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**ANNUAL REPORT 2003-04**

**Stormwater Monitoring Coalition  
of Southern California**

**November 15, 2004**

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## INTRODUCTION

As a result of the increasing regulatory focus and the lack of scientific knowledge base, both stormwater regulators and municipal stormwater management agencies throughout southern California have developed a collaborative working relationship. The goal of this relationship is to develop the technical information necessary to better understand stormwater mechanisms and impacts, and then develop the tools that will effectively and efficiently improve stormwater decision-making. As individuals and agency representatives, there was early recognition that these issues are oftentimes not localized, but typically cross watershed and jurisdictional boundaries. This relationship culminated in a formal letter of agreement, signed in 2000, by all of the Phase I municipal stormwater NPDES lead permittees and the NPDES regulatory agencies in southern California to create the Stormwater Monitoring Coalition (SMC) (Table 1).

**Table 1. List of member agencies in the Stormwater Monitoring Coalition**

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California Regional Water Quality Control Board, Los Angeles Region  
 California Regional Water Quality Control Board, San Diego Region  
 California Regional Water Quality Control Board, Santa Ana Region  
 City of Long Beach  
 County of Orange, Resources and Development Management Dept.  
 County of San Diego Stormwater Management Program  
 Los Angeles County Department of Public Works  
 Riverside County Flood Control and Water Conservation District  
 San Bernardino County Flood Control District  
 Southern California Coastal Water Research Project  
 Ventura County Watershed Protection District

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As a first step, a panel of experts was commissioned to help define a five-year research agenda for the SMC. The research agenda, published in 2001, consisted of 15 unique projects developed around three main foci: 1) developing a regional monitoring infrastructure; 2) understanding stormwater runoff mechanisms and processes; and 3) assessing receiving water impacts. Regional monitoring infrastructure included projects such as standardization of sampling and reporting programs. Stormwater runoff and mechanisms included projects such as peak flow impacts. Receiving water impacts included projects such as developing regional bioassessment protocols.

As the research agenda finishes its third year, the SMC has been a successful and positive resource to its member agencies. Five projects from the research agenda have been initiated, three of which have been completed. Several more are under serious consideration for implementation in the upcoming year. What's more, all of the completed projects have been on time and on (or under) budget. Not only does the collaborative nature of SMC projects represent tremendous value to the member agencies because project costs are split across multiple agencies, but the SMC has been successful in attracting outside resources and agency support. For example, three projects have been supported by the State Water Resources Control Board (SWRCB) totaling \$425,000. In

addition, in-kind assistance has regularly been received from inland wastewater dischargers, environmental groups, universities, and regulatory or stormwater agencies that are not currently SMC members. The power of collaboration should magnify as the SMC continues to be successful in accomplishing its goals. Below is a list of the project accomplishments during the 2003-04 reporting period from July 2003 to June 2004.

## PROJECT ACCOMPLISHMENTS

### **Develop Standardized Sampling and Analysis Protocols**

Status: 100% completed

Budget \$180,000

This project developed a recommended stormwater monitoring infrastructure in order to increase comparability among programs throughout southern California. The SMC developed a four-step approach to accomplish this goal: (1) define the monitoring questions of interest, (2) assess what monitoring programs are currently doing to determine how well they are answering the monitoring questions, (3) create an optimum design for answering the monitoring questions, and (4) conduct QA intercalibration studies. This study was partially funded by the SWRCB in response to SB 72, whose legislative goal was to standardize sampling, analysis and reporting for stormwater monitoring. It was made clear that the SMC is only developing a design for the southern California region.

A technical working group was formed to guide the study and met monthly for over one year. The working group included the stormwater agencies and regulators on the SMC, the SWRCB, and Heal the Bay (an environmental advocacy group). The working group delivered three documents to the SMC and SWRCB, all of which were approved and have been posted on the Internet ([http://www.sccwrp.org/tools/model\\_monitoring2.html](http://www.sccwrp.org/tools/model_monitoring2.html)). These documents included:

- *Monitoring Design Document* - provided the approach, rationale, and methodology for developing the model monitoring program, which is structured around five fundamental management questions.
- *Laboratory Manual* - uses a performance-based quality assurance approach for setting accuracy, precision, and sensitivity goals for a common list of constituents.
- *Information Management Manual* - uses standardized data transfer formats (SDTF) for agencies to share information.

