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SAN DIEGO REGIONAL
WATER QUALITY
CONTROL BOARD

**SEMI-ANNUAL REPORT:
ADDRESSING FLOATING MATERIAL IN
CHOLLAS AND PALETA CREEKS**

March 15, 2007

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I. BACKGROUND

Pursuant to Section C.2 of the Municipal Storm Water Permit (California Regional Water Quality Control Board – San Diego Region, Order No. 2001-01), the City of San Diego is required to report twice a year on existing and planned Best Management Practices (BMPs) to prevent or reduce trash, debris, and other floating materials in Chollas and Paleta Creeks. The City of San Diego is submitting this semi-annual report covering the activities conducted during the first half of fiscal year 2007 (July 1, 2006 through December 31, 2006) to the San Diego Regional Water Quality Control Board (Regional Board).

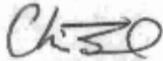
II. REPORT ORGANIZATION

This report is organized according to the outline provided below, as requested in the letter from Mr. John H. Robertus (Executive Office for the Regional Board) dated December 18th, 2002.

1. Public Education and Outreach Efforts
 - 1.1 Volunteer Cleanups
2. Enforcement
3. Storm Drain System and Creek Maintenance and Cleaning Efforts
4. Best Management Practices (BMPs)
 - 4.1 Structural Best Management Practices (BMPs)
 - 4.2 Non - Structural Best Management Practices (BMPs)
 - 4.3 BMP Action Plan
5. Creek Refuse Assessment Program
6. Collaborative Efforts
7. Trash Measures Effectiveness Assessment

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Chris Zirkle
Deputy Director

1. PUBLIC EDUCATION AND OUTREACH EFFORTS

During this reporting period the City continued to identify behavior modification as the primary means to deal with trash as non-point source of pollution in our waterways. Because "midnight dumping" activities are relatively easy to conduct without consequences, educating citizens to prevent this from occurring in the first place is our best line of defense. As such, the focus of our education efforts is to raise public awareness and to foster behavior changes to ultimately reduce non-point source pollution, including trash and litter.

The fifth year of "Think Blue," the City's public education and outreach campaign, included continued airing of public service announcements (PSA) for television. The City secured additional funding for Fiscal Year 2007 for increased advertising Citywide as well as the creation of new PSAs which will begin in February 2007. Planning for the new PSA will begin in March 2007.

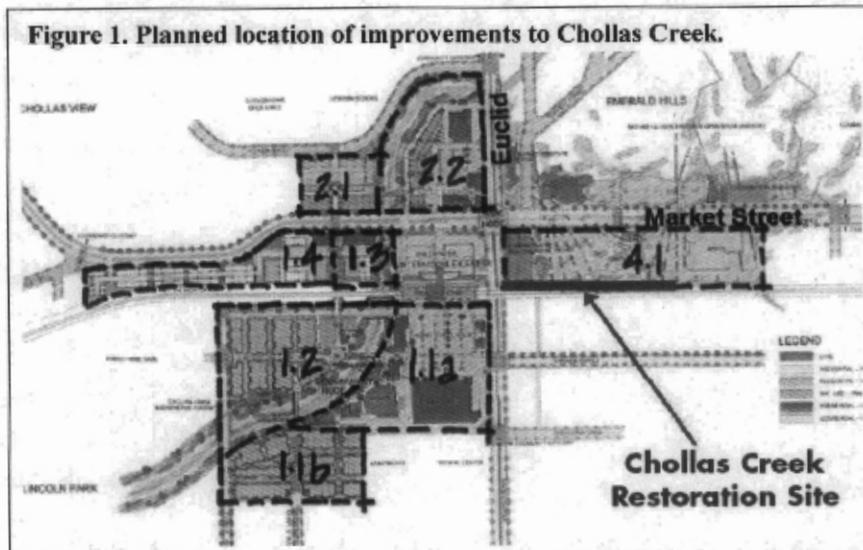
The results of the 2004 annual resident's survey entitled "City of San Diego Storm Water Pollution Program 2004 Follow-up Survey of City Residents" indicated the city increased awareness of the program by another two percentage points to a three-year cumulative increase of 23 percent. Public awareness that the storm drain system is separate from the sewer system and flows directly to our creeks and bays remained essentially static between the 2002 and 2004 surveys, meeting but not exceeding expectations. With new PSAs having aired in FY 2004 through early FY 2006, as well as additional funding secured for increased advertising, we anticipate making additional progress in meeting our awareness and behavior modification goals. The City's Follow-up Survey was unable to be completed in 2006.

The City of San Diego and its project partners for the *Chollas Creek Water Quality Protection & Habitat Enhancement Project* (the Port of San Diego, Environmental Health Coalition, and San Diego Coastkeeper, the cities of La Mesa and Lemon Grove), received a State Costa-Machado Act of 2000 (Proposition 13) grant in the amount of \$2,244,000 to implement portions of the *Chollas Creek Enhancement Program*, adopted by the San Diego City Council on May 14, 2002. Planned creek improvements as part of the grant project include: removal of concrete sections of the channel; widening of the floodplain; and, creation and restoration of wetland and transitional upland habitats. Improvements will be designed to re-establish the natural structure, dynamics and hydrologic functions within applicable creek segments and restore affected beneficial uses.

In concert with the planned improvements to Chollas Creek, the scope of work for the *Chollas Creek Water Quality Protection & Habitat Enhancement Project* details two related education and outreach campaigns that continue to be implemented. The grant project developed the implementation of a broad education outreach campaign within the

Chollas Creek watershed administered jointly between the City of San Diego Storm Water Pollution Prevention Division (Storm Water Division) and the Environmental Health Coalition with support from San Diego Coastkeeper, the Port of San Diego and the cities of Lemon Grove and La Mesa. The purpose of the education program is to increase awareness about non-point sources of pollution while encouraging residents of the watershed to adopt appropriate behaviors in every-day activities around the home and business. Second, the grant project continued to develop watershed protection and urban runoff principles by implementing new environmental curricula for 5th and 6th grade schoolchildren in the area. These new curricula include anti-litter principles.

The agreement with the State Water Resources Control Board was approved on July 6, 2004, and project implementation is underway. As of the writing of this report, the Storm



Water Division is working to establish an agreement with the property owner (which is a non-profit company with a contractor's license) to build the project. As of the writing of this report, the City is processing an agreement with the property owner. The Storm Water Division anticipates

receiving City Council approval to award the construction agreement in April 2007, and starting construction in May 2007.

The second Proposition 13 project proposal titled "*Water Quality Leaders*," mentioned in the February 14, 2003, Technical Report did not receive funding. This grant would have funded a pilot study for existing developed areas and would have focused on the commercial corridors in three different watersheds, including the Chollas Creek watershed. The proposed project would involve working with area businesses to install catch basin inserts that would be maintained and monitored through a partnership with San Diego Coastkeeper, participating businesses, and the City. Both structural and educational BMPs would be implemented and monitored to determine the appropriateness and effectiveness of each application. The City believes this proposal has substantial merit because project implementation would cost-effectively help protect San Diego water bodies and beneficial uses. As such, the Storm Water Division will continue to pursue grant funding for similar projects.

The City's already significant storm water educational challenges are compounded by the socio-economic make-up of the neighborhoods along Chollas and Paleta Creeks. The Mid-City community located in the Chollas Creek watershed is home to a large and diverse first generation immigrant population where environmental awareness as a community value is a new concept. It is estimated that there are approximately 75 languages spoken within the area, representing a significant challenge in first, gaining access to these communities and, secondly, achieving integration of environmental/storm water compliance behaviors.

