

1.1 MONITORING PROGRAM OBJECTIVES

The major objectives of the Monitoring Program outlined in the Municipal Storm Water Permit are to:

- Assess compliance with the Los Angeles County Municipal Storm Water Permit No. CAS004001;
- Measure and improve the effectiveness of the Stormwater Quality Management Plans (SQMPs);
- Assess the chemical, physical, and biological impacts of receiving waters resulting from urban runoff;
- Characterize storm water discharges;
- Identify sources of pollutants; and
- Assess the overall health and evaluate long-term trends in receiving water quality.

The Monitoring Program, developed to address these objectives, has several elements: core monitoring, which includes mass emission monitoring, water column toxicity monitoring, tributary monitoring, shoreline monitoring, and trash monitoring; regional monitoring, which includes estuary sampling and bioassessment; and three special studies, which include the new development impacts study in the Santa Clara Watershed, the peak discharge impact study, and the Best Management Practice (BMP) effectiveness study.

1.2 MONITORING PROGRAM STATUS

The 1994-95 storm season was the first for which storm water monitoring was required under the 1990 Los Angeles County National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit (No. CA0061654). During the 1994-95 and 1995-96 seasons, automated and manual sampling was conducted to characterize storm water quality and quantity in accordance with the 1990 Municipal Storm Water Permit.

The 1996-97 season was the first storm season in which storm water monitoring was conducted under the 1996 Municipal Storm Water Permit (No. CAS614001). Under the 1996 Municipal Storm Water Permit, the scope of the Monitoring Program was expanded to incorporate further data collection through the Mass Emission, Land Use, and Critical Source Monitoring Programs, and new pilot studies, such as “Wide Channel” and “Low Flow” analyses.

Under the 2001 Municipal Storm Water Permit (No. CAS004001) adopted on December 13, 2001, the Monitoring Program eliminated Land Use and Critical Source elements and focused on core monitoring, regional monitoring, and three special studies. Due to varying compliance dates for each element, only mass emission, water column toxicity, and shoreline monitoring under the core monitoring program were addressed in the 2001-2002 Monitoring Report. The 2002-2003, 2003-2004 and 2005-2006 Monitoring Reports address mass emission monitoring, tributary monitoring, water column toxicity monitoring, shoreline monitoring, and trash monitoring under the core monitoring program, estuary sampling and bioassessment under the regional monitoring program, and the progress of the three special studies.

1.2.1 Core Monitoring

1.2.1.1 Mass Emission Monitoring

The objectives of mass emission monitoring are to estimate the mass emissions from the Municipal Separate Storm Sewer System (MS4), assess trends in the mass emissions over time, and determine if the MS4 is contributing to exceedances of water quality standards by comparing results to applicable standards in the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan), the California Ocean Plan (Ocean Plan), or the California Toxics Rule (CTR), and with emissions from other discharges.

Seven mass emission monitoring sites, Ballona Creek, Malibu Creek, Los Angeles River, Coyote Creek, San Gabriel River, Dominguez Channel, and Santa Clara River, were utilized to achieve the objectives outlined above during the 2005-2006 reporting period. Mass emission stations capture runoff from major Los Angeles County watersheds that generally have heterogeneous land use. All mass emission sites, except the Santa Clara River site, are equipped with automated samplers with integral flow meters for collecting flow-composite samples. Sampling at the Santa Clara River began during the 2002-2003 storm season. Although sample collections at the Santa Clara River station are performed manually, composite samples are achieved using the real-time flow measurements by a United States Geological Survey (USGS) stream gage near that site. A minimum of three storm events and two dry weather events were sampled at each mass emission site. Total Suspended Solids (TSS) were collected from four storm events at the Santa Clara River mass emission site; eight storm events at the Ballona Creek, Malibu Creek, and Los Angeles River mass emission sites; and seven storm events at Coyote Creek, Dominguez Channel, and San Gabriel River mass emission sites.

1.2.1.2 Water Column Toxicity Monitoring

The objectives of water column toxicity monitoring are to evaluate the extent and causes of toxicity in receiving waters and to modify and utilize the SQMP to implement practices that eliminate or reduce sources of toxicity in storm water. Composite samples were taken at the mass emission monitoring stations. Two storm events and two dry weather events were sampled at each mass emission site during the 2005-2006 season.

