Green Infrastructure

Enhanced Stormwater Management

A Community and Watershed Approach

Local Government Planning and Zoning Workshop

October 4, 2012

CDRPC and County Planning Departments

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Basic Principles

A. Progress consumes the natural world.
B. Natural systems are natural healers.
C. Planning can help balance A with B.

What is “green infrastructure”?

Green infrastructure is the interconnected system of natural lands, parks, waterways, farms, and historic areas that sustain Saratoga County’s environmental health, economy, and quality of life. (From Saratoga County Green Infrastructure Plan.)

"Environmental services" : an example

The maple pulls ground water up through soil, clarifies it, and gives it to us—clean, sweet and pure. Green infrastructure working for us.

Balance Gray Infrastructure…

With Green Infrastructure.

From grey infrastructure

To green infrastructure

NYSDOT wet pond,
NYS Route 22,
Westchester County
(photo courtesy NYSDEC)

Help people deal with a river of change:

Prattsville home after Irene brought the Schoharie Creek to new levels.

Stormwater Management in Changing Times

A question of perspective:

- Look beyond site-specific solutions.
- Recognize watershed/ecologic systems.
- Consider economies of scale.

Flooding may not be reduced if we fail to think big (we may control runoff but not rainfall.)

Site-specific treatments

Site-specific solutions are not the only answer . . .

MS4

- Municipal Separate Storm Sewer System

MS4 and construction permits — intended to mitigate pollutants from point sources.

Green infrastructure solutions can be a cost-effective option—and encourages intermunicipal partnerships.

Permitting Process—(is only one tool)

More emphasis is needed on watershed-based approaches and opportunities.

Incentives are needed:

- To mitigate problems with wet weather overflow and combined and sanitary sewer systems.
- Entice property managers to minimize storm runoff.
- For land owners to protect and enhance green infrastructure resources.

Adding systems to address current problems:

Ideally, we can find ways to “incentivize” green infrastructure projects to create larger-scale watershed protection and enhancement areas more cost-effectively .

A Bigger Perspective

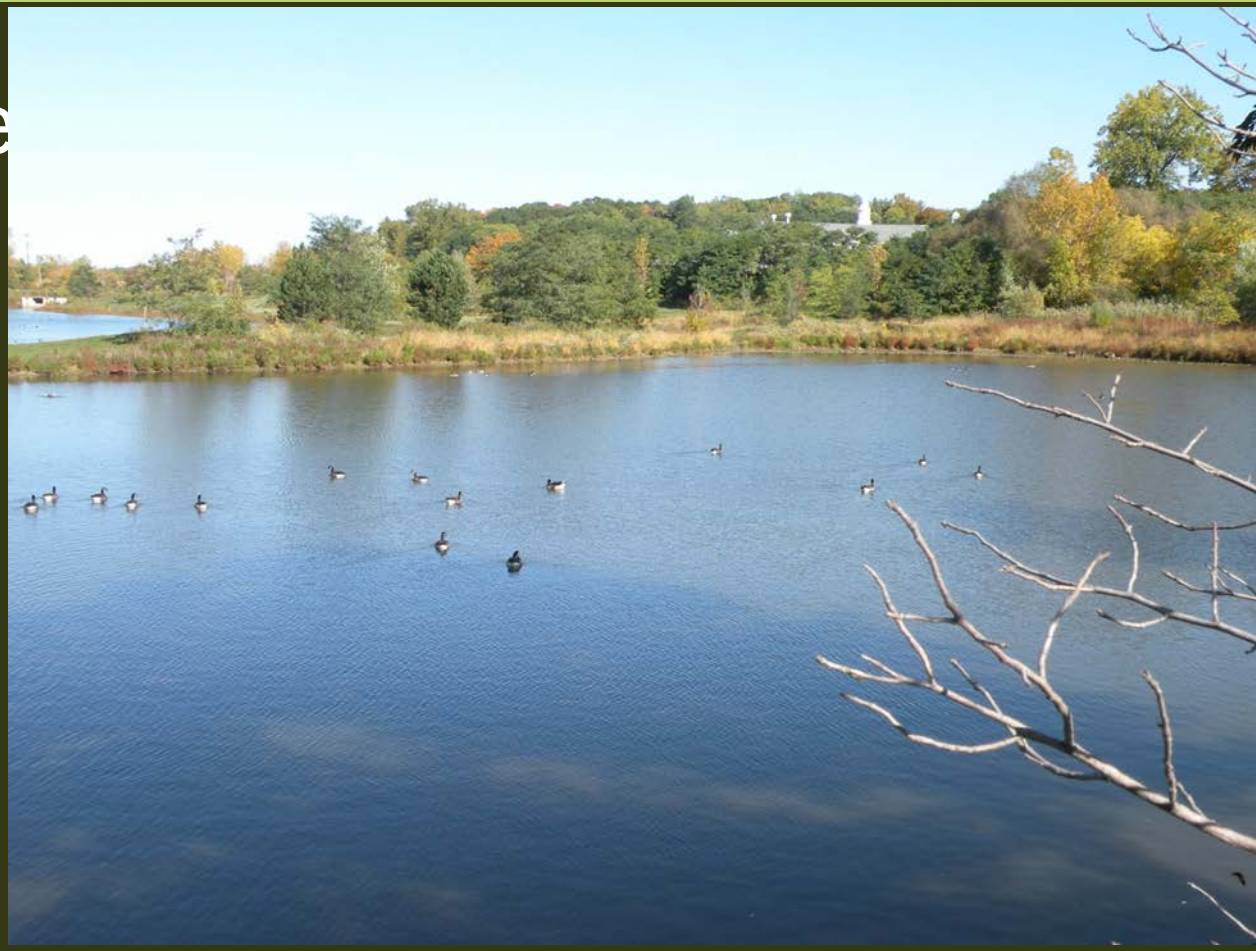
A Watershed/Community-Based Approach:

