatives for removing existing trash and sediment deposition. The County and City of San Diego are partnering with the San Diego Regional Water Quality Control Board, the California Integrated Waste Management Board (CIWMB), and other stakeholders to complete this study.

As a first step, a consultant was retained to characterize trash and sediment in the Tijuana River and Estuary and to prepare a work plan to identify remediation alternatives for removing existing trash and sediment deposition. The following tasks and deliverables are scheduled to be completed no later than June 15, 2009 at a cost not to exceed \$100,000.

#### Task 1: Inventory of Existing Information and Field Reconnaissance

- Research and review plans and pertinent studies.
- Research topographic maps to determine boundaries of the River and Estuary
- Conduct field investigation and take digital photos of the existing trash and sediment depositions.
- Determine the extent of the existing trash, waste tires, and sediment deposition in the river, estuary, and tributaries.
- Geo-reference location of trash, waste tires, and sediment depositions
- Quantify the depth, width, and length of the trash, waste tires, and sediment deposition.

#### Task 2: Digitize/Compile Existing Information

- Prepare orthophoto base maps with the existing trash, waste tires, and sediment information.
- Import from the County of San Diego GIS database information such as land use classifications, soil groups, and transfer into project database.

#### Task 3: Characterization

- Determine the types and quantities of trash in the deposition. Develop a matrix showing the general types of trash and the disposal methods.
- Determine the amount of sediment in the deposition.
- Determine the amount of recyclable materials that can be recovered from the deposition.
- Determine the amount of waste tires in the deposition.
- Determine the viability of recycling sand.
- Plot percentage of trash versus sedimentation on the base map.

**TITLE: Tijuana River and Estuary Trash and Sediment Characterization Study**  
**ID NUMBER: TJ-018**

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#### Task 4: Analyze Alternatives

- Develop alternatives for removing existing trash, waste tires, and sediment deposition. Consider alternatives that do not require cross-border solutions.
- Consider the following in developing the alternatives:
  - Cost to haul to landfill
  - Temporary or Permanent Transfer Station
  - Segregating recyclables
  - Segregating sand
  - Waste tire recycling and disposal
- Include cost to restore river, tributary, and estuary to natural condition.
- Develop cost estimate for various alternatives.
- Determine the viability of each alternative. Consider unit costs as a factor.

#### Task 5: Report Submittals

- Submit quarterly progress reports and meet with CIWMB/County/City Staff for review and comments.
- Submit Draft and Final Reports with all text, graphs, and GIS maps in both hard copy and electronic formats.

#### **ACTIVITY IMPLEMENTATION FY08-09**

The following activities were implemented in FY08-09:

- Compilation of existing historical aerial photographs for the valley for specific years;
- Review of historical aerial photographs to identify the active channels on the floodplain;
- Completion of a trash survey in the areas east of the plug near Hollister Street, east to the International Border along the main river channel, and along Smuggler's Gulch;
- Preparation of a database with georeferenced information collected during the trash survey;
- Permitting associated with test pits and borings to be completed in the same areas as indicated above;

#### **ACTIVITY IMPLEMENTATION FY09-10**

Implementation of the activity continued during the current reporting period. The following activities were completed in FY09-10:

- Completion of the trash survey from the Plug westward to the shoreline, including Goat and Yogurt Canyon areas
- Excavation of test pits and sampling to identify the presence of chemicals of potential concern (COPCs) in sediment and the presence of trash in the subsurface
- Drilling soil borings and conducting grain-size analyses to identify if the sediment may be suitable for beach replenishment
- Preparation of a GIS database with the results of the trash and sediment sampling program using an ArcReader interface
- Draft report summarizing the results of the trash, waste tire and sediment study.

**TITLE:** Tijuana River and Estuary Trash and Sediment Characterization Study  
**ID NUMBER:** TJ-018

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### **TMDL APPLICABILITY**

There are no TMDLs currently adopted for the Tijuana River or Estuary; however, US EPA has indicated to watershed stakeholders that it is in the initial phases of data gathering for the development of trash and sediment TMDLs. The San Diego Regional Water Control Board (RWQCB) indicates that it will be issuing a draft TMDL for trash for the Tijuana River in early 2011.

### **TIME SCHEDULE FOR IMPLEMENTATION**

Activities to be completed in FY10-11 include the Completed Study Report.

### **PARTICIPATING WATERSHED COPERMITTEES**

- County of San Diego (project/consultant management)
- City of San Diego

### **OTHER PARTICIPATING ENTITIES**

- San Diego Regional Water Quality Control Board
- California Department of Resources Recovery and Recycling (CalRecycle, formerly the California Integrated Waste Management Board; Funding Source)

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Trash
- Sediment

### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The trash and sediment characterization study is consistent with the collective watershed strategy in that it will provide information regarding the location and extent of trash and sediment within the Tijuana River Valley. This will lead to the identification of effective water quality activities to reduce the amount of trash and sediment within the valley.

### **EXPECTED BENEFITS**

This activity is an important step toward the ultimate goal of improving public and environmental health in the Tijuana River Valley. The direct benefits of this activity will be a better understanding of the types, quantities, and locations of trash and sediment in the River Valley. It will also identify and evaluate various alternatives for removing existing waste, preventing future waste transport, and restoring the watershed to a more natural condition.

### **EFFECTIVENESS ASSESSMENT**

Characterization of the location and extent of trash and sediment will provide the basis for load reduction activities. Future activities will be evaluated through the amount of trash and sediment removed from the system.

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**TITLE:** City of San Diego Strategic Plan Implementation  
**ID NUMBER:** TJ-019

### **ACTIVITY IMPLEMENTATION**

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

During this reporting period, the City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. After the reporting period, SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.