1.2.1.3 Tributary Monitoring

The objectives of tributary monitoring are to identify sub-watersheds where storm water discharges are causing or contributing to exceedances of water quality standards, and to prioritize drainage and sub-drainage areas that need management actions.

Sampling for the 2005-2006 season was conducted at six tributary monitoring stations in the Ballona Creek Watershed, same as for the 2004-2005 season. Exactly as during the 2004-2005 season, the tributaries monitored included Centinela Creek, Sepulveda Channel, Benedict Canyon, Adams Drain, Fairfax Drain, and Cochran. Automatic flow weighted composite samples were taken from each tributary location. Grab samples were also taken at these

locations. A minimum of four storm events and two dry events were sampled at each tributary monitoring site. Due to mechanical problems with the automated sampler at the Benedict Canyon site during the first storm of the season, October 17, 2005, no flow weighted composite samples were collected. Therefore, an additional storm was sampled, including both grab and flow weighted samples, on February 27, 2006.

1.2.1.4 Shoreline Monitoring

The City of Los Angeles is required to monitor shoreline stations to evaluate the impacts to coastal receiving waters and the loss of recreational beneficial uses resulting from storm water/urban runoff. Also, the Municipal Storm Water Permit requires the City of Los Angeles to annually assess shoreline water quality data and submit it to the Principal Permittee for inclusion in the monitoring report. Therefore, the City of Los Angeles' assessment is included in Appendix D of this monitoring report.

1.2.1.5 Trash Monitoring

The objectives of trash monitoring are to assess the quantities of trash in receiving waters after storm events and to identify areas impaired for trash. Visual observations of trash were made and a minimum of one photograph at each mass emission station was taken after four storm events including the first storm event.

In addition, a minimum of ten representative sites for each land use monitored were sampled. On average, each sampling site contained a minimum of five catch basins fitted with inserts with a total of 256 inserts within the Los Angeles Watershed Management Area (WMA) and 309 inserts within the Ballona Creek WMA. A total of five structural full capture devices or Continuous Deflective System (CDS) units were installed. However, one of the CDS units was decommissioned at the end of the 2003-2004 season due to operating issues. All of the upstream catch basins were fitted with inserts. Each insert and CDS unit were emptied within 72 hours of every rain event of 0.25 inches or greater, additionally being emptied every three months during dry weather.

1.2.2 Regional Monitoring

Los Angeles County Department of Public Works (LACDPW), representing the Flood Control District, is participating in regional monitoring programs that address public health concerns, monitor trends in natural resources and near shore habitats, and assess regional impacts from storm water pollutant sources. Those regional programs include the following:

1.2.2.1 Estuary Sampling

In compliance with Section II.F of the storm water monitoring requirements, LACDPW is participating in the coastal ecology committee of the Bight 2003 project coordinated by the Southern California Coastal Waters Research Project (SCCWRP). The two primary objectives of Bight 2003 are to estimate the extent and magnitude of ecological change in the Southern California Bight (SCB) and to determine the mass balance of pollutants that currently reside

within the SCB. Regional monitoring components include coastal ecology, shoreline microbiology, and water quality. This project has been conducted in collaboration with various organizations including regulators, wastewater and stormwater permittees, and citizen volunteers under the coordination of SCCWRP.

The goal of the Estuary Sampling program required under Section II.F is to supplement the regional monitoring of the SCB estuarine habitats by sampling estuaries for sediment chemistry, sediment toxicity, and benthic macroinvertebrate diversity to determine the spatial extent of sediment fate from storm water, and the magnitudes of its effects. In Los Angeles County, the estuaries being sampled are those of: Malibu Creek, Ballona Creek, Los Angeles River, San Gabriel River, and Dominguez Channel.

Following is an update on the status of the SCB Regional Monitoring and Estuary Monitoring during this reporting period:

All sampling and analyses for Estuary Monitoring were completed. The preliminary results were subsequently reported in the previous reporting period.

SCCWRP has issued the final Regional Monitoring reports for Sediment Toxicity and Sediment Chemistry. The remaining reports that will complete the Bight 2003 project are expected by December 2006.

