UNH STORMWATER CENTER EFFECTIVE STORMWATER MANAGEMENT Lamprey River Symposium January 16, 2009

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Mill Pond Rd after dam failure at Nottingham Lake, 4/18/2007





Dedicated to the protection of water resources through effective stormwater management

Research and development of stormwater treatment systems

To provide resources to stormwater communities currently involved in design and implementation of Phase II requirements











Impacts of Imperviousness



Sediment Data (TS, TSS, VSS)



Influent Concentration





Isolator Row



Subsurface Infiltration



Filter Unit





Porous Asphalt

Pervious Concrete



Retention Pond





Stone Swale Veg Swale



Gravel Wetland

L.

Sand Filter



Bioretention Unit







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The Anatomy of a Box and Whisker



²⁵⁰ TSS Event Mean Concentrations







TPH-D Event Mean Concentrations (ug/L)







Bacterial Colonies

So What Really Bugs You?





Bacterial Concentrations





Seasonal Variations in Performance







There are now multiple chloride TMDLs in the country There are 4 proposed chloride **TMDLs in NH** Chloride is toxic to aquatic life No BMP targets removal



Chloride Levels in First Order Receiving Stream (Durham, NH)





Where should reductions occur?





Salt Reduction and Porous Asphalt

% Ice Cover





100% Removal???

There are no silver bullets Designs should be based on regional watershed and water quality objectives. (think locally act locally!) We are moving beyond 80% TSS removal: Nutrients, PSD, effluent concentrations

Emerging Research Activities

CONTRACT OF A

Samples from 1st storm after sealcoat was applied. EPA Surface Water Quality Criteria for total PAHs = 300ug/l





Other Issues

Clogging of filter media?

Tremendous implications for subsurface infiltration!





Summary Conclusions

- While concerns exist for LID in cold climates, seasonal variations are observed for conventional BMPs and Manufactured systems
 - Infiltration and filtration systems have the highest removal efficiency
 - The standard of practice is moderate at best, and low especially for stone lined swales
 - Systems dependent on particle settling show the greatest affect by season and temperature variability.
- Bacterial concentrations are only reduced significantly by LID systems and subsurface infiltration



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