A long term strategy for addressing water pollution and abatement of pollutants of concern in our recreational waters, including trash continues to be the education of school-aged children about San Diego's unique marine environment. An exciting development in the past several years is the joining together of the City of San Diego and the San Diego City School District to create K-12th grade science curricula to focus on San Diego watershed issues and characteristics, impact student behavior toward pollution prevention, link to and modify existing curricula, and serve as a model for schools county-wide. The curricula is entitled "Stewardship: Water Education for Lifelong Leadership," or Project SWELL. Project SWELL was launched in the Fall of 2003 and included in the curriculum of about half of all fifth grade classes. The City and San Diego Coastkeeper is still actively seeking grant funding from various state grant programs, including Proposition 13 for continued development of Project SWELL curricula for additional grades.

Educational efforts for the remainder of Fiscal Year 2006 included continuing the Storm Water Division's Think Blue education efforts. The Storm Water Division continued outreach to businesses in the Chollas Creek watershed as part of the Chollas Creek Water Quality Protection & Habitat Enhancement Project grant. Written materials (posters and dashboard placards) developed for business outreach were produced in the four languages predominant in the area. These materials address key business-related BMPs for stormwater pollution prevention and include messages to keep trash and litter out of the storm drain system. Materials provided at presentations to community groups and at community events typically included the general Think Blue brochure which contains an anti-trash message. Additionally, the Storm Water Division worked collaboratively with the City's Metropolitan Wastewater, Park and Recreation and Environmental Services departments and Caltrans District 11 in the Chollas Creek and surrounding areas in an effort to leverage multi-media buys and outreach efforts.

1.1 VOLUNTEER CLEANUPS

The California Coastal Cleanup Day is considered the premier volunteer event focused on the marine environment in the country. It is estimated that since the program started in 1985, over 552,000 Californians have removed almost 8.5 million pounds of debris from our state's shorelines and coast. Beginning in 2002, the annual event was expanded to include inland sites, thus linking inland sites to the ocean.

This reporting period, the Storm Water Division was a contributing sponsor to six cleanup sites (one site in each of the City's six watersheds) during California Coastal Cleanup Day on September 16, 2006. These cleanup sites included a site in a segment of Chollas Creek near the Barrio Logan in San Diego Bay. Trash removal statistics for this cleanup event are not available as of the writing of this report. The City anticipates including the statistics in the next semi-annual report.

2. ENFORCEMENT

Illegal dumping is a difficult problem to control. In addition, studies show that approximately 60-70% of trash that ends up in waterways is due to naturally occurring leaves and vegetation. Wind then transports light debris (usually floatables) into low-lying areas such as channels. Littering and illegal dumping can thus make source identification a moving target. Due to the difficulty in actually catching someone in the act of illegally dumping or proving the source of the trash, enforcement by means of imposing penalties or issuing Notices of Violation (NOV) is rare. Therefore, most "enforcement" actions for gross pollutants consist of either requesting an owner to clean up his/her property or having the appropriate City department properly remove and dispose of trash from the public right-of-way after it has been dumped illegally.

As previously noted, the Environmental Services Department (Environmental Services) has had the primary responsibility for responding to waste/litter issues and operates under different sections of the San Diego Municipal Code (SDMC, Sections 54.0208, 54.0209 and 54.0210) than does the Storm Water Division (SDMC, Section 43.03). Both programs have hotlines to which they respond. Environmental Services typically receives calls regarding litter or gross pollutants whereas Storm Water receives reports of liquid discharges into the storm drain system and/or receiving waters.

Environmental Services has a Code Compliance section that responds to reports and phone calls. Their process for enforcement includes a letter to the property owner notifying them of the time period in which the trash must be removed followed by a site visit to confirm compliance. Environmental Services also responds to calls from other City departments for illegal dumping on City property (which is the case for Chollas and Paleta Creeks). Therefore, based on historical records, each department within the City may have a budget for having Environmental Services pick up trash within another department's area of responsibility. Although Street Division is responsible for inspecting channels, it is from a flood control perspective; their crews would have to submit a request to Environmental Services to pick up smaller amounts of trash that are not causing a flooding hazard within the watercourse.

An updated map depicting the locations of the Environmental Services Department's record of incidents of illegal dumping and litter problems between July 1, 2006 and December 31, 2006 is provided as an attachment to this report (Attachment 1). A

summary of the Environmental Services Department's efforts this reporting period is provided in Table 1, below.

Table 1. Summary of Environmental Services Department's trash collection efforts.

Types of Service	No. Calls/Events	Tons
Calls for service involving litter	316	432.47
Calls for service involving illegal dumps	3,889	
Requests from other City Departments for Clean Ups	24	260.9
Community Clean Ups	25	
Total Tons:		693.37

The Storm Water Division also has a Code Compliance section that responds to reports of illegal discharges. Their focus is on both liquid and solid waste (trash) discharges. If they are unable to take enforcement action for trash, the issue is referred to Environmental Services. Within the Chollas and Paleta Creek watersheds, the Storm Water Division's code compliance officers have issued twelve NOV's since December 2001, including one this reporting period.¹

Staff from the Office of the City Attorney has also researched and identified state and local statutes that could be used to pursue further legal actions (beyond imposing penalties and/or issuing NOV's), if necessary, against property owners or those responsible for illegal dumping activities. Further, during prior reporting periods staff from the Office of the City Attorney conducted additional outreach efforts within City departments (reaching park rangers, lifeguards and police officers) to encourage City personnel to be especially diligent in regard to illegal dumping activities. As part of this outreach, City staff was reminded about how to report violations and how pertinent San Diego Municipal Code sections are enforced.

The City of San Diego will continue to implement the enforcement programs described above.

3. STORM DRAIN SYSTEM AND CREEK MAINTENANCE AND CLEANING EFFORTS

The General Services Department's Street Division cleaned 628 drainage structures, 631 linear feet of drainage pipes, and 4,800 square feet of drainage channel, removing 113 tons of trash and debris from the Chollas Creek and Paleta Creek watersheds from July 1, 2006 to December 31, 2006. Street Division staff also removed 550 tons of debris from the Chollas Creek watershed and 251 tons of debris from Paleta Creek watershed through the Street Sweeping Program.²

¹ The number of NOV's issued in the Chollas and Paleta Creek watershed areas was estimated using zip codes.

² Note: Street Division estimates the tons of waste removed from street sweeping based on estimates of what percentage of sweeping routes occur within the Chollas and Paleta Creek watershed areas.

Chollas and Paleta Creeks are scheduled for annual inspection in March of each year. Should the inspection reveal the need for cleaning, the creeks are scheduled and cleaned as soon as possible. Additionally, during inclement weather the Street Division performs critical drain inspections. These inspections include known problem areas in the Chollas and Paleta Creek watersheds. The Urban Runoff Management Plan's *Storm Water Conveyance System* Component (component 2.1.11) identifies the known problem areas and the objective of the cleaning. Additional cleaning efforts are based on identified problem areas. The City will continue to carry out its standard annual inspections within the Creeks as described above as well as continue to perform critical drain system inspections during inclement weather.

In previous years, the General Services Department's Street Division maintained an agreement with the U.S. Navy to provide additional funding to clean trash and debris from Chollas Creek at the area where the Navy installed a containment boom during the rainy season. The Street Division obtained Mayoral approval to renew the agreement with the Navy in December 2006, and anticipates having the boom operational for the 2006-07 rainy season.

As previously reported, studies have shown that trash re-accumulates approximately 7-10 days after cleaning efforts, which would negate channel cleaning as an effective permanent solution. Large-scale (mechanical) trash removal is an inefficient, expensive and reactive strategy that does nothing to eliminate the source of the trash problem (unless trash removal is combined with education and outreach). To tackle the source of trash issues proactively, and in the most effective manner, the City continues to focus its efforts on continuing anti-litter education to facilitate the cultural shift needed to reduce the sources of trash pollution. The Storm Water Division has also begun employing a Community-Based Social Marketing approach to identifying the most effective future trash reduction efforts. By using the CBSM approach, the City will be able to identify perceived benefits and barriers to non-polluting behaviors.