The Outdoor Water Conservation Rebate Program involved launching a city wide rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted. Specific residential and commercial locations will be monitored to assess the efficiency of the program in reducing runoff volume and pollutant loads. Water quantity monitoring (runoff volume) will be conducted both at the pre and post irrigation modification stage. The rebate program is scheduled to be implemented in FY11.

In addition, the City is of the opinion the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

**Table 1 – Conceptual Projects**

<b>Activity Description</b>	<b>Activity Type Classification</b>	<b>Type</b>	<b>Class</b>	<b>Primary Target Pollutant</b>	<b>Status</b>
Outdoor Water Conservation Rebate Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning, Implementation and assessment is anticipated to be completed in FY2013. WMA: TBD.
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Commercial Pest Control	Product Sub	Education	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Education	Non-Structural	Pesticides	In progress through JURMP

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
					education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity	Pre-planning
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Hydromodification BMP (1)	Hydromod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (2)	Hydromod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Hydromodification BMP (3)	Hydromod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP education program.
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides	Pre-planning
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

### **TIME SCHEDULE FOR IMPLEMENTATION**

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

### **OTHER PARTICIPATING ENTITIES**

- None

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies.

## **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP Annual Report.

## **EFFECTIVENESS ASSESSMENT**

**Watershed: Tijuana River**

### **CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION**

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

**TITLE: Pet Waste Bag Dispenser Program**  
**ID NUMBER: TJ-020**

**ACTIVITY IMPLEMENTATION**

The purpose of the activity is to assess the effectiveness of installing pet waste stations at municipal and mixed-use locations. When pet waste bags are available, pet owners are more apt to pick up pet wastes and dispose of it properly, thereby eliminating pollutants from the environment and potentially from receiving waters. The assessment focused on evaluating the installation of pet waste stations as a best management practice (BMP) in reducing pollutant loading in correlation with the number of bags deployed. The project includes site evaluations and selections, the installation of pet waste bag dispensers and all-in-one pet stations (dispenser and trash receptacle), pre- and post- site observations for the effectiveness assessments.

Watershed maps were developed and utilized to assist in the selection of appropriate municipal and mixed-use locations. Criteria used to identify the sites included:

- a) Canine related activity, e.g. dogs being walked
- b) Cleanliness (observed pet waste)
- c) Trash receptacles present
- d) Pet Waste receptacles present
- e) Degree of pet waste observed
- f) Potential for vandalism

Additionally, the City used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the Tijuana River watershed management area (WMA).

Two sites within the Tijuana River WMA were selected: the Coral Gate Neighborhood Park and the Howard Lane Neighborhood Park. During the initial assessments for site selection, a high degree (more than 20 piles) of pet waste was observed at the Coral Gate Neighborhood Park; a moderate degree (between 10 and 20 piles) of pet waste was observed at the Howard Lane Neighborhood Park.

Two All-in-One Pet Stations (bag dispenser, trash receptacle and sign), were installed at both ends of Coral Gate Neighborhood Park. Three Dogipot pet waste stations (bag dispenser and sign), were installed at the Howard Lane Neighborhood Park: one at the entrance to the park and along the walking trail, another by the gazebos near the walking trail.



**All-in-One Pet Waste Station at Coral Gate Community Park**



**Pet Waste Bag Dispenser and Sign at Howard Lane Community Park**



**Sign**



### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL

### **TIME SCHEDULE FOR IMPLEMENTATION**

Project planning and design started in FY 2009. Installation of the pet waste bag dispensers and the effectiveness assessment concluded during FY 2010. Dispensers will be maintained by the Park and Recreation Department.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

### **OTHER PARTICIPATING ENTITIES**

- None

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria as high priority water quality problems and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing exposed pet waste carrying bacteria.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Tijuana River</b>			
<b>PET WASTE BAG DISPENSER PROGRAM</b>			
<b>Assess the Effectiveness of Pet Waste Bag Dispensers</b>			
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• Does the implementation of dog waste bag dispenser stations help reduce bacteria?</li> <li>• What is the estimated load reduction efficiency of implementing dog waste bag dispenser stations?</li> <li>• Can the number of pet waste bags dispensed be related to a reduction in bacteria in run-off from the park?</li> </ul>		
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Number of pet waste bags distributed</li> <li>• Reduction in bacteria in run-off from the park</li> </ul>		
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)</li> <li>• Quantification (e.g., use number of pet waste disposal bags and their average weight to calculate estimated load reduction)</li> <li>• Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials, amount of money spent on pet waste disposal bags)</li> </ul>		
<b>Recommended Data</b>	<ul style="list-style-type: none"> <li>• Change (%) in load reduction pre and post implementation (Outcome Level 4)</li> <li>• How much money spent on implementation and maintenance</li> <li>• Dataset of load contributions for specific activities (Outcome Level 4)</li> <li>• Change in use of pet waste disposal bags (Outcome Level 3)</li> </ul>		
<b>Data Recorded</b>		Coral Gate Neighborhood Park	Howard Lane Neighborhood Park
	Weekly average of waste piles observed prior to installation	21.3	15
	Weekly average of waste piles observed after installation	15.7	10.7
	Weekly average number of bags dispensed	62	147
	Average Weekly waste pile reduction	5.6	4.3
	Percent waste reduction	26.6%	29%
	Ratio of bags dispensed to pet waste piles removed	11.1	34.2

**Objectives**

The goal of this assessment is to determine the effectiveness and efficiency of installing pet waste bag dispensers to reduce bacteria loading and improve water quality.

