

Guest Editorial

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Stormwater Monitoring: Appropriate Approach

There is controversy today about the appropriate approach to follow in developing an urban NPDES permit-based program to monitor stormwater runoff water quality. In some areas, such as for MS4s in California, detailed monitoring of several storms per year has been undertaken for approximately five to ten years. These monitoring programs have shown that some constituents, such as copper, lead, occasionally cadmium, and aquatic life toxicity, are present in the runoff waters at concentrations that could cause or contribute to violations of water quality standards/objectives. The US EPA and states, however, are not yet requiring that NPDES-permitted urban stormwater runoff not cause or contribute to violations of water quality standards/objectives. Therefore, this exceedance at the point of discharge (where no mixing zones are allowed), in accord with current regulatory approaches, trips the need to initiate the BMP ratcheting-down process, in which the discharger and the regulating agency agree on improved BMPs to work toward (but not necessarily achieve) compliance with water quality standards/objectives.

Some MS4 municipalities and regulatory agencies are justifiably questioning what new information is being gained from a substantial expenditure for continued monitoring of stormwater runoff. It is my recommendation that the routine end-of-the-pipe/pavement monitoring of urban and highway stormwater runoff be curtailed, in favor of using these funds, plus additional funds derived from the MS4, to conduct detailed studies at selected sites of the impacts of the regulated as well as unregulated constituents in the stormwater runoff that have the potential to impair the designated beneficial uses of the receiving waters. As discussed in my editorial in the May/June 2001 issue of *Stormwater*, the current US EPA approach of trying to regulate urban stormwater runoff as if it were an NPDES-permitted municipal or industrial wastewater, is inappropriate and cannot possibly succeed. This is based on the very high cost of dollars per person per day for the community to purchase the land, install the collection, storage and treatment works, and operate and maintain these works so that the discharges of treated stormwater do not cause or contribute to exceedances of water quality standards at the point of discharge by any amount more than once every three years (i.e., current wastewater discharge requirements).

It will be important that the receiving water impact studies focus on evaluating the existing beneficial use impairment of the receiving waters for the stormwater runoff and determine where these waters are impaired through toxicity-caused alteration of aquatic life assemblages, excessive concentrations of bioaccumulatable chemicals, impairment of domestic water supply water quality, impaired contact recreation/beach closures or other impairments. Basically, the Evaluation Monitoring approach, which focuses not on determining concentrations of a constituent such as copper, but on copper impacts to aquatic life, is a technically valid, readily implementable approach that can be used to appropriately regulate urban stormwater runoff impacts on the beneficial uses of receiving waters (see my

article in the November/December 2000 issue of *Stormwater* (www.forester.net/sw_0011_right.html) for a description of this approach).

Where water quality standards are exceeded at the point of discharge, there is need to determine whether these exceedances are administrative, related to the overly protective nature of most water quality criteria/standards when applied to urban area and highway stormwater runoff, or if they represent real impacts on the beneficial uses of the receiving waters.

In situations where the MS4 or highway department is practicing stormwater infiltration, the Evaluation Monitoring approach would involve monitoring of groundwater to determine if the constituents in the stormwater runoff are polluting the groundwaters/impairing their use.

The receiving water impact studies should be conducted in a stakeholder-developed consensus approach, where the regulatory agencies, environmental groups, dischargers and others work together to develop an appropriate assessment of the beneficial use impairment of the receiving waters caused by the stormwater runoff. This approach will require that the MS4s fund environmental groups and others so that they can participate in the stakeholder process and hire the necessary consultants who will provide them with a valid assessment of technical issues that are important to them.

An important part of this impact assessment is the development of funds used to search for unidentified, unknown-caused problems associated with urban and highway stormwater runoff.

Further, the Evaluation Monitoring assessment of impairment of beneficial use caused by urban stormwater runoff-associated constituents should consider the physical impacts on habitat associated with the stormwater runoff, particularly for urban streams, and be repeated every five years to address new or expanded-use constituents that are introduced into urban stormwater runoff at higher concentrations.

It would not be necessary to monitor every stormwater runoff discharge point for its impacts. Representative situations can be selected to evaluate, for that type of situation, the potential impacts of stormwater runoff-associated constituents. Further information on Evaluation Monitoring is available from Jones-Lee and Lee (1998).

References

Jones-Lee, A. and Lee, G. F., "Evaluation Monitoring as an Alternative to Conventional Water Quality Monitoring for Water Quality Characterization/Management," Proc. of the NWQMC National Conference "Monitoring: Critical Foundations to Protect Our Waters," US Environmental Protection Agency, Washington, D.C., pp. 499-512, (1998), available from www.gfredlee.com, in the Water Quality/Stormwater section.