A City-wide summary of the estimated trash removed from the Chollas and Paleta Creek watersheds is provided in Table 1, below.

Table 2. Estimated trash removed from Chollas and Paleta Creek watersheds, January 1, 2006 – June 30, 2006.

Watershed	Source of Trash Removal			
	Environmental Services	Streets Division		Navy/City Trash Boom
		Street Sweeping	Storm Drain Cleaning	
Chollas Creek	693.37	550	71	0*
Paleta Creek		251	42	0*
1/1/06 to 6/30/06 Reporting Period Total (in tons):				1,607.37

*Note: The City is in the process of renewing an agreement with the Navy for trash boom operations.

4. BEST MANAGEMENT PRACTICES (BMPs)

4.1 STRUCTURAL BEST MANAGEMENT PRACTICES

The City's Urban Runoff Management Plan identifies the need for a City-wide drainage master plan (Component 1.6, *Watershed Planning*). The master drainage plan and watershed studies would identify deficiencies in the storm drain system, identify appropriate areas for system upgrades and storm water BMPs, and recommend improvements. The City is currently studying the feasibility of pursuing a storm drain fee increase for City of San Diego residents. Citywide master drainage plans and corresponding storm drain and BMP capital improvement program are included in the storm drain fee analysis.

In addition, as an initial phase of development and implementation of the drainage master plan, the City has begun preliminary planning to identify a sub-drainage within the Chollas Creek watershed to implement a runoff reduction BMP. As of the writing of this report, the City has completed the concept plans for a project in the lower portion of the Chollas Creek watershed (see Attachment 2). The runoff reduction BMP concept plan identifies porous pavement replacement on an existing street and landscape biofiltration areas along roadways/sidewalks. The project will be designed to include sediment/trash forebays in each biofiltration strip to collect trash and other debris prior to entering the storm drain inlet. This design will not only provide for easier access for maintenance, but will also keep the trash and debris in public sight. The City anticipates beginning final design in April 2007, and completing construction in October 2008. The City also began the concept planning for a second runoff reduction BMP retrofit project at the City's Memorial Park, located in the lower portion of the Chollas Creek watershed. The City anticipates completing the concept plans for this location in Spring 2007.

In addition, the City has pursued grant funding to implement BMPs. The City's *Water Quality Leaders* Proposition 13 grant proposal was not selected. Implementation of the *Water Quality Leaders* project would have provided the City with funding to implement structural BMPs and evaluate their effectiveness. The Storm Water Division will continue to pursue water quality grants, in partnership with other jurisdictions, agencies and organizations in the region, as a means of funding trash-abatement efforts.

In February 2006, the City applied for \$725,000 in State Water Resources Control Board Consolidated Grants Program funding to construct six storm water best management practices in parking lots, streets, and other locations that would treat nuisance and other low flows prior to entering the storm drain system in the Tijuana River, San Diego Bay, San Diego River, Mission Bay & La Jolla, Los Peñasquitos, and San Dieguito River watersheds (one best management practice would be installed per watershed). The best management practices would address bacteria, metals, nutrients, sediment, and trash, which have been identified as constituents of concern in those watersheds by their respective Watershed Urban Runoff Management Programs. Monitoring of the

effectiveness and maintenance requirements of the six best management practices during the two-year life of the grant would allow for the development of recommendations for future use in the City of San Diego. Unfortunately, this grant was not selected for funding.

The City of San Diego also submitted an initial application for \$2,950,000 in Integrated Regional Water Management (IRWM) Grant Program, (Proposition 50, Chapter 8, or "Prop 50") grant funding in Spring 2005 to implement another creek restoration project per the City-approved *Chollas Creek Enhancement Program*. The concept proposal was selected by the State Water Resources Control Board (State Board) to submit a full grant proposal for consideration. Due to staffing limitations, in Fall 2005 the City turned the project concept over to Groundwork Chollas, a non-profit group working to restore habitat in the Chollas Creek watershed.

Finally, as a measure to prevent trash and debris from entering Chollas Creek, NASSCO continues to maintain fencing in the parking lot along the sides of the Creek.

4.2 NON - STRUCTURAL BEST MANAGEMENT PRACTICES (BMPs)

As previously reported, trash is removed from or discouraged from entering the storm drain system and receiving waters in the Chollas and Paleta Creek watersheds due to the following non-structural activities:

- Education & Outreach, "Think Blue"
- Weekly residential trash pick up
- Trash pick up from public areas
- Recycling
- Household Hazardous Waste collection
- Storm Drain Stenciling
- Volunteer cleanups
- Drain and inlet cleaning
- Channel cleaning
- Street Sweeping
- Enforcement of the San Diego Municipal Code (SDMC)
- Enforcement of applicable state codes through court actions

Through these services, the City of San Diego is effectively preventing tons of trash from entering into our waterways. However, physical cleaning of the entire reaches of Chollas and Paleta Creeks by City crews is not an environmentally optimal option because it is an "end of pipe" solution that fails to eliminate the source of the problem (people's behaviors), and is therefore, inherently less effective than source controls (education). Studies have shown that trash re-accumulates approximately 7-10 days after cleaning efforts, which would negate channel cleaning as an effective permanent solution. Large-scale (mechanical) trash removal is an inefficient, expensive and reactive strategy that does nothing to eliminate the cause of the litter problem (unless trash removal is combined with education and outreach). In addition, property and environmental constraints may make

regular creek cleaning difficult. Research into property boundaries in Chollas Creek reveals that private ownership extends into the creek bed in nearly all locations, and the City does not possess drainage easements in all of these privately-owned sections of the creek. In those locations, the City must request permission to access the property to perform maintenance. The same is true for volunteer clean up events. Coordinating a cleanup event and securing all of the necessary approvals is often prohibitively time consuming and difficult. Additionally, restrictions on impacting native habitat may also reduce access to portions of the creeks.

Therefore, to tackle the source of trash issues proactively, and in the most cost-effective manner, the City continues to focus its efforts on continuing anti-litter education to facilitate the cultural shift needed to reduce the sources of trash pollution through the Think Blue program.

The Storm Water Division also joined together with the San Diego City School District to create and implement Project SWELL (Stewardship: Water Education for Lifelong Leadership) K-12th grade science curricula focusing on San Diego watershed issues and characteristics, impacting student behavior toward pollution prevention, and serving as a model for schools county-wide.

Also during this reporting period, the Storm Water Division continued to use the Think Blue anti-litter storm drain stencil (see Figure 2). The stencil is being used in City

Figure 2. City of San Diego Think Blue Storm Drain Stencil.



municipal yards and facilities, including the Chollas Yard located within the Chollas Creek watershed. Stencils were distributed to I Love A Clean San Diego so that volunteers may stencil

storm drains throughout San Diego, including the Chollas and Paleta Creek watershed areas. The stencil specifications have been posted on the City's Think Blue website (thinkbluesd.org) so that contractors and environmental organizations can make their own stencils using the City standard. A similar concrete stamp is required on all new development projects which build new storm drain inlets.

The General Services Department's Street Division cleaned 628 drainage structures, 631 linear feet of drainage pipes, and 4,800 square feet of drainage channel, removing 113 tons of trash and debris from the Chollas Creek and Paleta Creek watersheds from July 1, 2006 to December 31, 2006. Street Division staff also removed 550 tons of debris from the

Chollas Creek watershed and 251 tons of debris from Paleta Creek watershed through the Street Sweeping Program.³

As a watershed activity targeting trash and metals in the Chollas Creek Watershed, the Storm Water Division is currently working to purchase an additional vacuum-assisted street sweeper and fund its operation beginning in Summer 2007.

During the reporting period, the Environmental Services Department also collected 693.37 tons of trash through community cleanup events and service calls, as shown on Table 1 (page 8).