## **Analysis and Results**

Observations and pet waste pile counts were conducted for a total of six weeks. For three weeks prior to the installation of the pet waste bag dispensers, weekly observations and cleaning were conducted to assess the conditions at each site. Prior to the installation of the pet waste bag dispensers a weekly average of 21.3 piles and 15 piles were observed at the Coral Gate Neighborhood Park and Howard Lane Neighborhood Park, respectively. After the installation of the pet waste bag dispensers, a weekly average of 15.7 piles and 10.7 piles were observed at the Coral Gate Neighborhood Park and Howard Lane Neighborhood Park, respectively.

The observations show an average weekly reduction of 5.6 piles and 4.3 piles Coral Gate Neighborhood Park and Howard Lane Neighborhood Park, respectively. The average weekly reduction was calculated by subtracting the pre-installation average count of observed waste and the post-installation average count of observed waste. This translates to 26.6% and a 29% reduction in the amount of pet waste piles observed. Additionally, the weekly average number of bags dispensed was 62 and 147 at the Coral Gate Neighborhood Park and Howard Lane Neighborhood Park, respectively.

## **Conclusions**

A review of the collected data revealed that the installation of the pet waste stations contributed to the reduction of pet waste piles within the study area. The average number of bags dispensed weekly at the Coral Gate Neighborhood Park and Howard Lane Neighborhood Park corresponds to an estimated removal of 12.6 pounds and 29.8 pounds of pet waste per week, respectively<sup>1</sup>.

Overall, this activity demonstrated that there are positive, measureable pollutant load reductions due to the installation of pet waste bag dispensers.

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<sup>1</sup> Welker, S. 2004. Dog Waste Tracking Project. San Elijo Lagoon Ecological Reserve.

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**TITLE: Tijuana River Gross Solids and Sediment BMPs Design**  
**ID NUMBER: TJ-022**

**ACTIVITY IMPLEMENTATION**

This activity is the design and construction of trash and sediment storm water Best Management Practices (BMPs) to reduce the volume of sediments and gross solids which are transported to the Tijuana River's main channel and the Tijuana River Estuary during storm events.

Initial efforts for this activity began in February 2009 at which time URS was contracted under a Storm Water As-Needed Engineering Contract. URS has been engaged under Task Order 8 to prepare 15% concept designs for these projects. Potential projects types were screened and alternative project cost estimates were developed for suitable sites and technologies using technical literature review; existing available hydrology and hydrological studies and gross estimates of loading. This exercise yielded initial estimates of the required scale and sizing of the trash and sediment facilities that would be necessary to handle the anticipated loads. A basis of design technical memorandum dated October 5, 2009 was prepared summarizing an order-of-magnitude cost estimates and scheduling for the design, permitting and construction of the BMPs.

The City has received a \$700,000 State Water Resources Control Board Clean Up and Abatement (CAA) Fund Grant which will fund the completion of the trash and sediment characterization studies which were begun in 2008 by URS. This grant will fund and provide a protocol for more specific studies and reports to include hydrology and hydraulic studies, LiDAR data acquisition, sediment and trash loading studies of the Tijuana River. These studies will also be used as a basis for a planning effort to develop a general land use strategy by the stakeholders and agencies in the lower Tijuana River Valley. Also included in this grant is funding for a trash removal effort during or after the winter of 2010- 2011. It is anticipated that the trash removal effort can be conducted in collaboration with a community-based non-profit organization so as to include an educational and outreach component.

Additionally, URS was contracted to conduct studies of the excavated sediments and gross solids generated maintenance activities in the Pilot Channel and Smugglers Gulch during the winter of 2009 – 2010. This study was conducted concurrently with a Land Use Options study for the Nelson Sloan Quarry in the Tijuana River Valley. Grants are currently being secured to complete studies, plan and permits reviews for the deposition of sediment in the Nelson Sloan Quarry in the Tijuana River Valley. This grant will fund the review of the suitability, and augment where possible, existing permits, documentation and reclamation plans for the deposition of excavated sediments from the channels as a result of maintenance activities in the lower valley. The principal participants in this activity may seek the necessary permits to reclaim the quarry using these sediments after a Substantial Conformance Review by the City of San Diego Development Services is completed.

Funding continues to be sought by the City of San Diego for efforts to develop more specific designs, cost estimates, and environmental studies to support the installation, operations and maintenance of a trash interception infrastructure. It is anticipated that as funding can be secured in FY 2011 then the design of these facilities could begin in FY 2012 with construction in FY 2013. The initial facilities would then be operational by winter of 2014..

### **TMDL APPLICABILITY**

- None

### **TIME SCHEDULE FOR IMPLEMENTATION**

At this time, schedules are estimated and are based on the availability of funding for the remainder of the project. Schedules developed from the concept design estimated the following implementation schedule:

- 10% design (concepts) alternatives which will include design specific sizing, siting, hydrology and hydrology studies, stream bed profile and initial design drawings shall be developed by summer of 2012.
- 30% design of selected alternative which will include the initial design drawings shall be developed by fall of 2012.
- Future design phases of the project including 60% design, 100% design, environmental documentation and permit process are slated to begin in summer mid 2013.
- Award of construction contracts and construction activities would commence in early 2014; and the initial facilities would be operational by winter of 2014 - 2015.
- Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing storm water volume and trash and sediment loading including trash characterization. This shall include data from ongoing trash characterization studies, lower valley sedimentation and ongoing environmental assessment at the TRNERR.