- Less expensive than “grey infrastructure”.
- Less wasteful of valuable real estate
- Enhanced fish and wildlife habitat values

Positive example

Community stormwater pond—branch of Irondequoit Creek in Pittsford (Rochester)

- Fish and wildlife habitat
- Irrigation
- Stormwater management
- Town park



Uber-scale stormwater management

Sacandaga Reservoir—completed 1930: Protects the Hudson River Valley.

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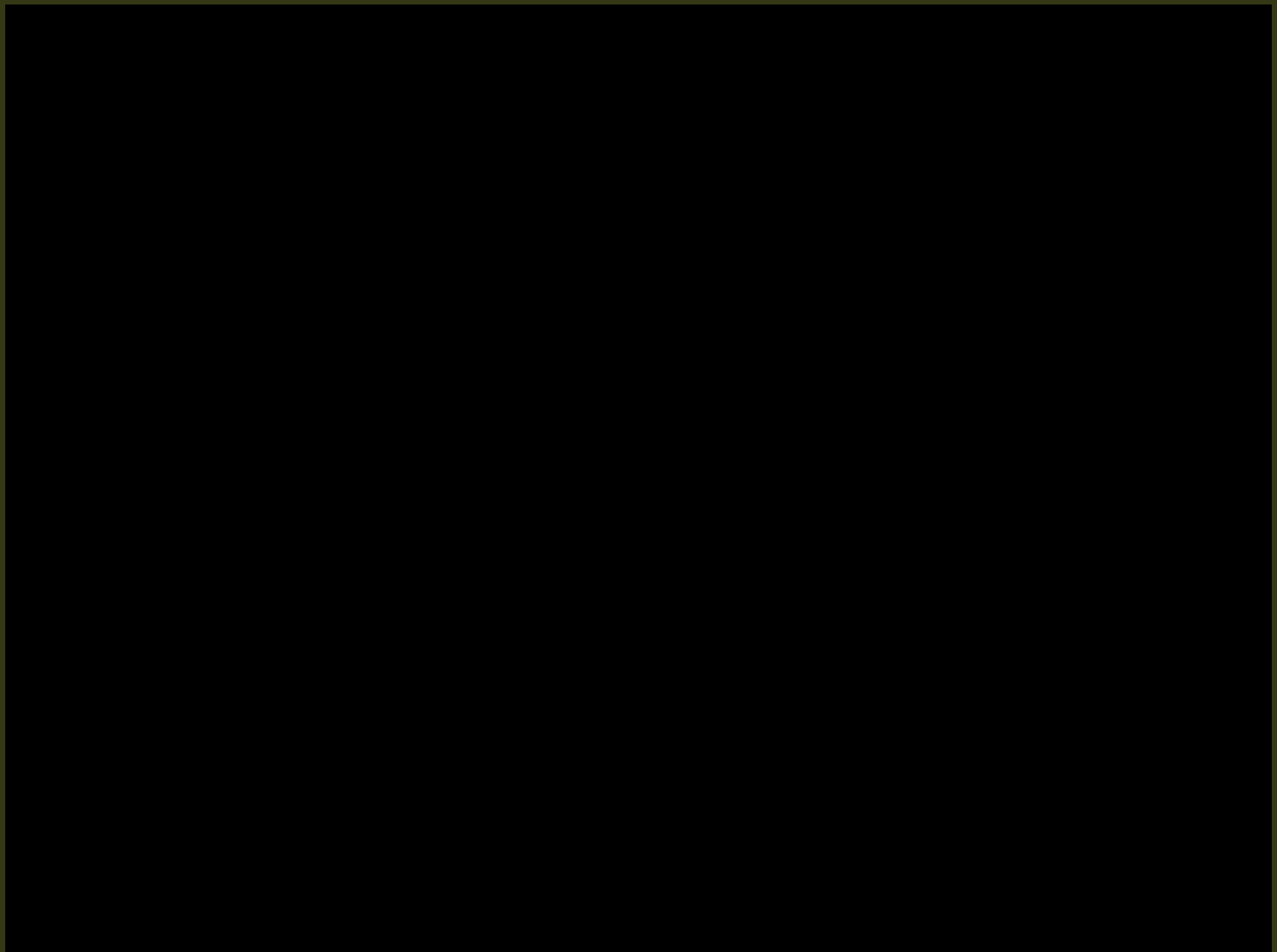

