

**2003-2004 Annual Review of Municipal Stormwater Programs
with Focus on Monitoring
Santa Clara Valley Urban Runoff Pollution Prevention Program
Janet O'Hara and Sue Ma**

The Santa Clara Valley Urban Runoff Pollution Prevention Program (the Program, or SCVURPPP) consists of 15 permittees, ranging from the large city of San Jose to the small town of Monte Sereno, and including Santa Clara County and the Santa Clara Valley Water District. They have been jointly permitted since 1990, and thus have a great deal of experience in stormwater management. Board staff's review of the Program's FY 2003-04 Annual Report focused on the New/Redevelopment Projects and Monitoring components of Program activity. Overall, staff found these two components of the Program to be generally in compliance.

New and Redevelopment

In FY 2003-04, a total of 62 Group 1 Projects (projects creating one acre or more of impervious surface) were processed/approved in the Santa Clara Valley. Individual permittees processed from zero (Palo Alto) to 34 (San Jose) Group 1 projects. Of the 62 projects, 35 (30 of them in San Jose) were exempted from the requirement to install numerically-sized stormwater treatment Best Management Practices (BMPs) because their applications were deemed complete prior to October 15, 2003. The site area of the 62 Group 1 Projects varied greatly, from 1+ to 578 acres, and the new or replaced impervious surface areas created ranges from 1 acre to 30 acres. Finally, on the upside, among the 35 projects exempted outright, 11 projects nonetheless did include treatment BMPs such as biofiltration swales, detention basins, and sedimentation ponds. The fact that these projects voluntarily plan to install treatment BMPs provides evidence that the Board's and the permittees' public outreach efforts are working and having a positive influence on the regulated community.

The completeness of individual permittee reporting of Group 1 Projects in the Annual Report varies broadly, with Sunnyvale and San Jose providing the most comprehensive information. Board staff has developed a "template" for the Reporting Tables that the permittees will be required to use next year for reporting information on individual Group 1 and 2 projects. (Group 2 projects create or replace 10,000 ft² or more of impervious surface.) The purpose of collecting the information in the Reporting Tables is two-fold. First, the Tables will provide Board staff with a good summary of the Group 1 and 2 Projects in Santa Clara County and allow us to compile and evaluate the types of treatment BMPs being implemented. Second, the Tables will produce a comprehensive database that can be used by the permittees to track and evaluate operation and maintenance of the treatment BMPs once they are installed, as required by the permit.

Water Quality Monitoring

The Program employed a three-prong approach to water quality monitoring: the three prongs can be thought of as **baseline data collection, special monitoring studies, and regional monitoring.**

The Program’s approach to **baseline data collection** is similar to that used by Board staff in the State’s Surface Water Ambient Monitoring Program (SWAMP), and we appreciate this move towards consistency. In FY03-04, the Program collected baseline data in Adobe (see figure), San Tomas Aquino, and Saratoga creeks, for a total of ten water quality samples and three sediment quality samples. These creeks were selected based on the prioritization scheme documented in the Program’s Watershed Integration report.

With so few samples, and limited funds available for additional sampling, it is difficult to get a clear picture of the water quality in urban creeks with the baseline monitoring. Many stormwater programs are turning to rapid bioassessment in an effort to get more information for the dollar. Bioassessment uses benthic macroinvertebrates (the insects and other small animals that live in the bottom of a creek) to indicate the biological and ecological health of a creek. Bioassessment is a new tool, and stormwater programs are working together to develop reference benchmarks for benthic macroinvertebrates, which will be used to interpret the data. Until then, we can only tell whether there is a relatively high, medium, or low benthic population. Unfortunately, the benthic population is almost invariably low in urban areas, which greatly limits the usefulness of bioassessment in urban areas. We are tentatively hopeful that the region-wide effort to develop benchmarks will increase the value of bioassessments, and we value the collection of physical habitat information during bioassessment. The Program collected bioassessment samples at eleven locations in FY03-04.

Baseline data collection results are summarized below.

FY 03-04 Monitoring Data – Santa Clara Valley Creeks

	Adobe Creek	San Tomas Aquino Creek	Saratoga Creek	Water Quality Objectives or Benchmark Values
Copper-total	1.6-4.9 µg/L	1.1-21.0µg/L	1.2-19.0 µg/L	13 ¹ µg/L (1 hr avg)
Nickel-total	2.6-3.4 µg/L	2.3-3.5 µg/L	2.2-3.8 µg/L	470 ² µg/L (1 hr avg)
Mercury-total	not detected at 0.005 µg/L	not detected at 0.005 µg/L	not detected at 0.005 µg/L	2.4 ³ µg/L (1 hr avg)
Diazinon	not detected	not detected	not detected	At detection limit of 0.01 µg/L
PAHs in sediment	97.5 µg/kg	473.6 µg/kg	7.5 µg/kg	211 µg/kg ⁴
PCBs in sediment	1.75 µg/kg	0.05 µg/kg	not detected	8.6 µg/kg ⁴
Chlorinated Pesticides in sediment	Analyzed for 30 different chlorinated pesticides in creek sediments. Almost all were below their laboratory detection limits, except 4,4”DDE found at 13 µg/kg in San Tomas Aquino Creek			2.8 µg/kg ⁵
Toxicity	Dry season-none	Dry season-decreased	Dry season-some	Narrative Water