### **PARTICIPATING WATERSHED COPERMITTEES**

- County of San Diego
- City of San Diego

### **OTHER PARTICIPATING ENTITIES**

- California State Parks

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Gross pollutants (Trash)
- Sediment

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Both the City’s *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River Watershed Management Area (WMA) identify gross pollutants (trash) and sediment as high priority water quality problems in the Tijuana River WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing the volume of trash and sediment in the stream via siltation basins and trash interceptor devices.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Tijuana River</b>	
<b>TIJUANA RIVER GROSS SOLIDS AND SEDIMENT BMPs</b>	
<b>Assess the Efficiency and Effectiveness Trash &amp; Sediment BMPs</b>	
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What is the load reduction efficiency due to implementation of these BMPs?</li> <li>• How effective are the Trash BMPs and Siltation basins at reducing loads of priority pollutants?</li> <li>• What are the operation and maintenance costs associated with these facilities?</li> <li>• Does the implementation of the trash sediment result in a detectible receiving water quality improvement?</li> <li>• Where are the most cost effective location and methods to dispose or reuse of trash and sediments</li> </ul>
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Change (%) in load reduction pre and post-implementation (Outcome Level 4)</li> <li>• Receiving water quality improvement</li> <li>• Stream bed and sediment stabilization of improvement</li> <li>• Valley wide stream assessment to ensure that there a no unanticipated adverse effects to sediment reduction or streambed/stream flow alternation.</li> <li>• Cost of operation and maintenance.</li> </ul>
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Inspections (e.g., ensure the infiltration is working as designed)</li> <li>• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)</li> <li>• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)</li> <li>• Tabulation (e.g., amount of funding required for implementation and maintenance, revenues and outlays for reclaiming or reusing materials recovered, amount of money spent on educational materials)</li> <li>• Reporting (e.g., estimates of load reduction from 3rd party data)</li> <li>• Costs for operations and maintenance vs. estimated for other load</li> </ul>

	reduction alternatives such as source mitigation.
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**Objectives**

The goal of the analysis is to determine the load reduction efficiency of the Trash and Sediment Best Management Practice (BMP) facilities.

**Analysis and Results**

After construction and initiation, data shall be collected from the trash and sediment BMP facilities on an ongoing basis as part of operations. These data shall be analyzed to determine BMP facility efficiency and summarized in periodic reports.

**Conclusions**

Anticipated future monitoring will be conducted to assess pollutant removal efficiencies.



**TITLE:** Tijuana River Watershed Brochure  
**ID NUMBER:** TJ-023

### **ACTIVITY IMPLEMENTATION**

In FY 2010, the City of San Diego (City) and *Think Blue* will implement a new brochure program in two (2) of the watershed management areas (WMAs) assigned to the City. The Tijuana River Watershed brochure will be used to inform San Diego residents about the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. The brochures will also be used to promote watershed stewardship by making citizens aware of specific pollutants within each watershed, and ways individual action can be used to protect each water body.

The main goals of the brochures are to improve the public's understanding of basic watershed principals, address the high priority water quality problems in each WMA, educate about best management practices (BMPs), and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs had a watershed specific brochure created:

- Tijuana River
- San Diego River

### **TMDL APPLICABILITY**

Brochures will target pollutants associated with TMDLs as applicable.

### **TIME SCHEDULE FOR IMPLEMENTATION**

Project planning began in FY 2009 and continued into FY 2010. Implementation and initial distribution occurred in late FY 2010.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

### **OTHER PARTICIPATING ENTITIES**

- None

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Trace Metals
- Pesticides
- Gross Pollutants
- Sediments, TSS, Turbidity

## **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Watershed Management Areas.

## **EFFECTIVENESS ASSESSMENT**

### **Objectives**

Effectiveness Assessment will take place in FY2011. The goal of assessment will be to determine the effectiveness of the watershed brochure in increasing knowledge and awareness, and whether the brochure will encourage positive behavioral changes that will reduce bacteria and gross pollutants in the watershed. The City is planning a feedback assessment activity which will include gathering feedback from target audiences via a feedback card. The card will be available at the Think Blue booth during various community events that take place in or near the watershed. Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. Within 3 months, those that provided contact information will be contacted and asked a series of follow-up questions to determine if the brochure has a lasting impact.

### **Analysis and Results**

Effectiveness assessment results of this activity are not available at this time because the assessment will be occurring in FY2011.

### **Conclusions**

The City plans to continue to implement the brochure program in FY 2011. Effectiveness assessments will be conducted in FY 2011. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

**TITLE: Smuggler's Gulch, Pilot Channel & Northern Channel Sediment and Debris Removal**  
**ID NUMBER: TJ-025**

### **ACTIVITY IMPLEMENTATION**

On September 23, 2009, the City of San Diego Council declared a State of Emergency in the Tijuana River Valley due to the potential for severe flooding pursuant to Resolution Number R-30526. Re-establishment of the channel profiles to reduce the risk of flooding in these flood control facilities was deemed necessary because of the additional sediment deposition from the Tactical Infrastructure Border project, and because of the flood which occurred in late November 2008. In FY 2010, the City excavated and removed sediment and trash, including tires, within two flood control facilities known as Smuggler's Gulch and the Tijuana River Pilot Channel pursuant to Emergency Coastal Development Permit No. 194684, County of San Diego's Regional General Permit 53, US Army Corp of Engineers Permit SPL 2009-00719-TCD, and Regional Water Quality Control Board 401 Water Quality Certification 09C-077.

Permitted maintenance included approximately 1,600 linear feet running north of the Monument Road toward the confluence and approximately 5,400 feet of Tijuana River Pilot Channel west of the Erodible Berm and Hollister Street Bridge toward the Tijuana River Estuary. Approximate excavation depths range from 12 feet in Smuggler's Gulch and five feet in the Pilot Channel. The 5,000 square-foot gabion rock mattress, that was originally constructed in 1998, was exposed approximately 13-feet below the accumulated sediment, trash and debris at the confluence.

