

Report of the Stormwater Science Work Group Activities

Submitted to

State Stormwater Quality Task Force Executive Committee

by

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The Stormwater Science Work Group was initiated in March 1998 with its primary purpose of developing guidance on addressing the BMP ratcheting down process to achieve appropriate water quality standards in the NPDES permitted stormwater runoff. A summary of the 1998 activities of this Work Group is presented below.

Work Group Goals

Listed below are the “Goals” and “Products” developed for the Stormwater Science Work Group. Also presented in italics is a summary of the status of the work on achieving the goals established by the Task Force Executive Committee.

Goal: “Promote the development and application of appropriate water quality standards to intermittent discharges from urban area and highway stormwater runoff conveyance systems.”

- **“Develop a position on application of water quality standards to wet weather discharges.”--**
- **“Identify where there are problems meeting water quality standards.”**

Products:

- **“Report detailing alternate approaches to applying water quality standards.”**

G. Fred Lee, (GFL) Work Group Chair, provided draft comments to the Work Group and the Task Force Executive Committee on the US EPA ANPRM devoted to the problems with the current US EPA approach for applying worst case based water quality criteria to urban area and highway stormwater runoff. GFL, as an individual, submitted revised comments to the US EPA on the ANPRM and to the Task Force Executive Committee and Work Group. GFL is developing a report on suggested alternative approaches for applying water quality standards to urban area and highway stormwater runoff.

- **“Report on constituents of concern relative to water quality standards compliance.”**

GFL provided draft report, “Assessment of Potential Urban Area and Highway Stormwater Runoff Water Quality Standards Compliance Problems,” to the Work Group and the Task Force Executive Committee. This report has been revised and has been submitted as a report to the Work Group.

- **“Cost Survey (to be finalized).”**

Guidance provided by S. Taylor to the Task Force Executive Committee on an approach for estimating the cost of implementation of BMPs. Further work on this topic is on hold waiting on Executive Committee directions.

How does the Task Force Executive Committee wish to proceed in developing information on the cost of achieving water quality standards in stormwater runoff?

Goal: “Identify stormwater pollutants of concern.

- **Define pollutants of concern.**
- **Review monitoring findings.**
- **Compile “state of knowledge.”**
- **Promote research on the transport and fate of pollutants.**
- **Facilitate improved understanding.”**

Products:

- **“Task Force presentation”**

A task force presentation can be made by Mack Walker and Fred Lee on urban area and highway stormwater runoff constituents of concern and compliance issues. This presentation could also cover the general characteristics of the site specific studies that need to be conducted to determine the real significant water quality problems caused by urban area stormwater runoff associated constituents.

Stormwater Runoff Water Quality Monitoring Programs

There is growing recognition that traditional end-of-the-pipe and edge-of-the-pavement stormwater runoff water quality monitoring programs provide limited information on the water quality impacts of urban area stormwater runoff associated constituents. Several of the municipal stormwater runoff water quality monitoring programs are shifting the emphasis in the program from monitoring a suite of chemical constituents in the runoff waters to assessing the water quality impacts of the chemical constituents in the runoff waters as they may impact the beneficial uses of the receiving waters.

The Evaluation Monitoring approach developed by Lee and Jones-Lee has evolved as guidance on how to utilize the funds available for water quality monitoring so as to define the real water quality use impairment impacts caused by stormwater runoff associated constituents on the beneficial uses of the receiving waters for the runoff. It is anticipated that additional information on the Evaluation Monitoring approach can be provided to the Task Force during 1999.

This Work Group can also provide guidance to the Task Force on how stormwater managers can determine the water quality significance of an exceedance of a water quality standard in the receiving waters for the runoff caused by runoff derived constituents. The Stormwater Science Work

Group can organize a Task Force meeting technical session devoted to stormwater runoff water quality monitoring issues.