The Sediment Toxicity report indicated that sediment toxicity was not wide spread in the SCB but was concentrated mostly in marinas and estuaries. In the Los Angeles Region, the majority of estuary sediment toxicity was observed in the Dominguez Channel and Ballona Creek and may have been the result of organic contaminants, possibly pesticides currently used in the watersheds.

The Sediment Chemistry report revealed that the majority of the SCB had some level of anthropogenic sediment constituents including metals and organic pollutants. However, only one percent of the SCB was at a moderate to high risk of adverse biological effects (ERM quotient greater than 0.5) due to the presence of these sediment constituents. That is mainly focused at the LA estuaries, marinas, and large POTWs.

1.2.2.2 Bioassessment

Bioassessments aid in the evaluation of the qualitative integrity of water bodies through the detection of biological responses and trends resulting from exposure to pollution within watersheds. Section II.G of the storm water monitoring permit requires LACDPW to perform regional bioassessments of the streams in Los Angeles County in October every year. Sampling sites are spread throughout each of the six major watersheds and are selected to represent the diverse environments of the Los Angeles region. Table 1-1 lists the sampling station locations and Figure 1-1 is a map showing the geographical location of the sampling stations. In addition to regional water quality assessment, information gathered from the biological surveys in Los Angeles County will be combined with data collected from surrounding counties to refine an

Index of Biological Indicators for the Southern California region, if possible. For complete details, the final report from the previous year of the Bioassessment Monitoring Program (2005-2006) is included in Appendix H of this annual report.

1.2.3 Special Studies

As required by the 2001 Municipal Storm Water Permit, LACDPW, representing the Flood Control District, is conducting special monitoring programs, including the following:

1.2.3.1 New Development Impacts Study in the Santa Clara Watershed

The objective of the New Development Impacts Study in the Santa Clara Watershed is to evaluate the effectiveness of the Standard Urban Storm Water Mitigation Plan (SUSMP) Best Management Practices at reducing pollutants in storm water runoff.

The Regional Board, in a letter dated March 7, 2003, allowed the County and the City of Santa Clarita to fulfill this permit requirement by simulating the expected improvements from implementation of SUSMP through a mathematical modeling. On November 13, 2003, we submitted a work plan to the Regional Board. The US EPA's Storm Water Management Model (SWMM) will be used to conduct a deterministic hydrological modeling coupled with a stochastic Monte Carlo approach for modeling storm water runoff water quality.

A small watershed tributary to the Santa Clara River in the western side of the City of Santa Clarita was selected for monitoring and modeling. The 126-acre drainage area of this pre-SUSMP site includes a mix of residential and commercial land uses, and therefore met both the drainage area sizing and land use criteria for the modeling project.

A monitoring station and rain gage were installed at the outlet of the watershed. The station included a flow meter and automatic sampler. The equipment can be monitored remotely through the cell phone connection and hydrologic data are currently downloaded on a weekly basis.

Some of the activities to be conducted in the next reporting period include creation of the hydrologic network for SWMM model and compilation of initial series of BMP scenarios that will be modeled.

1.2.3.2 Peak Discharge Impact Study

The study was conducted to fulfill the requirement to develop numeric criteria for peak flow control by assessing the potential cause and effect relationships between urbanization in watersheds and stream erosion in Los Angeles County.

The SCCWRP and Los Angeles County Flood Control District were jointly conducting the study through a consultant contract. The study results were previously reported. The numeric criteria for peak flow control were developed and submitted in the previous reporting period.

1.2.3.3 BMP Effectiveness Study

The Municipal Stormwater Permit requires a study of the effectiveness of various BMPs. Five different types of BMPs have been chosen for this study. These BMPs included five catch basin inserts connected in series with a hydrodynamic separator downstream of these inserts in the City of South Pasadena, an enhanced manhole in one of Los Angeles County Public Works maintenance yards in the City of Los Angeles, a bioswale located in the City of Los Angeles inside a small public park, and a treatment train that consisted of a wet vault for oil and sediments separation followed by an infiltration trench inside a metal recycling recycling facility in the City of Los Angeles. Monitoring started during the 2004-2005 season. Current activities include design and construction of flow measuring devices, installation of water samplers, and development of monitoring plans. It is anticipated that continuous deflective separator devices and metals filtration units will be monitored at the Sun Valley Park Project during the 2006-2007 season. The selected BMPs will be evaluated for effectiveness of removing various pollutants from stormwater runoff.