¹ Basin Plan Freshwater Water Quality Objective of the dissolved fraction of the metal in water column. Assumes a hardness of 100 mg/l CaCO₃. Site Specific Objective for Marine and Estuarine Waters Contiguous to SF Bay, South of Dumbarton Bridge is 10.8 µg/L dissolved, one-hour average criteria maximum concentration.

² Basin Plan Freshwater Water Quality Objective of the dissolved fraction of the metal in water column. Assumes a hardness of 100 mg/l CaCO₃. Site Specific Objective for Marine and Estuarine Waters Contiguous to SF Bay, South of Dumbarton Bridge is 62.4 µg/L dissolved, one-hour average criteria maximum concentration.

³ Basin Plan Freshwater Water Quality Objective. The CTR human health criteria for mercury are also legally applicable to all waters of the San Francisco Bay Region.

⁴ Ambient concentration for San Francisco Bay sediment based on less than 40% fine, May 2000.

⁵ Ambient concentration for DDTs for San Francisco Bay sediment based on 40% fine – total of 6 isomers, May 2000.

	Wet season-slight water flea reprod'n inhibition	water flea reproduct'n & algal growth Wet season-same as Adobe	algal growth inhibition Wet season-same as Adobe	Quality Objective from Basin Plan ⁶
Fecal Coliform	>1600 MPN/100 ml	80-9000 MPN/100 ml	20-900 MPN/100 ml	< 200 MPN/100 ml ⁷
Temperature	11.7-22.2° C	9.1-24.8° C	7.6-22.8° C	Need background temperature ⁸
Dissolved Oxygen	4.6-18.0 mg/L	9.5-17.3 mg/L	9.3-15.4 mg/L	5 mg/L minimum ⁹
Bioassessment Results	Number and diversity of benthic organisms decreased with urban land uses, increased in upstream non-urban areas			None established

In FY 03-04 one **special monitoring study** was conducted within the Santa Clara Basin: preliminary sampling and a *Data Collection Plan* were completed for mercury in the Guadalupe River in support of the Guadalupe Mercury TMDL and funded by the Santa Clara Valley Water District. In addition, the Program incorporated monitoring for pollutants of concern (TMDL pollutants) within its baseline monitoring. This included sampling creek water for organophosphate pesticides (10 samples), conducting four toxicity tests, analyzing sediment and water samples for copper and nickel, and analyzing sediment samples for PCBs.

SCVURPPP also contributed funding and staff time to **regional monitoring efforts**, including the Regional Monitoring Program and the Clean Estuary Partnership. Program staff was active in further development of the bioassessment protocol mentioned above.

SCVURPPP's monitoring efforts are in compliance with its permit and represent an improvement over earlier years. We appreciate its adoption of SWAMP methods, which helps create consistency and comparability among the data collected by various parties. An area where improvement is needed is reporting. Like other stormwater programs, SCVURPPP's annual report lacks data evaluation and a summary of what the Program has learned from its monitoring efforts. As in previous years, we continue to direct SCVURPPP to ask and attempt to answer such questions as: Are Program activities affecting water quality? Should different actions be taken? How have trends in data quality changed? How do the Permittees take into account the 11 years' of data from the RMP? SCVURPPP's annual report contains over 350 pages of monitoring information, but does not ask or answer these types of questions. To correct this, we asked the Program to submit a detailed outline for the annual monitoring report that fully addresses these concerns, so that the Program's FY 04-05 Annual Report will contain the needed evaluation and associated actions.

⁶ All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms.

⁷ From Table 3-1 of Basin Plan. < 200 MPN/100 ml geometric mean for water contact recreation. < 2000 MPN/100 ml mean for non-water contact recreation.

⁸ The natural receiving water temperature of inland surface waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses. The temperature of any cold or warm freshwater habitat shall not be increased by more than 5°F (2.8°C) above natural receiving water temperature

⁹ From Chapter 3 of Basin Plan. 5 mg/L for warm water habitat. 7 mg/L minimum for cold water habitat.

Figure: Five sample locations in Adobe Creek, denoted by yellow boxes