Organophosphate Pesticide Toxicity Issues

The organophosphate (OP)pesticides, diazinon and chlorpyrifos, used in urban areas for structural-termite and ant and lawn and garden pesticide control have been found to be a major cause of urban stormwater runoff aquatic life toxicity. Urban stormwater quality managers in several parts of the state are facing achieving TMDL for the control of aquatic life toxicity and OP pesticides. GFL is involved in the OP pesticide urban stormwater runoff aquatic life toxicity issues in Orange County and in the Sacramento area. He is also a participant in the Urban Pesticide Committee. The Stormwater Science Work Group can make a presentation to the Task Force on the evolving situation on the regulation of OP pesticides in urban area stormwater runoff.

Contaminated Sediment Issues

In addition to considering traditional water quality standards violations associated with exceedance of a water quality standard in a receiving water water column, the Stormwater Science Work Group can provide guidance to the Task Force on approaches that the Task Force may wish to consider in implementing contaminated sediment management programs that will address compliance with the WRCB Bay Protection and Toxic Cleanup Program, toxic hot spots requirements and US EPA sediment quality guidelines for identifying contaminated sediments that need remediation. Particular attention can be given to providing guidance on appropriately evaluating the designation and ranking of, as well as determining the responsible parties for, funding cleanup of toxic hot spots relative to discharges of particulate constituents in urban area and highway stormwater runoff. Also, attention can be given to providing guidance on how an urban area or highway NPDES stormwater permit should be modified to control the discharge of constituents in urban area and highway stormwater runoff that cause toxic hot spots and contaminated sediments in the runoff receiving waters.

Coordination with the BMP Work Group

The Stormwater Science and the BMP Work Groups will closely coordinate their activities because of the significant scientific component of properly selecting, implementing and evaluating urban stormwater runoff BMPs. The Stormwater Science Work Group can provide guidance on the kinds of site-specific studies that need to be conducted in reliably selecting appropriate BMPs that are technically valid, cost-effective and protective of the receiving water designated beneficial uses. The Stormwater Science Work Group can also provide guidance on reliably evaluating the efficacy of BMPs as they may impact the designated beneficial uses of the receiving waters for urban area and highway stormwater runoff.

Coordination With Watershed Workgroup

The State Stormwater Quality Task Force Watershed Work Group has selected as one of its primary areas of activity, during 1998, the development of guidance to the Task Force on approaches that should be incorporated into urban area and highway stormwater runoff water quality management programs under the TMDL regulatory regime. The Stormwater Science Work Group

and the Watershed Work Group will work closely together where the Stormwater Science Work Group will provide technical input to the Watershed Work Group with particular reference to TMDL issues.

Stormwater Runoff Water Quality Short Course

While not a Stormwater Task Force activity, the Stormwater Runoff Water Quality Short Course was organized by GFL with the assistance of Chris Crompton in managing local arrangements. The primary objective of the short course is to disseminate information on the application of the BMP ratcheting down process to ultimately achieve appropriate water quality standards, to stormwater management and regulatory agency staff. In this two-day short course Scott Taylor covered hydrologic, hydraulic and BMP issues and GFL covered water quality issues. It was attended by 36 individuals who were primarily staff of the Orange County co-permittees; based on evaluation forms completed by participants, the course was well-received.

It is anticipated that this course will be offered in other parts of the state as local arrangements can be developed. Where accommodations for presentation of the course can be provided at no-cost, the short course can be offered at minimum cost to the participants; the course was made available in Orange County facilities at a cost of \$ 25.00 to participants to cover break refreshments and catered luncheon sandwiches. Both Scott Taylor and GFL plan to continue to donate their time and resources in support of this course.

Stormwater Runoff Water Quality Science/Engineering Newsletter

As part of an effort to improve the understanding of the science and engineering that should be associated with urban area and highway stormwater runoff water quality impact evaluation and management, Dr. Anne Jones-Lee and GFL have developed a Stormwater Runoff Water Quality Science Newsletter. While this Newsletter is not affiliated with the Task Force, it has many of the same objectives as the Task Force Stormwater Science Work Group. This no cost Newsletter is email based that is issued at about monthly intervals to over 850 individuals. The Newsletter is available to anyone with an email address. Contributions from others are encouraged.