Approximately 30,000 cubic yards of sediment was removed from the flood control facilities and as much as 1,000 tons of trash and over 5,000 tires. Vegetation was separated from the sediment and disposed separately from the spoils. Tires have been removed and will be disposed of by a certified tire disposal and recycling contractor. Sediment impacted less by trash deposition shall be temporarily stored within approved staging area locations.

The sediment removal project is necessary 1) to return the drainage facility to a condition where adjacent property is not threatened by flooding, 2) storm water flows convey properly to the main channel, and 3) channel profiles and conditions are restored to reduce the potential for sediment and debris to accumulate and thereby increase the potential of flooding.

### **TMDL APPLICABILITY**

- N/A

### **TIME SCHEDULE FOR IMPLEMENTATION**

During the FY 2010, sediment and debris was removed along the Smuggler's Gulch. Approximately 30,000 cubic yards of material including sediment, vegetation, tires and trash were removed and is being temporarily stockpiled until an appropriate disposal site can accept the excavated material. Excavation and removal of sediment and trash is underway for FY 2011.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

### **OTHER PARTICIPATING ENTITIES**

- California Department of Fish and Game
- California State Parks
- County of San Diego

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Sediment
- Gross Pollutants (Trash)

### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River Watershed Management Area (WMA) identify sediment and trash as high priority water quality problems and recommends implementing load reduction/source abatement activities to address them. This activity results in a direct load reduction of these pollutants.

### **EFFECTIVENESS ASSESSMENT**

This activity will be assessed based on the amount and type of sediment and debris removed.

**TITLE: WILDCOAST Spring Clean-up Event, June 2010**  
**ID NUMBER: TJ-026**

**ACTIVITY DESCRIPTION**

The County of San Diego's Watershed Protection Program (Department of Public Works) sponsored a clean-up event coordinated by WILDCOAST. The event was held in conjunction with the County of San Diego Parks and Recreation Department Trails Day Activities and included picking up trash and debris along the Effie May Trail which is located in the Tijuana River Valley Park. Trash and debris will be weighed to determine total amounts removed. Trash removal services will be donated by Allied Waste Services.

**FY 09-10 ACTIVITY IMPLEMENTATION**

The event occurred on June 5, 2010. Sixty people attended the event and collected 1,000 pounds of trash. A total of 100 tires were also removed from the river valley.

**TMDL APPLICABILITY**

This activity is not specifically implemented in compliance with a TMDL.

**TIME SCHEDULE FOR IMPLEMENTATION**

This project was completed during FY 09-10. No further activity is currently planned.

**PARTICIPATING WATERSHED COPERMITTEES**

- County of San Diego
- City of San Diego
- City of Imperial Beach

**OTHER PARTICIPATING ENTITIES**

The following groups provided sponsorships, donated services or participated in the clean-up.

- WILDCOAST
- Allied Waste Services
- Tijuana Citizens Council
- REI
- Surfrider Foundation
- Tijuana – Calidad de Vida
- AlterTERRA
- Lazaro Cardenas High School students (from Tijuana, Mexico)
- San Diego-Imperial council Boy Scout Troop 2001

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Trash

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

This activity supports the following principles that have been established to guide the selection and implementation of watershed activities as part of the Tijuana River Watershed WURMP:

Taylor activities implemented as part of the Tijuana River Copermittees' Jurisdictional Urban Runoff Management Programs (JURMPs), Watershed Urban Runoff Programs (WURMPS) and the Regional Copermittees' Regional Urban Runoff Management Program (RUMP) to the extent possible to address the watershed's priority water quality problems.

**EFFECTIVENESS MEASUREMENTS**

Activity effectiveness was measured by weighing the amounts of trash collected during the event (Level 4). All project elements were completed during FY 09-10.

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**TITLE: Tijuana River Action Month**  
**ID NUMBER: TJ-027**

### **ACTIVITY DESCRIPTION**

The Tijuana River Copermittees, the Cities of San Diego and Imperial Beach and the County of San Diego, will collaborate on a series of clean-up and education events in the Tijuana River Valley during the months of September and October 2010. The September 25<sup>th</sup> clean-up will be included as one of many events included as part of the International Coastal Clean-up Event hosted by I love a Clean San Diego. The October events are being coordinated by WiLDCOAST and will consist of four clean-ups at different locations within the river valley and one clean-up in an adjacent canyon in Mexico that drains to the valley. Each cleanup will be co-hosted by a different organization along with WiLDCOAST. Trash and debris will be weighed to determine total amounts removed. Trash removal services will be donated by Allied Waste Services and Tire Removal Activities will be funded by the County and City of San Diego through grants awarded through CalRecycle.

### **FY 09-10 ACTIVITY IMPLEMENTATION**

The County's Recycling Section applied for the CalRecycle grant funding for this project in December 2009. CalRecycle informed the County that grant would be funded in April. On June 11, 2010, County staff from the Recycling section and Watershed program met with WildCoast staff to discuss the project. The grant was funded for the full amount of \$35,868 in June 2010 with the grant term beginning July 1, 2010. All grant activities must be completed by June 30, 2011.

### **TMDL APPLICABILITY**

This activity is not specifically implemented in compliance with a TMDL.

### **TIME SCHEDULE FOR IMPLEMENTATION**

- Grant application: December 2009
- Planning: June 11, 2010, through October 2010.
- Clean-ups: September 2010 through October 2010.