In order to prevent trash and debris from entering the creek bed from parking lots due to wind or storm water, NASSCO contracts with St. Madeleine's Sophie Center to conduct trash pick-ups twice a week.

The Storm Water Division plans to continue an aggressive education and outreach campaign targeted at litter abatement, continue the implementation of the *Chollas Creek Water Quality Protection and Habitat Enhancement Project*; consider implementation of a criminal prosecution process for the Storm Water Division; and continue maintenance activities and participation in volunteer cleanup efforts. The Streets Division may implement additional trash awareness outreach and cleaning. In addition, Caltrans has recently initiated a statewide, multi-lingual anti-litter campaign that includes materials for students, flyers, and other handouts, which the City will distribute in the Chollas and Paleta Creeks areas.

4.3 BMP ACTION PLAN

Table 2 below provides an update on the potential BMPs reported previously in the February 13, 2003 letter. Please note that to maintain consistency, we've kept all of the activities reported previously, even if they have been completed, delayed or postponed.

Table 3. Potential & actual trash-related BMPs in the Chollas and Paleta Creek watersheds.

BMP	ESTIMATED IMPLEMENTATION DATE	COMMENTS
NON-STRUCTURAL BMPs:		
<i>EDUCATION</i>		
Public Service Announcements	Fall 2003 and ongoing	PSAs are in partnership with Caltrans – District 11 and the Port of San Diego. Two new PSAs began airing during previous reporting period. The Storm Water Division secured additional funding in FY 07 for increased advertising and development of new PSAs (which began in March 2007).

³ Note: Street Division estimates the tons of waste removed from street sweeping based on estimates of what percentage of sweeping routes occur within the Chollas and Paleta Creek watershed areas.

March 15, 2007

BMP	ESTIMATED IMPLEMENTATION DATE	COMMENTS
Materials with Trash Focus	As-Needed	During previous reporting periods, anti-litter messages were advertised in calendars and CD inserts. Other Think Blue materials will be created and updated as appropriate. In October 2003, the Storm Water Division conducted a number of Business Outreach workshops. In addition to informing business owners how to properly clean impervious surfaces, the workshops included other site best management practices including an anti-litter tips.
Tailored Brochures	FY 2005	Originally slated for FY2004, FY 2005, and FY 2006, postponed for FY2007. Caltrans provided "Don't Trash California" anti-litter campaign materials which will be used in Chollas Creek watershed.
District 4 Storm Water Outreach module	Originally FY2004	Postponed.
Trash & Litter Impact Module for Watershed Display Boards	FY2006	Delayed a third year to FY 2007 pending Copermittee agreement on WURMP education elements. Intend to add litter education module and materials to watershed display boards shared by Copermittees.
Project SWELL (Stewardship: Water Education for Lifelong Leadership)	Fall 2003 Ongoing	New K-12 th grade education program. Began implementation in Fall 2003 school year in San Diego City Schools. 5 th & 6 th Grade curricula completed and being implemented.
Letters to Property Owners	Ongoing	Outreach to property owners done as part of September 2002 Clean-Up event. Activity being carried out in conjunction with outreach to be implemented as part of the <i>Chollas Creek Water Quality Protection and Habitat Enhancement Project</i> .
Letters with brochures to residents in Council District 4	Completed	Council office distributed 200.
Letters to Copermittees	Completed	Reached all Copermittees within Chollas and Paleta Creeks watersheds via e-mail correspondence on 8/7/02.
Inter- and Intra-Agency Coordination	Ongoing	Outreach to other City departments has been done by the Office of the City Attorney as described in Section 3 "Enforcement" above. The City will continue discussions with Caltrans staff in order to identify opportunities for partnership between our agencies in order to abate trash concerns. As already noted, Caltrans is a valuable partner to the City providing financial support to the Think Blue PSAs. Storm Water Division staff continues to provide storm water training to various City departments, and includes information on reporting littering.
<i>Chollas Creek Water Quality Protection and Habitat Enhancement Project-Prop 13</i>	2004	State agreement approved, and began implementation on July 6, 2004. Creek restoration construction Scheduled to begin construction in May 2007. Education and outreach to residents and businesses currently being implemented.
<i>Water Quality Leaders</i>	N/A	Proposition 13 grant application denied. No longer pursuing funding.

BMP	ESTIMATED IMPLEMENTATION DATE	COMMENTS
<i>City of San Diego Watershed BMPs</i>	2007-2008 (not selected for funding)	Submitted initial \$725,000 grant proposal to construct and monitor six structural BMPs (1 in each of the City's six watersheds). BMPs would be selected to maximize removal of pollutants of concern in each watershed, including trash. Monitoring program would evaluate BMP effectiveness and compare maintenance requirements to form recommendations for broader application City-wide.
ENFORCEMENT		
Criminal Prosecution	2005	Currently under consideration.
Illegal Dumping Enforcement	Ongoing	One enforcement case generated this reporting period.
MAINTENANCE		
Street Division – Cleaning efforts	Ongoing	The General Services Department's Street Division cleaned 628 drainage structures, 631 linear feet of drainage pipes, and 4,800 square feet of drainage channel, removing 113 tons of trash and debris from the Chollas Creek and Paleta Creek watersheds from July 1, 2006 to December 31, 2006. Street Division staff also removed 550 tons of debris from the Chollas Creek watershed and 251 tons of debris from Paleta Creek watershed through the Street Sweeping Program.
Street Division – Additional trash awareness and cleaning efforts	Unknown	Postponed.
Environmental Services: Abatement of Illegal Dumping and Clean-Up & Recycling Events	Ongoing.	This reporting period, Environmental Services removed approximately 693.37 tons of vegetation, trash and debris from Chollas and Paleta Creek watersheds from 25 community clean up events, 24 work requests from other departments, 316 calls for service involving minor litter, and 3,889 calls for service involving illegal trash dumping.
Volunteer Clean-ups	Ongoing	The City is also partnered with San Diego Coastkeeper to sponsor six cleanup sites (one site in each of the City's six watersheds, including San Diego Bay) during the September 2006 California Coastal Cleanup Day event.
Parking Lot Clean Up at Chollas mouth	Ongoing	Coordination with Port District, NASSCO. NASSCO parking lots were cleaned during the September 2003 Cleanup Event and implemented permanent good housekeeping practices to periodically clean the parking lot in combination with fencing and new trash cans. NASSCO continues to hold periodic trash cleanups.
Boom Cleaning	Ongoing	Collaborative agreement with the Navy. Contract with the Navy in renewal process.
OTHER		
Pursue Grant Funding	Ongoing	The City will continue to research grant opportunities that may support implementation of structural and non-structural BMPs to address trash in intensely urbanized watersheds within the City of San Diego, including the Paleta and Chollas Creek watersheds. See <i>City of San Diego Watershed BMPs</i> grant proposal, above.
STRUCTURAL BMPs:		

BMP	ESTIMATED IMPLEMENTATION DATE	COMMENTS
Master Drainage Plan	Unknown	To date, the City has not studied the feasibility of the use of structural BMPs within this watershed. City-wide master drainage plan and watershed studies would identify deficiencies in the storm drain system, identify appropriate areas for storm water BMPs, and recommend improvements. The City is exploring the possibility of placing a proposal for a storm drain fee increase on a future public ballot. If approved, this fee could fund the preparation of a Master Drainage Plan. In the interim, the City will continue master planning efforts on a sub-watershed and/or pilot scale.
Structural BMPs	2007	As an initial phase of development and implementation of the drainage master plan, the City has continued concept planning of a pilot runoff reduction (LID) BMP retrofit project within the Chollas Creek watershed. The runoff reduction BMP concept plan includes: porous pavement replacement on an existing street, and landscape biofiltration areas along roadways/sidewalks. The City anticipates beginning final design in April 2007, and completing construction in October 2008. The City also began the concept planning for a second runoff reduction BMP retrofit project at the City's Memorial Park, located in the lower portion of the Chollas Creek watershed. The City anticipates completing the concept plans for this location in Spring 2007.
Fencing at NASSCO Parking Lot	Ongoing	Fencing at NASSCO parking lot completed in September of 2002.
<i>Chollas Creek Restoration Project (Prop 50)</i>	2006	Initial \$2,950,000 proposal submitted in Spring 2005. Project concept transferred to local non-profit groups in Fall 2005.

