

Draft
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Scope of Work for Evaluation of the Cost of Controlling Exceedances of Water Quality Standards in NPDES-Permitted Urban Area and Highway Stormwater Runoff

Background

The US EPA has established the requirement that NPDES-permitted urban area and highway stormwater runoff shall not cause or contribute to exceedances of water quality standards in the receiving waters for the runoff. In most situations, this requires that the runoff quality comply with water quality standards, since mixing zones are not typically allowed for stormwater runoff. Under the current regulatory approach, an exceedance of a water quality standard in runoff waters will initiate a BMP ratcheting-down process. The BMP ratcheting-down process will ultimately, over some yet-unspecified time, cause NPDES-permitted stormwater runoff water quality management agencies to implement increasingly more effective best management practices (BMPs). These BMPs will be directed toward the control of the concentrations of chemical constituents, fecal indicator organisms, and other characteristics of stormwater runoff that are judged to potentially cause a waterbody to be considered impaired and be placed on the 303(d) listing of impaired waterbodies by a Regional Board. This listing initiates the Total Maximum Daily Load (TMDL) process designed to control the concentrations of constituents/pollutants entering the waterbody which cause exceedances of water quality standards.

Information available on conventional stormwater runoff water quality BMPs such as detention basins, grassy swales, etc., shows that these BMPs will not treat urban area and highway stormwater runoff sufficiently to eliminate exceedances of water quality standards in the runoff waters. Further, the cost of retrofitting such BMPs in developed urban areas is estimated to be on the order of \$1 to \$3 per person, per day for the population served. These high costs are primarily associated with land acquisition within developed areas.

In order to achieve full compliance with water quality standards in urban area and highway stormwater runoff, it may be necessary to employ advanced water/wastewater treatment technology at the cost of many millions to hundreds of millions of dollars in small to moderate-sized communities, to tens of billions of dollars in major metropolitan areas such as Los Angeles.

The State Stormwater Quality Task Force finds that there is need to develop stormwater runoff compliance cost information for several communities in California, in order to inform decision-makers and the public of the costs that will ultimately have to be borne by the public through the implementation of the BMP ratcheting-down process to achieve full compliance with current water quality standards in the stormwater runoff as it enters the state's waters. The State Stormwater Quality Task Force wishes to receive proposals for the development of independent, reliable information on urban area and highway stormwater runoff compliance costs to achieve water quality standards in the runoff waters.

Scope of Work

The contractor shall develop information on the cost of controlling chemical constituents, pathogen indicator organisms (fecal coliforms), and other characteristics of urban area and highway stormwater runoff that can cause or contribute to exceedances of water quality standards, including Regional Board Basin Plan objectives, in the state's waters at the point of discharge of the stormwater runoff to these waters.

The cost/compliance evaluation should focus on two types of situations. One of these is the retrofit of conventional urban stormwater runoff BMPs such as detention basins, grassy swales, and stormwater infiltration systems for several cities in southern California, the Central Valley, and the San Francisco Bay Area. As part of this review, information should be provided on the expected performance of the conventional BMPs in controlling chemical constituents and stormwater runoff characteristics, such as aquatic life toxicity, or contributions of nutrients which lead to a waterbody being considered excessively fertile. The degree of control should consider the management of stormwater runoff-associated constituents so that they do not cause water quality standards violations, assuming 25, 50 and 75 per cent control of the constituent in the stormwater runoff as part of a phased TMDL implementation program.

The second situation that should be considered as part of developing a cost assessment is full compliance with water quality standards and control of characteristics, such as aquatic life toxicity so that violations of water quality standards do not occur by any amount for any constituent in the stormwater runoff more than once every three years.

Since one of the primary costs of retrofitting stormwater BMPs is the acquisition of land for the collection and treatment system, consideration should be given in this review to the cost of land needed to implement these BMPs in several representative California cities.

The report shall include an analysis of what the costs for implementing BMPs to achieve water quality standards translates into for property tax increases, and/or bonding feasibility. Further, the costs shall include an estimate of the O&M and capital costs for the various BMPs reviewed. A suggested list of constituents of concern and BMPs is attached.

An initial phase of this project shall be the development of a budget to cover the development of a credible independent report that would be considered a reliable presentation of this information. Included within the budget consideration should be an evaluation of the potential to obtain grant funds from federal and state agencies, as well as municipalities, to support this effort.

The time frame for the development of a draft report should be nine months, with the completion of the final report upon receipt of comments from the Task Force and other interested parties within 12 months.

It is proposed that a project advisory panel be appointed that would work with the contractor to address issues that arise during the course of the review. The nature of this advisory panel will be determined by the Stormwater Quality Task Force Executive Committee. Funding may be needed to support the time and expenses of some members of the advisory panel, where their employer cannot provide this support.

Further information on this proposed project can be obtained from Dr. G. Fred Lee, G. Fred Lee & Associates, 27298 East El Macero Drive, El Macero, California 95618-1005, phone (530)753-9630, fax (530)753-9956, email gfredlee@aol.com.

Suggested BMPs

- A. Aggressive Source Control
- B. New Detention Basins + A.
- C. Retrofit Detention Basins + A. + B.
- D. Grassy Swales
- E. Stormwater Infiltration
- F. Advanced Water/Wastewater Treatment, including reverse osmosis, activated carbon columns, ion exchange, advanced coagulation, filtration, etc. + A + B. + C. + D.
- G. Other Technologies

Constituents of Concern

- Copper
- Lead
- Zinc
- Bis (2-ethyl) phthalate
- Fecal coliforms
- Total coliforms for shellfish areas
- Aquatic life toxicity due to the OP pesticides diazinon and chlorpyrifos
- Cadmium
- Mercury
- PAHs, individual and total
- Nutrients (nitrate/ammonia and/or phosphorus)
- Sediment-associated constituents that cause exceedance of sediment quality guidelines in receiving water sediments
- Chlorinated hydrocarbon pesticides (DDT, chlordane) ?
- Dioxins
- Arsenic
- Chromium VI
- Oil and Grease

