Stormwater Retrofitting on a Community Scale:
The Tale of Lake George

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Some Quick Facts...

- Lake George is one of the cleanest large lakes in the United States

- However, its renowned water quality has been steadily declining for the past four decades or more

- 1983 National Urban Runoff Program studied Lake George, clearly identifying stormwater runoff as the primary reason for water quality declines. Many studies since have confirmed this fact

- More developed South basin is declining at a rate five times faster than the relatively undeveloped north basin
Stormwater Impacts to Lake George

- Reduced water clarity and quality
- Increased aquatic weed and algae growth
- Sedimentation and deltas
- Aquatic habitat and fisheries problems
- Urbanized areas account for 5% of the basin and 43% of the annual phosphorus loading
Stormwater Regs for New Development

NYS DEC
SPDES General Permit for Stormwater Discharges from Construction Activity
Regulates Construction Activities that disturb 1 acre or more of land

Lake George Park Commission
Regulates construction activities that disturb more than 5,000 square feet of land disturbance, or 1,000 square feet of impervious surface
But What About Existing Problems?

- There is no state mandate to fix existing stormwater runoff problems.
- The only solution is to "retrofit" those areas with improvement measures.
Stormwater Retrofitting

- Retrofitting: Taking existing stormwater infrastructure and changing it to add a water quality improvement component
Finding the Problems
English Brook Watershed Assessment

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Long-Term Goal...

- Eliminate Untreated Stormwater Discharges to Lake George
- Or, give it the ‘ol college try...
Beach Road Parking Lot Stormwater Median

- Joint pilot project between Village of Lake George, Army Corps of Engineers, and the Warren County SWCD

- 400 foot long stormwater median constructed, which retains and infiltrates all stormwater from a 1” rainfall event

- Two large catch basins, outlet into 96 low profile infiltration chambers, landscaped on top
Lake Avenue Beach Stormwater Project

- Village of Lake George public beach
- High sediment and coliform counts
- Educational component (native plantings and signage)
West Brook Conservation Initiative

- Environmental Park, capturing and treating largest stormwater source to Lake George
- Multi-million dollar project, partnership between municipalities, environmental groups, and state agencies
Lake George Village Stormwater

- Installing stormwater infiltration structures (drywells) throughout the Village of Lake George

- Goal is to eliminate all stormwater discharge to Lake George from Village Streets

- Dave Harrington, Keith Lanfear and rest of Village DPW crew going above and beyond their normal duties on these projects
Bixby Beach Stormwater Remediation Project

- System was designed by Warren County SWCD and constructed by the SWCD and Town of Bolton Highway Department.

- System designed to collect and infiltrate 1” rainfall event from the road
Town of Lake George
Highway Department Stormwater

Eroding gully
Sand storage
Petroleum storage
Salt Storage
Garage
Gage Road
Beach Road Highway
Porous Pavement Project

- $6 million full-depth reconstruction
- Construction this coming Fall (2011)
- Only the second porous pavement highway (and the largest) in the Northeast U.S.
- $415,000 Green Innovation Grant just received
- Cost-neutral, huge environmental benefit
- $6M full depth reconstruction project - 2.3 lane miles
- Section designed for storm events of up to 5" in 24-hours
- Reduced salt de-icing – by approximately 50% (8,000 lbs)
- Designed for 15,000 AADT (4% Truck Traffic)
- Requires special HMA design – Polymers, Binders, Fibers
- Construction to begin fall 2011

PERVIOUS PAVEMENT SYSTEM
BEACH ROAD, LAKE GEORGE, WARREN COUNTY, N.Y.

WARREN COUNTY DEPARTMENT OF PUBLIC WORKS
Beach Road Porous Pavement Highway…

Will It Last?

- Maine Mall Road porous pavement highway shows no signs of degradation
- FHWA – “Experimental” designation, replacement cost up to 10 years
- Specific construction techniques for success, but many contractors have experience with porous mixes
Stormwater Retrofitting: What Does it Take?

- Clearly identify the issue, including the contributing drainage area, stormwater volume, soils, and other factors
- Develop concept solutions (resources to help such as SWCD’s, local planning offices, highway departments, etc)
- Generate funding – many grants available
- Design the system
- Build it!!!
Maintain or Fail

- All stormwater treatment systems, regardless of type, require maintenance.

- Maintenance requirements must be factored into the design of the project, so the system works for the long-term.
A Few Funding Opportunities...

- NYS DEC - “Round 10” Nonpoint Source Funding
- NYS Department of State – Waterfront Revitalization
- US Army Corps of Engineers Champlain Authorization
- Legislative Initiatives (Member Items)
- Lake Champlain Basin Program – Implementation Grants Program
Partnersing With Highway Departments...

Local highway departments are a tremendous resource for getting stormwater projects installed on municipally owned properties – usually at no cost.
North Country Stormwater Conference and Tradeshow

2011 Stormwater Trade Show is October 20th at Roaring Brook Conference Center in Lake George
Questions?

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