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RE: Comments on the Draft General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts North Coastal Watersheds

I am writing to express my support of the Draft General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts North Coastal Watersheds. The changes in the new permit are necessary, and include many important improvements, and some important limitations.

Perhaps most importantly is the usage and application of Low Impact Development (LID) stormwater management as the expression of the Maximum Extent Practicable (MEP). The need for LID as MEP is reasonable and well documented[1]. The usage of LID as MEP is exemplified by its application in both state[2] and municipal applications throughout the US. LID stormwater management is evolving and becoming increasing affordable, increasingly familiar with the design community, and increasingly manageable from a maintenance perspective. It is also important to note that with the raising of the standards for MEP, that certain practices should be disallowed for usage. Practices that have been demonstrated to be contributing to the water quality failures should be eliminated were feasible.

Arguments against the usage of LID as MEP are typically due to a lack of familiarity with the practices and inflated cost estimates taken out of context of typical municipal activities. The majority of problems associated with LID stormwater management are less to do with the technology, and more to do with poor design, installation, and maintenance. A careful permit that requires qualified personnel during the design and installation process will prevent widespread problems.

LID stormwater management works effectively throughout multiple seasons including challenging winter conditions. Data shows that it works better for water quality than conventional stormwater management, and that in the winter standard practices suffer dramatically[3].

LID stormwater management is reasonable to construct and maintain. Existing municipal staff can be effectively trained to build and maintain these practices[4]. Maintenance requirements should not be

[1] NRC. (2008). "Urban Stormwater Management in the United States." National Research Council, Washington DC.
[2] Rhode Island General Assembly (RIGA). (2007). "Smart Development for a Cleaner Bay." HB6143.
[3] Roseen, R. M., Ballestero, T. P., Houle, J. J., Avellaneda, P., Briggs, J. F., Fowler, G., and Wildey, R. (2009). "Seasonal Performance Variations for Stormwater Management Systems in Cold Climate Conditions." Journal of Environmental Engineering-ASCE, 135(3), 128-137.

substantially different than current Good Housekeeping Practices requiring regular inspection and maintenance of stormwater infrastructure.

Cost concerns about LID stormwater management need to be balanced. Effective stormwater management will never be cost competitive with no stormwater management. However it can be cost competitive with common stormwater management using catch basins, curbing, pipe, and ponds. Two cost studies to be published in 2010 demonstrated a 6%[5] and 26%[6] savings in stormwater management infrastructure for a residential and commercial LID application. These projects had significant cost savings through the elimination of pipe, curb, retention ponds, clearing, and hydraulic control structures despite the usage of LID measures including porous asphalt, infiltration, and gravel wetlands.

Another significant element of the draft permit is the linkage to the TMDL program. Water quality improvements will not occur unless permits are grounded in the application of TMDLs. Arguably, a municipality could be in compliance with the first round of MS4 permits conditions, and still show no measurable improvements in water quality. For this reason, some type of wet weather monitoring should be required. There needs to be data demonstrating impacts and results from the MS4 activities. Water quality data needs to play an important role in the verification of permit efforts. A strong example for why this is needed is the Chesapeake Bay. While many important substantive challenges exist for the management of the Chesapeake Bay, some very poor guidance was given for years detailing improperly the success of nutrient control measures. The success was gauged on modeling results, and not based on water quality monitoring, which showed the opposite. Successful permit implementation must be based on water quality monitoring results.

A substantial limitation to the Draft MS4 Permit is the lack of adequate funding mechanisms. Given the current economical conditions that challenge municipal budgets, the MS4 permit should include some additional funding mechanisms. The State of Maryland [7] has legislation to require formation of stormwater utilities created by the state, and managed by towns. Other states are considering similar legislation. This is needed because municipalities lack the political will to pass utilities, without which no reasonable implementation of MS4 permit requirements will be implemented. The MS4 permit should require, as it does for the creation of municipal stormwater ordinance, the creation of municipal stormwater utility developed solely to support permit activities. This blanket approach is needed to facilitate and improve the rate of adoption of utilities. There are a limited number in the northeast, the state of NH has none, with the City of Manchester having one in process for nearly 5 years and counting.

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[4] Cocheco River Watershed Coalition (CRWC), Chase, L., and Roseen, R. (2009). "Introducing LID in the Willow Brook Watershed." Funding Source: NHDES Watershed Assistance Grants, Rochester, NH.
[5] Gunderson, J. (2010-In preparation). "Boulder Hills LID Economic Case Study." Forging the Link Between Research-Based Institutions, Watershed Assistance Groups, and Municipal Land Use Decisions, UNH Stormwater Center, Durham.
[6] Gunderson, J. (2010-In preparation). "Greenland Meadows LID Economic Case Study." Forging the Link Between Research-Based Institutions, Watershed Assistance Groups, and Municipal Land Use Decisions, UNH Stormwater Center, Durham.
[7] Raskin, Frosh, Harrington, Lenett, Madaleno, Pinsky, Pugh, Rosapepe (2010). "SB 686: Watershed Protection and Restoration Act." State of Maryland.

Another limitation is the size of disturbance to trigger the post construction stormwater controls is too large. Many projects with the significant impacts are smaller than 1 acre. The cumulative impact of small sites is tremendous. In many urban and suburban areas, very few lots will exceed 1 acre but will represent the major form of development.

The permit needs to encourage more widely the usage of porous pavements. There is a misconception that porous pavements present a unique risk to groundwater contamination. The risk to groundwater exists for all infiltration and filtration practices and the measures and means by which this threat is controlled should be similar. Systems can be limited or lined. Porous pavements represent substantial potential benefits hydrologically. No other LID practices can have such profound hydrologic impacts. Porous pavements can commonly recharge more rainfall than in a predevelopment condition. The same limitations do not exist for soil types as do for typical infiltration systems. Data shows that porous pavements on Hydrologic Group C soils can have as much as 25% recharge[8] and annual volume reduction and type B soils can have as much as 92% annual volume reduction[9]. Porous pavements can be built to be durable, and have tremendous water quality and quantity benefits.[10] Improvements to design specifications are routine and the standard of practice is advancing rapidly[11]. Additionally, porous pavements have also been shown to provide substantial salt reduction potential. As much as 50-75% salt reduction has been observed in some instances with the use of porous asphalt.[9]

Thank you for your consideration of my comments.

Regards,

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[8] Briggs, J. (2006). "Performance Assessment of Porous Asphalt For Stormwater Treatment," MS Thesis, University of New Hampshire, Durham.
[9] UNHSC, Houle, J., Roseen, R., and Ballestero, T. (2010). "UNH Stormwater Center 2009 Annual Report." University of New Hampshire, Cooperative Institute for Coastal and Estuarine Environmental Technology, Durham, NH.
[10] Roseen, R. M., Ballestero, T. P., Houle, J. J., Briggs, J. F., and Houle, J. P. (2010-Accepted). "Water Quality and Hydrologic Performance of a Porous Asphalt Pavement as a Stormwater Treatment Strategy in a Cold Climate." ASCE Journal of Environmental Engineering, 8.
[11] UNHSC, Roseen, R. M., Ballestero, T. P., Briggs, J. F., and Pochily, J. (2009). "UNHSC Design Specifications for Porous Asphalt Pavement and Infiltration Beds." University of New Hampshire Stormwater Center, Durham, NH.