5. CREEK REFUSE ASSESSMENT PROGRAM

The Creek Refuse Assessment Program will provide the City and the Regional Board with quantifiable trash data that can be used as a baseline and to evaluate the effectiveness of BMPs and to identify the most likely significant sources of trash to help guide future efforts. The City will review the Creek Refuse Assessment Program on an annual basis to determine if enhancements are needed. In addition, the Storm Water Division will be coordinating with the other jurisdictions in the region to develop consistent regional trash monitoring procedures for use beginning in 2008. The Storm Water Division will revise the Creek Refuse Assessment Program in accordance with these procedures. In the interim, the Storm Water Division will be updating it's Dry Weather Storm Drain Field Monitoring Data Sheet (See Figure 3) for use during the 2007 season.

The Storm Water Division recently completed the fourth year of the Creek Refuse Assessment Program as part of our Dry Weather Monitoring activities in the Chollas and Paleta Creek watershed areas (See Attachment 3). In summary, the City's assessment of the data collected over the previous 3-plus years indicates that illegal dumping from residents, and littering from pedestrians and other members of the public may be the two most likely significant sources of trash in the Chollas and Paleta Creek watersheds. More detailed analysis is provided in the March 13, 2007 report. A description of the assessment strategy follows.

The Dry Weather Monitoring component of the updated Municipal Storm Water Permit (Order No. 2001-01) expanded the physiochemical monitoring conducted under the

Figure 3. Dry Weather Storm Drain Field Monitoring Data Sheet.

San Diego Stormwater Cooperation
 City of San Diego Storm Water Pollution Prevention Program
 Dry Weather Monitoring Field Database

Station Inoperative TD Inoperable

Site ID	Latitude	Long.	Altitude	Hydrologic Unit	Map
Location	Longitude	Lat.	FT/1012	Hydrologic Area	Map
Date	TD Ppt			W. Air Quality Station (Optional)	Map
Time	Observer			Discharge Area	Platemark

Land Use (Planned?) Residential Commercial Industrial Agricultural Public Other

Land Use (Observed) Residential Commercial Industrial Agricultural Public Other

City-owned green area (SQ) Yes No

Conveyance Manhole Catch Basin Ditch Culvert Channel Ditch Embankment

Check area width

ATMOSPHERIC CONDITIONS

Weather Sunny Partly Cloudy Overcast Fog

Temp 20-30 Low

Wind Dir 10-20 10-20 10-20 10-20

Wind Spd 0-5 5-10 10-15

TRASH CHARACTERISTICS

Color Blue Green Brown Yellow Orange Grey Other

Shape Flat Round Square Triangular Irregular Other

Material Paper Plastic Metal Glass Wood Fabric Other

Quantity None 1-2 3-5 6-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100

Weight None 1-2 3-5 6-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100

Volume None 1-2 3-5 6-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100

Other None 1-2 3-5 6-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100

Have the items been seen near the storm drain? Yes No N/A

End of discharge flow? Yes No Incomplete Runoff? Other

Flow Volume Yes No None

Fast Forwarding Sample Collected? Yes No

Water Temp (°C) _____

PH _____

Ammonia (NH₃) Collected? Yes No

Ammonia (NH₃) _____

TRASH CHARACTERISTICS

Number of Items	Weight	Volume	Material
1-10	1-10	1-10	1-10
11-20	11-20	11-20	11-20
21-30	21-30	21-30	21-30
31-40	31-40	31-40	31-40
41-50	41-50	41-50	41-50
51-60	51-60	51-60	51-60
61-70	61-70	61-70	61-70
71-80	71-80	71-80	71-80
81-90	81-90	81-90	81-90
91-100	91-100	91-100	91-100

Comments:

Revised 1/2001

previous Municipal Storm Water Permit. The City's standard procedure for evaluating and recording observations now includes trash observations, as shown on the Dry Weather Storm Drain Field Monitoring Data Sheet (see Figure 3). Monitoring staff identifies trash characteristics in the storm drain's discharge "plume area" at storm drain outlets where it discharges into a large open conveyance channels or the natural drainages and creeks. We have defined the "plume area" as approximately 10-20 yards (30-60 feet) upstream and downstream of the storm drain outlet. Trash monitoring within open conveyance channels and manholes/catch basins uses similar criteria; staff notes conditions within a 20-yard diameter of the monitoring point and in the visible areas within

manholes/catch basins. To complete this assessment, our standard procedure for evaluating and recording observations has been expanded to include a photo documentation of the trash in these two creek watersheds.

Future assessments will assist in identifying sources and “hot spots” of trash from the tributary land uses and neighborhoods. In addition to trash, monitoring staff will continue to document unique deposition characteristics near outlets and monitoring sites looking for particulates that might identify sources of waste and trash.

6. COLLABORATIVE EFFORTS

During the reporting period, the Storm Water Division participated in implementation meetings for the San Diego Bay Watershed Urban Runoff Management Plan (WURMP). This Plan fosters collaboration between Chollas Creek watershed Copermittees, businesses, interested public, and other stakeholders. The Storm Water Division partnered with the jurisdictions in the San Diego Bay WURMP to sponsor six cleanup events throughout the City (including one location in the Chollas Creek watershed) as part of California Coastal Cleanup Day in September 2006. In addition, the City continues to participate in other watershed efforts in the area, such as the “Groundwork Chollas” watershed meetings. This group consisting of a diverse group of agencies, residents, and activists, meets regularly with a goal of forming a watershed network focused on protecting and restoring Chollas Creek.

As detailed in this report, the Storm Water Division coordinated with the Port of San Diego, City of La Mesa, City of Lemon Grove, Environmental Health Coalition, and San Diego Coastkeeper to continue the implementation of the *Chollas Creek Water Quality Protection and Habitat Enhancement Project* grant; continued to coordinate with Caltrans and the Port of San Diego to create PSAs focused on trash issues; coordinated with San Diego Coastkeeper, the San Diego City Schools to continue the implementation of the Project SWELL school curricula; coordinated with I Love A Clean San Diego and San Diego Coastkeeper to use their volunteers to stencil storm drain inlets; Coordinated with San Diego Coastkeeper to sponsor a Chollas Creek cleanup event and sponsor five others throughout the City, and coordinated with the U.S. Navy and Port of San Diego to continue to maintain trash booms in Chollas Creek.

The Storm Water Division and other City departments will continue to work collaboratively with other agencies, businesses and organizations to leverage additional energies towards cleaning our creeks, beaches and bays.