### **PARTICIPATING WATERSHED COPERMITTEES**

- County of San Diego
- City of San Diego
- City of Imperial Beach

### **OTHER PARTICIPATING ENTITIES**

The following groups provided sponsorships, donated services or participated in the clean-up:

- I Love a Clean San Diego
- TRNERR/State Parks
- Allied Waste Services
- REI
- San Diego Surfrider
- Tijuana Calidad de Vida
- San Diego Coastkeeper
- Job Corps
- Outside the Lens
- WiLDCOAST

## **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Trash

## **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

This activity supports the following principles that have been established to guide the selection and implementation of watershed activities as part of the Tijuana River Watershed WURMP:

Tailor activities implemented as part of the Tijuana River Copermittees' Jurisdictional Urban Runoff Management Programs (JURMPs), Watershed Urban Runoff Programs (WURMPS) and the Regional Copermittees' Regional Urban Runoff Management Program (RUMP) to the extent possible to address the watershed's priority water quality problems.

## **EFFECTIVENESS MEASUREMENTS**

Activity effectiveness will be measured by weighing the amounts of trash collected during the individual events (Level 4).



**TITLE: Xeriscaping of Municipal Facilities**  
**ID NUMBER: TJ – 028**

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### **ACTIVITY IMPLEMENTATION**

Imperial Beach partnered with California American Water Company to replace landscaping at municipal facilities with drought tolerant plants. The City identified landscapes at City Hall and at the Marina Vista Center as potential locations for xeriscaping projects. Existing vegetation at these locations consist of grass, shrubs, birds of paradise, and other non-native pants that require significant maintenance and watering. Replacing the existing landscapes with native and drought tolerant plants will result in the reduction of fertilizers and irrigation.

In 2009 the City received a grant from California American Water and moved forward with the first xeriscaping project at City Hall. The City hired an architect for the initial design of the project. The implementation of the project was taken on as an Eagle Scout Project for Boy Scout Troop 53, North Park with preparation work and oversight provided by the Public Works Department. Xeriscaping at City Hall was completed in February 2010.

The successful collaboration and completion of the City Hall site contributed to a second grant from California American Water for the xeriscape project at the Marina Vista Center. This second xeriscape project is scheduled to be complete during next reporting period with help again from Boy Scout Troup 53, North Park.

### **TMDL APPLICABILITY**

This activity is not specifically targeted for TMDLs in the Tijuana WMA.

### **TIME SCHEDULE FOR IMPLEMENTATION**

Xeriscaping at City Hall was completed in February 2010 and xeriscaping at the Marina Vista is currently being designed and scheduled to be complete for the next reporting period. Additional xeriscape projects may be considered in the future as grant funds become available.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of Imperial Beach

### **OTHER PARTICIPATING ENTITIES**

- Boy Scouts of America
- California American Water Company

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Nutrients

## **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Bacteria and nutrients are identified as a priority water quality problem in the Tijuana WMA. Through less watering and less fertilizing, this project will help reduce the amount of nutrients and irrigation runoff in the MS4 and the watershed. Since this activity addresses priority water quality problems and a priority source, it is consistent with the collective watershed strategy.

## **EXPECTED BENEFITS**

Expected benefits of xeriscaping include compliance with permit requirements, a reduction in irrigation runoff and contribution of nutrients in the watershed. This activity serves as a water quality activity but also indirectly contributes to education because the projects set an example of preferred landscapes in the community. Less runoff from irrigation will reduce pollutants in the watershed and the presence of attractive native plant displays at City facilities will show the public that these displays are a viable and attractive alternative to traditional landscaping.

## **EFFECTIVENESS MEASUREMENTS**

The effectiveness of this project meets the requirements of Outcome Level 1, Level 2, and Level 4 compliance with activity based permit requirements. Xeriscaping raises awareness of the connectivity of water saving landscape to urban runoff, storm drain systems, and receiving waters.

<b>Outcome Type</b>	<b>Potential Assessment Measures and Methods</b>
Level 1: Compliance with Activity-based Permit Requirements.	This project was implemented in February 2010 by Eagle Scouts under the supervision of Public Works Director Hank Levien.
Level 2: Changes in Knowledge / Awareness.	Knowledge of water quality issues and the effects of irrigation were increased as a result of this project. Citizens and staff alike were shown through example that native plants can provide an attractive alternative to similar landscaping and reduce urban runoff.
Level 3: Behavioral Change / BMP Implementation.	The City was able to further reduce irrigation by replacing 6,500 square feet of landscape with drought tolerant plants.
Level 4: Load Reductions.	Drip irrigation was installed and reduced irrigation for City Hall by 42 percent. This will reduce pollutant load to the MS4 by reductions in irrigation and nutrients.

**TITLE: Fiesta Del Rio Event**  
**ID NUMBER: TJ-029**

**ACTIVITY IMPLEMENTATION**

In FY 2009, the City of San Diego (City) and *Think Blue* became a sponsor of the annual Fiesta Del Rio event in the Tijuana River Watershed Management Area (WMA). The Fiesta del Río event is designed to raise awareness about the environment of the San Diego/Northern Baja region surrounding the Tijuana River Estuary, and steps the public (especially families with children) can take to help protect this fragile ecosystem and the surrounding area.

The Think Blue sponsorship included staffing a booth to provide the opportunity to educate the public about preserving the local environment, promote stewardship the Tijuana River Estuary, and encourage proactive steps in preventing pollution from entering the storm drain system. Think Blue staff offered free BMP related giveaway items to the public in exchange for their participation in a survey designed to assess their knowledge and attitudes towards storm water pollution and steps they would be willing to take to help reduce pollution of local waterways in the future.

**TMDL APPLICABILITY**

Event attendance will target pollutants associated with TMDLs as applicable.

**TIME SCHEDULE FOR IMPLEMENTATION**

Think Blue participation at the Fiesta Del Rio event began in FY 2009. Think Blue attended in FY 2010 and is anticipated to continue subsequent years the event takes place.

**PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- None

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Trace Metals
- Pesticides
- Gross Pollutants
- Sediments, TSS, Turbidity

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River Watershed Management Area.

## **EFFECTIVENESS ASSESSMENT**

### **Objectives**

The goal of this activity is increasing knowledge and awareness in the residents and visitors in the Tijuana River Watershed in order create positive behavioral change that will reduce the presence of bacteria and gross pollutants in nearby waterbodies. Effectiveness Assessment will be ongoing as Think Blue gathers more data from the event.

### **Analysis and Results**

Effectiveness assessment results of this activity are scheduled for FY 2011 in order to have a statistically significant sample size and provide an opportunity to note any behavioral changes over a longer period of time.

### **Conclusions**

The City plans to continue to sponsor and staff the Fiesta Del Rio event. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

**TITLE:** Beyer Boulevard Trash Segregation Best Management Practice (BMP) Installation  
**ID NUMBER:** TJ-030

**ACTIVITY IMPLEMENTATION**

This project will involve the installation of catch basin inserts along Beyer Boulevard (situated East of Highway 5) in the Tijuana River Watershed Management Area (WMA.) The catch basin inserts would be installed directly in the existing curb inlets. The Beyer Boulevard site location will include the implementation of storm drain catch basin inserts as retrofits within the existing storm drain system.

It is anticipated that accumulation of such pollutants at the mouth of inlets will facilitate their collection by the City of San Diego (City) crews using street sweepers. The City will study the effectiveness (in terms of load reduction) and the efficiency (in terms of load reduction divided by cost) of such devices in improving discharge and water quality impaired by bacteria, both in absolute terms and relative to other potential activities.

**TMDL APPLICABILITY**

- N/A

**TIME SCHEDULE FOR IMPLEMENTATION**

This project is part of a Storm Drain Inlet Inserts Pilot Project that initiated planning in FY 2008. The City of San Diego issued a Request for Proposals (RFP) from interested vendors and advertised the project as a pilot at no cost to the City. Interested vendors submitted their proposals in July 2010 and the City conducted a selection process to evaluate the submitted proposal. Based on the selection panel recommendation, vendor product(s) that met the performance standards and requirements of the RFP have been awarded. The catch basin inlets will be retrofitted with the selected drainage inserts within the next month or so and the first phase of monitoring will begin immediately after installation.

**PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- None

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Gross Pollutants (Trash)

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Both the City’s *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria and gross pollutants as high priority water quality problem in the WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address bacteria via the facilitation of trash and debris removal.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Tijuana River</b>	
<b>BEYER BOULEVARD TRASH SEGREGATION BMP INSTALLATION</b>	
<b>Assess the Efficiency and Effectiveness of Catch Basin Inserts</b>	
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What is the load reduction efficiency of the catch basin inserts?</li> <li>• How effective are these catch basin inserts at reducing loads of priority pollutants?</li> <li>• Does the implementation of catch basin inserts result in a detectible receiving water quality improvement?</li> </ul>
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Reduction in priority pollutant loads</li> <li>• Receiving water quality improvement</li> </ul>
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Inspections (e.g., ensure the catch basin inserts are working as designed)</li> <li>• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)</li> <li>• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)</li> <li>• Tabulation (e.g., amount of money spent on implementation and maintenance)</li> <li>• Reporting (e.g., estimates of load reduction from 3<sup>rd</sup> party data)</li> </ul>
<b>Recommended Data</b>	<ul style="list-style-type: none"> <li>• Number of inspections (Outcome Level 1)</li> <li>• Change (%) in bacteria load reduction pre and post-implementation (Outcome Level 4)</li> <li>• How much money spent on inspections and maintenance (Outcome Level 1)</li> </ul>

**Objectives**

The goal of this assessment is to determine the effectiveness and efficiency of the catch basin installations along Beyer Boulevard (East of Highway 5) in the curb inlets to remove trash and debris and improve water quality. It is anticipated that the pollutants will be collected at the mouth of inlets by City crews using street sweepers.

**Analysis and Results**

Once the installation and monitoring are completed, additional assessment will be completed to determine the effectiveness of this activity. The City will conduct pre and post project monitoring to evaluate the effectiveness of the drainage insert selected in load reduction and effluent quality.

**Conclusions**

Anticipated future monitoring will be conducted to assess pollutant removal deficiencies.

**TITLE: Sweeper Speed Efficiency Study**  
**ID NUMBER: TJ-031**

### **ACTIVITY IMPLEMENTATION**

During FY 2010, the City of San Diego (City) began planning a sweeper speed efficiency pilot study for implementation in FY 2011. The Sweeper Speed Efficiency Study will focus on assessing the speed efficiency of the City's mechanical street sweepers to determine whether the amount of debris collected is dependent on the variation in speed of the sweeper. The City's typical street sweeper operational speed is between 6-12 miles per hour. Reduced street sweeper speed is defined as 3-6 miles per hour based on manufacturer recommendations. During project planning, a commercial route along Beyer Boulevard in the Tijuana River WMA was selected for this study based on a number of criteria.

The goals of the Sweeper Speed Efficiency Study are to:

- assess the benefit of maximizing the level of debris removed versus operating the street sweeping equipment at the reduced operating speed;
- assess the benefit of maximizing the volume of metals removed versus operating the street sweeping equipment at the reduced operating speed;
- assess the relative level of load reduction potential for street sweepers at various speeds; and
- determine the relative cost efficiency of limiting the speed of street sweepers to reduced operating speed.

The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach providing a phased approach. The Sweeper Speed Efficiency Study will be piloted first to determine whether reducing sweeper speeds improves the effectiveness of street sweeping activities before being considered for broad scale implementation.