(http://www.youtube.com/watch?v=ucb-Y8iipng)

Suburban community setting: Conceptual master plan with green infrastrucure as central theme.

Emerging trends:

Stronger integration of stormwater management into planning at local, regional or watershed scale.

Recognizing economic benefits of watershed-based approaches and projects.

Legislative tools for incentivizing more comprehensive stormwater management projects.

Emerging Concept—Stormwater Utility District

Used in 39 other states. Treats stormwater as a distinct public management responsibility with costs and benefits accounted for more directly.

Has several advantages for communities—though needs NYS legislative approval to be enacted by municipalities.

Tool box: Designing for Green Streets

- Porous Concrete/Asphalt
- CU™ Structural Soils
- Root Production Method Trees
- Rain Gardens (biofilters)
- Lighting – Solar, LED, Inductive
- Street Furniture – Recycled Materials

When it Rains, it Drains.

Stormwater runoff occurs when rain falls. This runoff causes increased pollution in rivers and streams, flash floods, and loss of rainwater that could otherwise replenish water tables and aquifers. Pervious concrete has a 15-25% void structure and allows 3–8 gallons of water per minute to pass through each square foot—accounting for far more than is generated during most rain events. **Pervious concrete puts rainwater back in the ground where it belongs.**

Table 1. Applications for Pervious Concrete

Low-volume pavements
Residential roads, alleys, and driveways
Sidewalks and pathways
Parking areas
Low water crossings
Tennis courts
Subbase for conventional concrete pavements
Patios
Artificial reefs
Slope stabilization
Well linings
Tree grates in sidewalks
Foundations / floors for greenhouses, fish hatcheries, aquatic amusement centers, and zoos
Hydraulic structures
Swimming pool decks
Pavement edge drains
Groins and seawalls
Noise barriers
Walls (including load-bearing)

Porous Asphalt and CU Structural Soils

Using Porous Asphalt and CU-Structural Soil®

Cornell University

Urban Horticulture Institute
Cornell University
Department of Horticulture
134A Plant Science Building
Ithaca, NY 14853
www.hort.cornell.edu/UHI

Naturalized Snow Fence—Route 15 Montreal

Green Roofs

Historial de la Vendée in Les-Lucs-sur-Boulogne, France. Photo courtesy © Simon Garbut, used with permission.

Green Storm Drain

Niagara Falls, NY

"Greening" of local road standards—the highway as greenway.

Planning Tools

Open Space or Green Infrastructure Plan
All-Hazards Mitigation Plan
Watershed Protection/Management Plan
Sustainable Development Plan
Long-term Control Plan (combined sewers)
"Amenity Plan" (See Town of East Greenbush)

Implementation Tools

Cooperative Conservation Easements
Stormwater Management/
Watershed Protection Law
Design Guidelines or Standards
Greening of Local Road Standards
Conservation Subdivision Regulations
Incentive Zoning
Green Infrastructure Grants

New NYS law: Watershed Protection and Stormwater Planning in Towns

NYS Town Law Article 12 and Article 12A

Authorizes watershed protection improvement districts

Funding for stormwater treatment, wetland construction, etc.

- Adopting plans and specifications
- Finance costs associated with (MS4s)
- (Is not the same as a Stormwater Utilitiy District.)

Clean water . . . priceless

Thank you.

For updated information

Contact: jbehan@behanplanning.com

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