7. TRASH MEASURES EFFECTIVENESS ASSESSMENT

While there is little to no baseline data that would allow the City to assess effectiveness of measures taken to date to address trash issues within the Chollas and Paleta Creeks

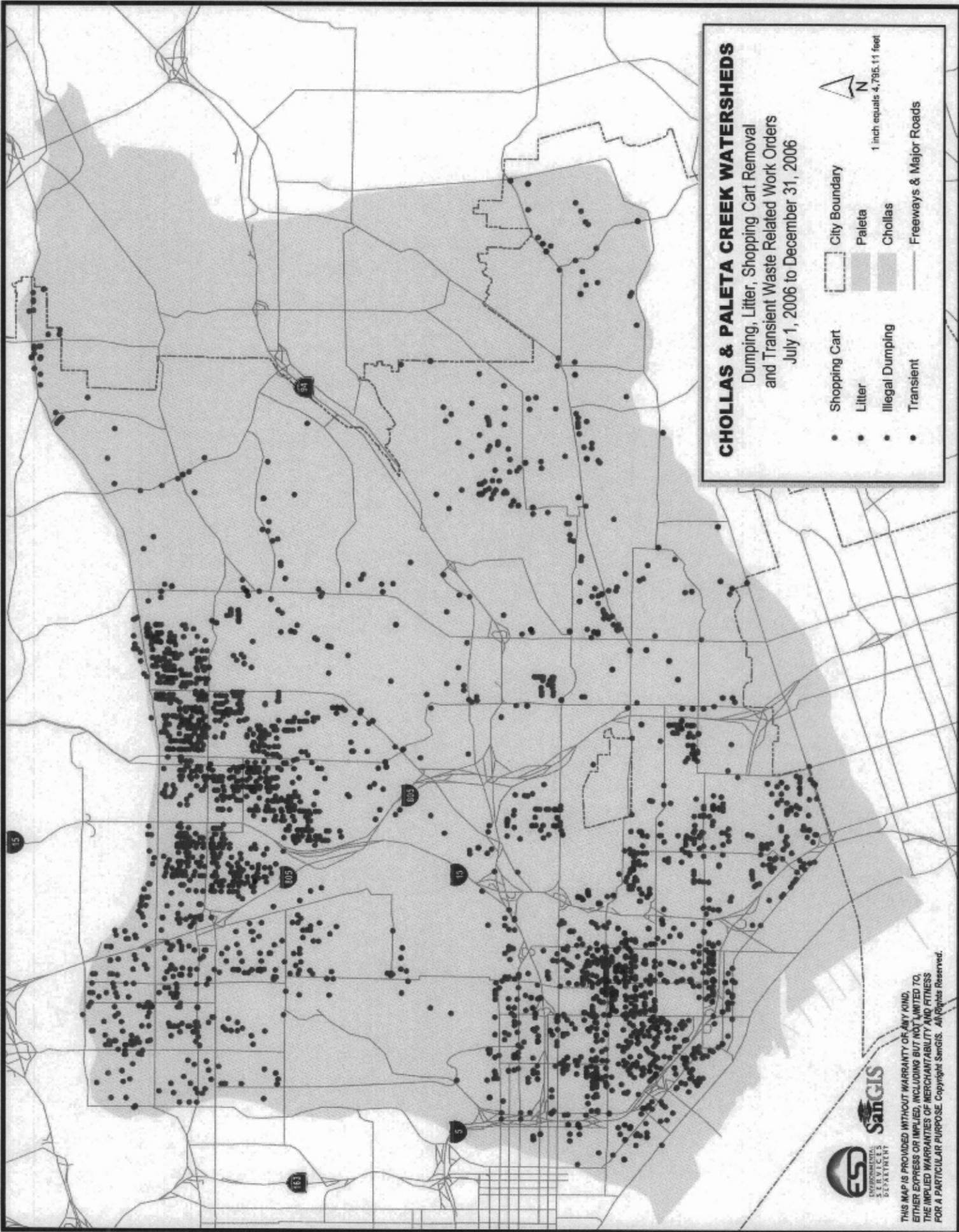
watersheds, and while there is no legal or functional standard for determining whether trash is impacting beneficial uses, the City believes that positive steps have been taken as measured by the amount of trash removed reported in this and previous reports. Additionally, we believe the groundwork has been established for the City to make a significant contribution towards the long-term health of these watersheds through the City's collaborative participation in annual California Coastal Clean-up and Creek to Bay Clean-up events. Seeds have been planted to allow the City to continue to participate in similar events in subsequent years, as evidenced by the City's participation in six locations for this year's California Coastal Clean-up and Creek to Bay Clean-up.

The City implemented extensive education, enforcement, street sweeping, and storm drain cleaning measures to prevent trash from entering into our storm drain system and will continue to explore cost-effective and meaningful ways of reducing illegal dumping of gross pollutants. We recognize that littering and illegal dumping are the major causes of trash and debris in receiving waters and related exceedances of water quality standards. We also recognize that trash in the urban environment is not limited to Chollas and Paleta Creeks; it is an issue for every urban creek, river, and canyon in San Diego. As such, the City has chosen to incorporate litter prevention in our public education and outreach program, Think Blue. Our emphasis will continue to be on education via our Think Blue program and its mission, "to raise public awareness and to foster behavior changes to reduce non-point source pollution." Simply stated we want, and need, to reach as many people as possible of the City's 1.2 million residents and not limit our efforts to one geographic area.

Toward that end, in 2003 we began implementing the water quality-based school curricula called Project SWELL (Stewardship: Water Education for Lifelong Leadership) in San Diego City Schools in partnership with San Diego Coastkeeper, the school district and others, and began airing a new Think Blue anti-litter public service announcement "Don't Trash Our Future." Our Think Blue program is highly acclaimed and has been selected as EPA's outreach model for large urban watersheds. Think Blue is making a difference by changing behaviors of people who live in the region.

Because the Chollas and Paleta Creek watersheds are not entirely within the City of San Diego, we also recognize the importance of coordinating our efforts with those of other jurisdictions and organizations within these watersheds. The City has already ventured into a watershed approach to address trash by working with the United States Navy, Caltrans, the City of Lemon Grove, the Port District, and NASSCO, and we will continue to engage willing stakeholders in developing and implementing solutions to address excessive trash in our watersheds that may impact beneficial uses. The City will continue to address trash concerns through a comprehensive and cost-effective approach that focuses on pollution prevention and participatory decision-making.

As an additional effort to address trash and other pollutants in the Chollas Creek watershed, the Storm Water Division has also begun efforts to fund the operation of a new



CHOLLAS & PALETA CREEK WATERSHEDS
 Dumping, Litter, Shopping Cart Removal
 and Transient Waste Related Work Orders
 July 1, 2006 to December 31, 2006

• Shopping Cart
 • Litter
 • Illegal Dumping
 • Transient

[Dashed Line] City Boundary
 [Light Gray Box] Paleta
 [Dark Gray Box] Chollas
 [Thick Line] Freeways & Major Roads

N
 1 inch equals 4,795.11 feet



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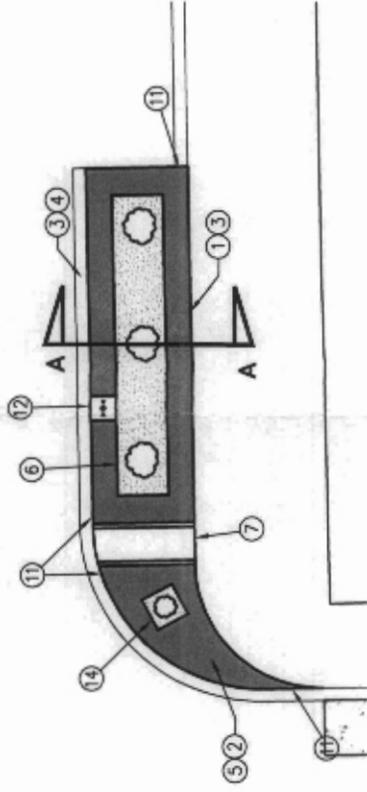
vacuum-assisted street sweeper within the watershed beginning in Summer 2007, and the Storm Water Division initiated design efforts to build two runoff reduction BMP projects that will both further our efforts to collect and remove trash prior to entering our creeks and waterways.

In summary, the City will continue to work diligently to ameliorate the trash issues in the Chollas and Paleta Creek watersheds, in addition to other watersheds throughout the City. The City's Environmental Services Department, Street Division, and Storm Water Division continue to work to remove trash from Chollas and Paleta creeks, among other water bodies throughout the City. Investing our dollars in Think Blue or pollution prevention is currently the best use of City funding to reduce pollution at our beaches and bays. We offer that best management practices are not all created equal, nor is dividing up one's resources between numerous best management practices always the best approach. By concentrating resources in Think Blue, or pollution prevention, we believe that we are realizing the greatest water quality benefit.