### **TMDL APPLICABILITY**

- None

### **TIME SCHEDULE FOR IMPLEMENTATION**

Project planning took place in FY 2010. Implementation and assessment will commence in FY 2011.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- None

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Both the City’s *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria as a high priority water quality problem, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity addresses bacteria by removing trash and debris, which contains bacteria, from City roadways.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Tijuana River</b>	
<b>SWEEPER SPEED EFFICIENCY STUDY</b>	
<b>Assess Effectiveness of Reduced Sweeper Speed on Debris and Metals Removal</b>	
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What is the benefit of maximizing the level of debris removed versus operating the street sweeping equipment at the reduced operating speed?</li> <li>• What is the benefit of maximizing the volume of metals removed versus operating the street sweeping equipment at the reduced operating speed?</li> <li>• What is the relative level of load reduction potential for street sweepers at various speeds?</li> <li>• What is the relative cost efficiency of limiting the speed of street sweepers to reduced operating speed?</li> </ul>
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Achieve load reduction for metals based on monitoring information</li> </ul>
<b>Assessment Methods</b>	<ul style="list-style-type: none"> <li>• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff)</li> <li>• Tabulation (e.g., amount of money to post additional signage and sweep medians)</li> <li>• Quantification (e.g., load estimate comparison pre and post-signage)</li> </ul>
<b>Recommended Data</b>	<ul style="list-style-type: none"> <li>• Total pounds of debris removed (Outcome Level 4)</li> <li>• Total broom miles swept (Outcome Level 4)</li> <li>• Cost of sweeper repairs/maintenance (Outcome Level 1)</li> <li>• Total pounds of debris removed by land use (Outcome Level 4)</li> <li>• Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4)</li> <li>• Post-sweeping COC concentrations in runoff (Outcome Level 4)</li> </ul>

**Objectives**



The goal of the assessment will be to determine the optimal speed to operate City mechanical sweepers to maximize debris and metals removal.

### **Analysis and Results**

An effectiveness assessment of this activity is not possible at this time as project planning and coordination will continue into FY 2011. Implementation is anticipated to occur during the first half of FY 2011, with final assessment and conclusion being prepared in the latter half of FY 2011.

### **Conclusions**

Effectiveness and efficiency will be determined by comparing load reduction values (determined via debris monitoring efforts) at varying operational speeds. Conclusions will be made after assessment is complete in FY 2011.

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**TITLE: Residential Rain Barrel Subsidies & Distribution**  
**ID NUMBER: TJ-032**

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### **ACTIVITY DESCRIPTION**

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this regional activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate.

Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

### **ACTIVITY IMPLEMENTATION FY09-10**

Activity during FY09-10 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 10-11. In addition, the County used an existing website to provide more information to the public ([www.rethinkwateruse.org](http://www.rethinkwateruse.org)).

### **TMDL APPLICABILITY**

This activity was not specifically implemented in compliance with a TMDL.

### **TIME SCHEDULE FOR IMPLEMENTATION**

Planning for this activity occurred during FY09-10. The events are scheduled to occur during FY10-11. Depending upon the success of the initial events, additional events will be considered for implementation during FY11-12 and FY12-13.

### **PARTICIPATING WATERSHED COPERMITTEES**

- County of San Diego

### **OTHER PARTICIPATING ENTITIES**

- N/A

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- All

### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

### **EFFECTIVENESS MEASUREMENTS**

Level 1 Outcomes were achieved through the number of rain barrels sold to individuals living in the County and through the signing of rain barrel maintenance agreements.

**TITLE: Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials**  
**ID #: TJ-033**

**ACTIVITY IMPLEMENTATION**

Metals, which includes copper, has been found to be a High Priority Water Quality problem in watersheds in San Diego County. Previous City of San Diego (City) investigations determined copper from automotive brake pads was a major contributor of dissolved copper to our waterbodies. Because the regulation of automotive brake pads is beyond the authority of any local government, the City collaborated with other California local governments, through California Storm Water Quality Association, to achieve true source control by reducing copper at its source. It was determined the best way to achieve this goal was through the development of legislation, mandating reductions and then replacement of copper in automotive brake pads.

During this reporting period, the City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. After the reporting period, SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.

**TMDL APPLICABILITY**

- None

**TIME SCHEDULE FOR IMPLEMENTATION**

SB346 calls for reductions of copper down to 5% by weight by 2021 and 0.05% by 2025. It is anticipated that copper loads from automotive brake pads will decline after the first reduction date in 2021. This is a long-term action and other BMPs will need to be implemented to comply with the 80% reduction of by 2018.

**PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

## **OTHER PARTICIPATING ENTITIES**

- CASQA - assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage.
- Coalition for Practical Regulation - assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage.
- Alameda County - provided financial resources for experts to assist with the bill's development, and provided lobbyist assistance to obtain political support for the bill's passage.
- Contra Costa County - provided financial resources for experts to assist with the bill's development, and provided lobbyist assistance to obtain political support for the bill's passage.

## **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Metals

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY** Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identifies metals as a high priority water quality problem. and recommend implementing source control activities to address it. This activity's objective is to reduce the amount of copper and restore water quality for our citizens.

## **EFFECTIVENESS ASSESSMENT**

<b>Watershed: Tijuana River</b>	
<b>Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials Removal of Copper in Automotive Brake Pads</b>	
<b>Targeted Measurable Outcome(s)</b>	Evidence of reductions of copper starting in 2022.

### **Objectives**

The goal of this legislation is to reduce the amount of copper released into the environment from automotive brake pads.

### **Analysis and Results/Conclusions**

The authorization of this proposed legislation is expected to result in long-term reductions of copper from automotive brake pads to the environment.