The technical working group provided many useful tools for agencies to use in implementing the new designs at the local level including decision trees, adaptive monitoring triggers for increasing or decreasing effort, a ranking system for prioritizing

toxicity identification efforts or bacterial source identification, and strategic incorporation of the model program based on existing monitoring effort. Two of the tools are available as stand alone products including:

- Standardized Data Transfer Format (SDTF) compliant database
- Power analysis tool for determining sampling frequency to detect trends.

The stormwater model monitoring program has already begun to be implemented in southern California. At least two member agencies have used the concepts of the model monitoring program in their negotiations for NPDES permit renewals. Likewise, regulatory agencies have begun inserting the tools developed as part of this project into permit monitoring and reporting programs. The model monitoring program has also found a new application in the development of watershed wide monitoring programs for the San Gabriel River and Malibu Creek.

### **Peak Flow Impacts**

Status: 90% completed

Proposed budget \$280,000

Watershed development increases imperviousness eventually leading to alterations in runoff flow regimes. This alteration in flow regime, particularly increased flows during high frequency events (i.e. 1-2 year storms), can result in downstream impacts such as increased erosion or habitat loss. The goal of this study is to quantify impacts from increased peak flows as a result of watershed development. Ultimately, the objective of this study is to develop indicators of peak flow and resulting peak flow impacts so that regulators and regulated agencies can develop numerical criteria for peak flow. This project is fully funded by the Los Angeles County Department of Public Works (LACDPW), although most of the SMC members are interested in this study.

This project is in its final stages. A technical workgroup has been formed in coordination with the SMC consultant, EarthTech/Aquifer-Beech, to guide the study. The workplan targeted 10 sites located in Ventura, Los Angeles, and Orange Counties. Field work examined stream geomorphology and compared these results to historical geomorphologic data and changes in land use within in their respective catchments. The goal was to use these results to produce a conceptual model for bank and streambed morphological processes, a classification matrix for categorizing cohesiveness, a resiliency index for identifying stream channels most at risk, and a numerical model that will be used for evaluating management actions to stabilize at risk channels. A draft report has been written and was distributed to the SMC in November 2004. The report should be finalized in December.

This project represents the first step in a multi-year, multi-targeted research program. The data collected and interpreted in this project provides a good overview of potential impacts and categorizes the types of channels most susceptible to stream bed and bank

erosion. It does not, however, provide specific numerical guidance and still needs to be validated in all types of watersheds found in southern California. These are the next challenges for subsequent studies based on the information gleaned from this initial step.

### **Building a Regionally Consistent and Integrated Freshwater Stream Bioassessment Monitoring Program**

Status: 5% complete

Proposed budget \$280,000

Assessment of freshwater biological communities represents a potentially powerful tool for evaluating the effects of discharges in southern California creeks and streams. Bioassessments integrate the effects of multiple stressors, including chemical pollutants and physical alterations in receiving waters. The value of biological assessments is that they are closer to many of the defined beneficial uses of receiving waters (i.e. aquatic life, warm water habitat, cold water habitat) than chemically-derived water quality objectives.

The goal of this study is to build a regionally consistent bioassessment monitoring program. This project will be completed in three phases including: 1) methods standardization; 2) calibrating and validating a regional assessment tool; and 3) designing and implementing an integrated, coordinated regional monitoring program. The first phase focuses on creating a monitoring infrastructure so that multiple agencies are properly trained, data are collected in comparable manners, and data can be efficiently shared. The second phase focuses on developing an assessment tool that is robust enough to be used by all agencies across the region. This will enable a consistent approach for evaluating the status of freshwater biological communities and provide the answers regarding community impacts to managers in meaningful and understandable terms. The third phase focuses on creating a study design that most efficiently answers specific questions of interest at large regional scales. Addressing some questions at regional scales can provide cost efficiency for addressing reference condition, cumulative impacts, and when nested within a local sampling design, provides unparalleled information for providing context to local monitoring data.

The main collaborators on this project are SCCWRP and the California Department of Fish and Game (CDF&G). The project is 50% funded by the SWRCB, whose main desire is to ensure integration with the Statewide Ambient Water Monitoring Program (SWAMP). This will provide further value to SMC member agencies. To date, the SMC has begun bioassessment training for member agencies. Over the next year, SCCWRP and CDF&G intend to continue training, create a region-specific standard operating procedure for bioassessment sampling and analysis, initiate the assessment tool development/validation, and begin developing an information management system for biological data.