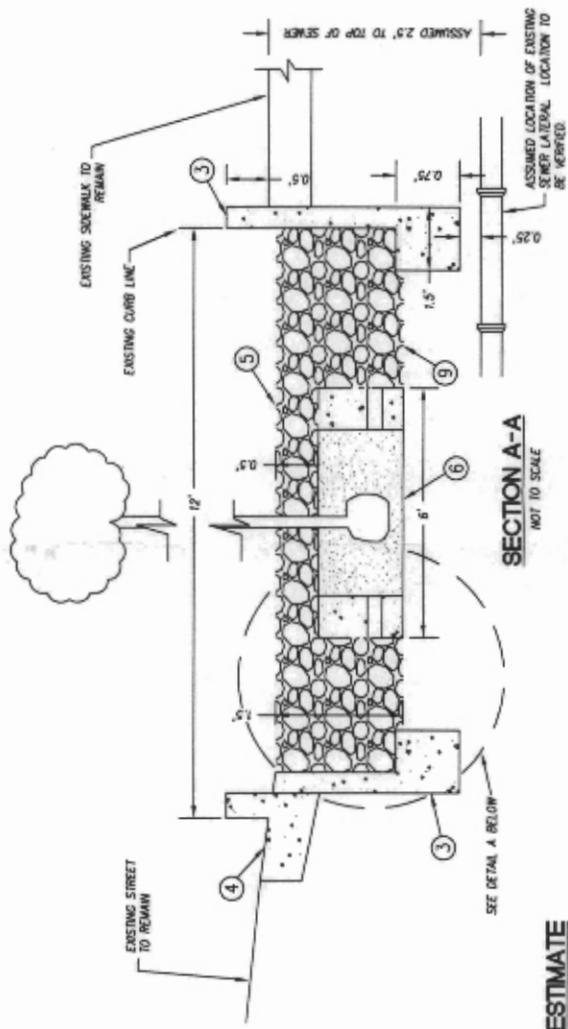
We believe that it is premature to state that the City's existing BMPs are ineffective. Rather, we need to explore additional alternatives for reducing illegal dumping of gross pollutants beyond what storm water programs can provide. It is evident that the City's current practices are effective in ensuring proper disposal of trash, and thus preventing tons of trash from entering into our storm drain system and receiving waters.

Attachments:

1. City of San Diego Environmental Services Department's map of calls for service.
2. Runoff reduction concept plan.
3. Report for the Paleta and Chollas Creeks Refuse Assessment Program, March 13, 2007.



TYPICAL PLAN VIEW
SCALE: HORIZONTAL 1" = 10'



SECTION A-A
NOT TO SCALE

QUANTITIES AND CONSTRUCTION ESTIMATE

ITEM	DESCRIPTION	QUANTITY	UNIT	ESTIMATE
1.	DEMO EXISTING AC PAVEMENT AND BASE - ASSUMED 4" THK AC AND 9" THK BASE FOR ESTIMATING PURPOSES	6,600 SF		\$4,000
2.	DEMO EXISTING CURB AND GUTTER	280 LF		\$1,700
3.	HAUL AND DISPOSE DEMO MATERIALS - ASSUMES 9" THK EXISTING BASE MATERIAL REUSED	92 CY		\$6,100
4.	8" THK PERVIOUS CONCRETE	3,100 SF		\$16,500
5.	9" THK PERVIOUS CRUSHED AGGREGATE BASE - ASSUMES EXISTING BASE MATERIAL REMOVED AND REUSED	3,100 SF		\$1,600
6.	3"-6" CRUSHED ROCK	4,300 CF		\$4,300
7.	6" PCC CURB AND GUTTER	340 LF		\$13,600
8.	6" PCC WALL AND FOOTING	650 LF		\$32,500
9.	8" THK BY 1' HIGH CONCRETE PLANTER BOX	420 LF		\$8,400
10.	30-GALLON INETS	16 UNITS		\$3,200
11.	FIRE HYDRANT RELOCATION	1 UNIT		\$5,000 / UNIT
12.	NEW CONCRETE DISABLED ACCESS RAMPS	2 UNITS		\$5,000 / UNIT
				\$134,900

EQUIPMENT

- AT 10 FEET ON CENTER
- WALL - SET OPENING FLOWLINE ELEVATION EQUAL TO ADJACENT
- IN ORDER TO ALLOW DRAINAGE INTO AND OUT OF PLANTER AREA
- 11 AND W-12 ON NEW 6 INCH THICK REINFORCED PCC SLAB
- ALL FOUR SIDES PER ITEM 3 ABOVE

FT HIGH X 8 IN THK PLANTER BOX - SCALE
 1/2" FIELD CONDITIONS. TOP OF PLANTER BOX TO BE 6 INCHES
 WATER WITH ENCAUSTED SOLE AS AVAILABLE.
 SIDE WALK, AND CONSTRUCT
 E A-1 AND G-1.

City of San Diego

**REPORT FOR THE PALETA AND CHOLLAS CREEKS
REFUSE ASSESSMENT PROGRAM
DRY WEATHER MONITORING SEASONS
2003-2006**

March 13, 2007



**City of San Diego
Storm Water Pollution Prevention Division
1970 B Street, MS 27A
San Diego, CA 92102**

Paleta and Chollas Creeks Refuse Assessment Program Dry Weather Monitoring Seasons 2003-2006

Introduction

The City of San Diego Storm Water Pollution Prevention Division added and implemented a Creek Refuse Assessment Program component to the Dry Weather Monitoring Program in the Chollas and Paleta Creeks watershed areas, commencing in 2003. These sites are located at storm drain outlets, open channels, or manholes within the storm water conveyance system. The Creek Refuse Assessment Program trash monitoring methods provide quantifiable trash data that can be used as a baseline and to evaluate the effectiveness of Best Management Practices (BMP's) and identify sources of trash.

Methods

For this assessment, trash quantification and characterization was performed by determining and calculating the survey area, depth of trash, and estimated percentage of ground covered by trash/floatables within the survey area. The survey area was determined as described below:

- Manholes/Catch basins: estimated visible bottom area
- Channels: an estimate of twenty yards downstream of the monitoring point times the estimated width of the channel
- Storm Drain Outlets: an estimated twenty yards downstream times the estimated width of the channel. For flat bottomed channels, the estimated width was determined by the high water mark and for more incised channels the width was estimated between the vertical banks.

A total of 35-38 dry weather monitoring sites in Chollas and Paleta Creeks were visited and photographed each year during 2003-2006. Trash characterizations and quantifications were noted on a refuse assessment field form. In addition to collecting quantitative data, staff classified types of trash as described in Table 1.

Table 1. A description of the types of trash in each classification.

Paper	Writing paper, newspaper, cup, cigarette butts, etc
Plastic	Soft drink/juice bottles, Styrofoam, juice box, snack food wrappers, etc
Glass	Drink/food container, etc
Metals	Soda cans, soup cans, steel containers, etc
Vegetative	Landscaping debris, grass clippings, etc
Automotive	Vehicle parts and fluids, batteries, etc
Construction	Concrete debris, rebar, paint, solvents, gravel, dirt, lumber, roofing, etc

Total area surveyed can be expected to vary year-to-year based on a number of factors, including changes in drainage patterns due to different flows in the conveyance system, and differences in how the observer defines the drainage area.

