

CITY OF ORANGE LOCAL IMPLEMENTATION PLAN (LIP)

SECTION A-11 WATER QUALITY MONITORING



A-11.0 WATER QUALITY MONITORING

This section describes the water quality monitoring and follow-up activity implemented by or on behalf of the City. Beginning with the development of the DAMP 1993, the Permittees have used the DAMP to assist them in meeting the requirements of the Regional Board Monitoring and Reporting Program as required by the permits to improve storm water management practices and where necessary to address identified problems and implement new practices.

A-11.1 Monitoring and Follow-up Activity Carried Out by the Principal Permittee

The City participates financially through the annual cost-share agreement described in Section 2.0, to support the implementation of the following required monitoring programs by the County of Orange as the Principal Permittee:

- Mass emissions monitoring: Currently the Principal Permittee monitors 11 mass emissions stations to estimate the total mass emissions (range of urban contaminants and loads) from the MS4; assess trends in mass emissions over time; and to determine if the MS4 is contributing to exceedances of water quality objectives or beneficial uses, by comparing results to the California Toxics Rule (CTR), Basin Plan, Ocean Plan and/or other relevant standards. Samples are collected from the first storm event and two more storm events during the rainy season. A minimum of three dry-weather samples are also collected.
- Estuary/wetlands monitoring: Currently the Principal Permittee monitors 20 sites in Upper Newport estuary, Talbert Marsh, and Bolsa Chica wetlands areas to determine the effects of storm water and non-storm water runoff associated with increased urbanization on these systems. These monitoring locations include representative areas surrounding channel outfalls and areas away from channel outfalls to enable the determination of storm water and non-storm water effects on sediment chemistry, toxicity, benthic communities, nutrient status, and spatial extent of sediment fate within the estuarine environment.
- Bacteriological/pathogen monitoring: This monitoring element uses measurements of a
 suite of bacterial indicators to identify spatial and temporal patterns of elevated level in
 order to prioritize problem areas. The Permittees currently monitor 9 representative areas
 along the Orange County coastline and six inland water bodies/channels, for total coliform,
 fecal coliform, and enterococcus in order to determine the impacts of storm water and nonstorm water runoff on loss of beneficial uses to receiving waters.
- **Bioassessment:** Using a "triad" of indicators (bioassessment, chemistry, toxicity), the Permittees currently monitor 12 stations in cooperation with the Southern California Coastal Water Research Project (SCCWRP) in efforts to evaluate the biological index approach for Southern California and to design a research project for developing an Index of Biological Integrity (IBI) for the region.



- **Reconnaissance**: Using measurements of key pollutants, reconnaissance monitoring identifies potential illegal discharges and illicit connections based on comparison with historical data and available estimates of background levels.
- Water Column Toxicity Monitoring: The current monitoring program analyzes for toxicity
 to freshwater and marine species on mass emissions samples to determine the impacts of
 storm water and non-storm water runoff on toxicity of receiving waters.
- **Sediment:** The Principal Permittee monitors sediment toxicity at seven stations in Newport Bay and seven stations along Huntington Harbour/Talbert Marsh areas.
- Land use correlations: Using an experimental, "before-after," design, this monitoring element identifies changes in runoff associated with the urbanization of previously agricultural land.
- TMDL/303(d) Listed Water Body Monitoring: The Permittees participate in the Regional Monitoring Program for the San Diego Creek Nutrient and Toxics TMDLs, and evaluate the impacts of runoff on all impairments within the Newport Bay watershed and other 303(d) listed water bodies.

For the Mass Emissions Monitoring, Bioassessment and receiving waters monitoring programs described above, associated follow-up special investigations to determine the extent and causes of MS4 discharge contributions to key identified impacts are generally conducted by the County, with City financial or logistic support as needed, as described in the Monitoring and Reporting Program. Follow-up investigation findings are used to inform the prioritization and implementation of City and/or County management actions to reduce/eliminate sources.

A-11.2 Monitoring and Follow-up Activity by the City

The following monitoring and follow-up activities are carried out by the City, with technical assistance from the County as needed:

- Follow-up Investigations and Enforcement for the Illicit Connection/Illegal Discharge Program: As described under Section A-10, the City may conduct water quality sampling as a component of follow-up investigations and/or enforcement actions to help determine the source(s) of significant pollution identified via hotline reports and the dry weather monitoring program.
- BMP Effectiveness Evaluation: As described in Section A-3, the City may conduct and/or cooperate with water quality sampling to verify whether Best Management Practices proposed or implemented in response to the IC/ID Program or other programs are effective in reducing the constituent(s) of concern at a specific problem location, at MS4 outfalls, in receiving waters, or at research site(s); or whether another iteration of BMPs should be considered to make progress toward attaining water quality objectives. The City



may also conduct water quality sampling to verify the effectiveness of its Municipal, Existing Development, and Construction BMP programs.

All water quality analyses for the City-run sampling and monitoring programs will be collected and analyzed by professional staff and a commercial laboratory. Monitoring data accumulated under the above programs will be evaluated and reported by the City.

A-11.3 Reporting

Data from the Monitoring and Reporting Program conducted by the Principal Permittee on behalf of the City and Permittees are assessed by quantitative evaluation of data and analyses of short-and long-term trends as appropriate, and are reported to the Regional Board by the Principal Permittee.