Related Publications

During the past year GFL and his associates have developed several papers and reports which can serve a basis for improving the quality of science and engineering that is used in evaluating the water quality impact of urban area and highway stormwater runoff associated constituents and the development of appropriate BMPs for managing real significant water quality problems caused by stormwater runoff associated constituents. A listing of the papers and reports pertinent to these areas is presented below.

Guidance on Appropriate Use of Stormwater Infiltration BMPs

Lee, G.F., Jones-Lee, A. and Taylor, S., "Developing of Appropriate Stormwater Infiltration BMPs: Part I Potential Water Quality Impacts, Monitoring and Efficacy Evaluation," Proc. of Ground Water Protection Council's 98 Annual Forum, Sacramento, CA, pp. 55-72, Sept (1998).

Taylor, S. and Lee, G.F., "Developing of Appropriate Stormwater Infiltration BMPs: Part II Design of Infiltration BMPs," Proc. of Ground Water Protection Council's 98 Annual Forum, Sacramento, CA, pp. 73-80, Sept (1998).

Stormwater Runoff Monitoring

Jones-Lee, A., and Lee, G.F., "Evaluation Monitoring as an Alternative to Conventional Water Quality Monitoring for Water Quality Characterization/Management," Proceedings, National Water Monitoring Conference, Monitoring: Critical Foundations to Protect Our Waters, National Water-Quality Monitoring Council, pp III-499-III-512, July (1998).

Lee, G.F. and Jones-Lee, A., "Stormwater Runoff Water Quality Evaluation and Management Program for Hazardous Chemical Sites: Development Issues," *Superfund Risk Assessment in Soil Contamination Studies: Third Volume, ASTM STP 1338*, American Society for Testing and Materials, pp. 84-98, (1998).

Stormwater Runoff Management Regulatory Issues

Lee, G.F. and Jones-Lee, A., "Urban Stormwater Runoff Water Quality Management: Challenge of the 2000's," Report of G. Fred Lee & Associates, El Macero, CA, September (1998).

Jones-Lee, A. and Lee, G.F., "Stormwater Managers Beware of Snake-Oil BMPs for Water Quality Management," Report, G. Fred Lee & Associates, El Macero, CA, July (1998).

Lee, G.F. and Jones-Lee, A., "Appropriate Application of Water Quality Standards to Regulating Urban Stormwater Runoff," Report, G. Fred Lee & Associates, El Macero, CA, July (1998).

Lee, G.F., "Santa Monica Bay Stormwater Runoff Water Quality Impact Research Needs, Comments submitted to J. Dorsey, Chair, Santa Monica Bay Restoration Project Technical Advisory Committee, G. Fred Lee & Associates, El Macero, CA, June (1998).

Lee, G.F. and Jones-Lee, A., "Development of a Regulatory Approach for OP Pesticide Toxicity to Aquatic Life in Receiving Waters for Urban Stormwater Runoff," Presented at NorCal SETAC meeting, Reno, NV, June (1998).

Lee, G.F. and Jones-Lee, A., "Comments on 'Draft Functional Equivalent Document Water Quality Control Policy for Guidance on the Development of Regional Toxic Hot Spot Cleanup Plans' Developed by Division of Water Quality State Water Resources Control Board dated March 1998," Report of G. Fred Lee & Associates, El Macero, CA, May (1998), June (1998) and August (1998).

Lee, G.F., comments on WRCB California Ocean Plan 1998 Triennial Review, Staff Report: Issues for Review, submitted to the State Water Resources Control Board, September (1998).

Lee, G.F., Taylor, S. "Proposed Soil Lead Management Criteria Criteria as Part of Caltrans Highway Construction and Maintenance," Caltrans Report to State Water Resources Control Board Sacramento, CA June (1998)

Copies of these papers and reports are available from <http://members.aol.com/gfredlee/gfl.htm>.

Additional Information

Further information on the 1998 Stormwater Science Work Group activities is available upon request.