After determining the area of survey, staff evaluates route of entry (storm drain, dumping, upstream, or a combination) and the types of trash present (as described above). Observed routes

Paleta and Chollas Creeks Refuse Assessment Program Dry Weather Monitoring Seasons 2003-2006

of entry are subject to change from year-to-year depending on factors such as public behavior/trash disposal habits, BMP effectiveness, rainfall events, and what the observer determines the route of entry to be. Factors considered when determining routes of entry include evidence of trash on slopes, bags that may have been tossed, or if the trash is under a bridge or some other place that would make it easy for someone to illegally dump there. Homeless encampments in or alongside creeks also contribute to trash. When determining if trash is solely from the storm drain outlet, observers may look inside the drain to compare types of trash, or may look at the drain discharge pattern. Comparisons of trash upstream of outlets to what is seen at the storm drain are helpful in determining the main source of the trash. In tidally influenced areas trash from all sources may be redistributed in the creek making trash entry route determinations difficult. Trash types can assist in determining whether the trash originates from residential households, or from commercial /industrial sources. The field data sheet includes a percentage range for each type of trash present. This may be used to generate an estimated volume of each type of trash observed.

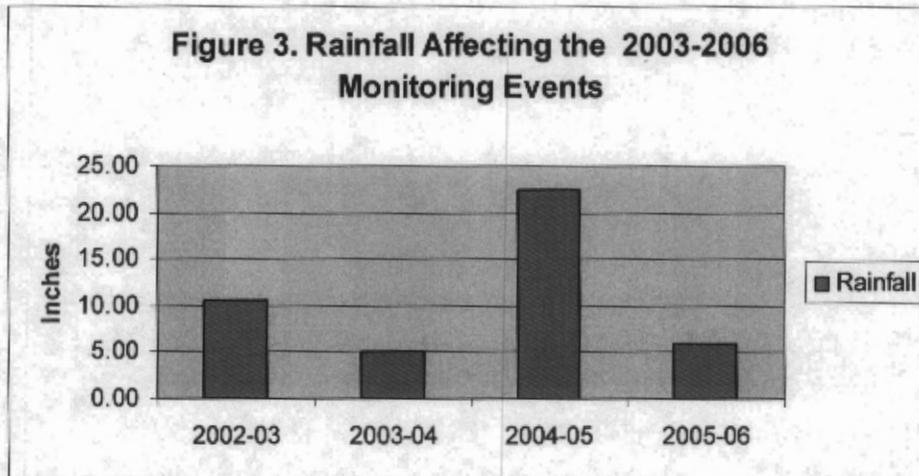
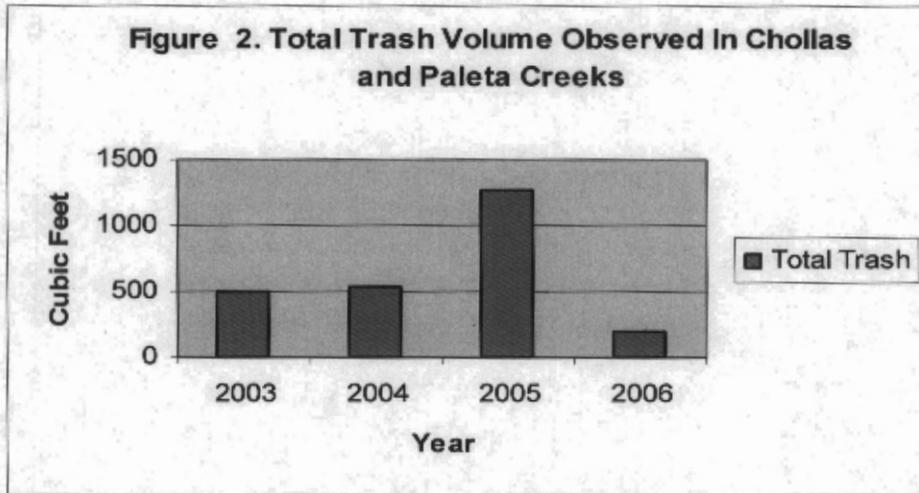
Monitoring Results

Analysis of data and photographs showed that trash was not necessarily visible from a typical vantage point such as a sidewalk or dirt path, though trash was found at nearly every site upon closer inspection. The photo below provides a visual example of trash at one location.



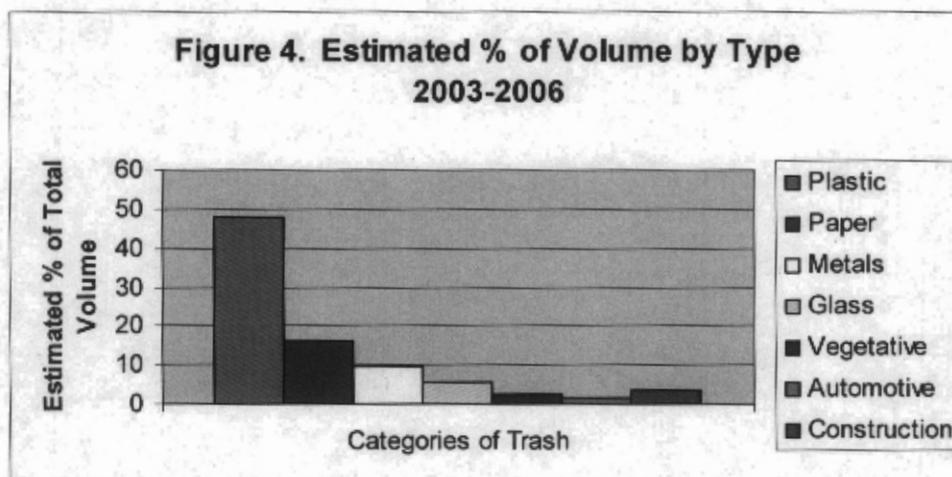
Total volumes of trash observed were similar in 2003 and 2004, increased significantly in 2005, and dropped back down in 2006. See Figure 2 for total trash volumes. It is thought that the record rainfalls over the 2004-2005 winter season increased the likelihood of trash being washed into the storm drain system, resulting in greater quantities of observed trash. See Figure 3 for winter rainfall information. Another factor strongly influencing the increase is the interpretation of quantity of trash by different observers.

Paleta and Chollas Creeks Refuse Assessment Program Dry Weather Monitoring Seasons 2003-2006



As shown in Figure 4, trash observed over the four monitoring seasons primarily consisted of paper and plastics. Staff observed that most paper and plastics consisted of recyclable drink containers, paper or Styrofoam cups, and snack packaging. The least common types of trash were vegetative waste, automotive parts, and construction debris. One category of trash not included on the data sheet, but frequently observed, was clothing.

Paleta and Chollas Creeks Refuse Assessment Program Dry Weather Monitoring Seasons 2003-2006



NOTE: The percentages in Figure 4 may not add up to 100; this chart should be used to compare types of trash on a relative scale.

Conclusion

The intent of this program is to assess the effectiveness of BMPs and to identify sources of trash in the Chollas and Paleta creeks, by characterizing and quantifying trash. Our current method adequately characterizes the types of trash, and it is possible to generate a very rough estimate of trash volume. It does not, however, allow for detailed, non-subjective analysis of potential sources of trash.

However, after four years of observation, monitoring staff that have conducted the trash assessments in the field are able to suggest that littering and illegal dumping are likely the most significant sources of trash in our creeks. Most of the trash consists of either everyday use items (such as food wrappers, cigarette butts, cups, etc.) more likely to originate with the general public rather than from specific commercial or industrial sources, or large piles of trash/debris or items that appear to have been deposited in the creek by illegal dumping.

Because the current field sheets have limitations in collecting data that would allow for detailed source identification, the City is currently working with other co-permittees in the Dry Weather Monitoring Regional Workgroup (the Workgroup) to develop a Trash Assessment program as required by Order 2007-0001. The Workgroup is revising the City's current field data sheet in order to capture more data for the 2008 monitoring season, beginning May 1, 2008. In the interim, the City will implement modifications to its field data sheet beginning May 1, 2007. New information collected on the draft of the revised field sheet include a more comprehensive description of trash types, likely routes, and an expanded likely source selection. Each component will be assigned a percentage of total value to assist in more accurate linking of types of trash to actual sources. This information will inform us of the best target audience for our efforts to ultimately reduce trash in our creeks.