

MS4 Stormwater Program Issues for Planning and Code Enforcement Officials

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Presentation Outline

- Brief Introduction to Stormwater
- Background and History of Phase II Stormwater Regulations
- Roles of Municipal Officials and Departments
- Acceptance of Post-Construction Stormwater Management Practices
- MS4 Jurisdictional Issues
- Better Site Design and the New Stormwater Management Design Manual

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What is Stormwater?

- *Stormwater* is water from rain or melting snow that does not soak into the ground. It runs off the surface of the “land” into storm sewers and ditches.
- “Land” includes:
 - **Pervious** surfaces (grassed or landscaped areas, woodlands) – some water soaks into soil, some runs off
 - **Impervious** surfaces (roads, parking lots, concrete, rooftops) – almost all water runs off, almost none soaks in

Why is Stormwater a Problem?

- Rain and snowmelt wash pollutants such as pesticide, motor oil, bacteria, fertilizer, soil and litter into storm sewers and ditches.
 - Ultimately, sewers and ditches empty to a lake, river or stream.



Photo courtesy of WNY Stormwater Coalition.

Why is Stormwater a Problem?

- Although stormwater runoff is a natural process, increases in impervious surfaces and changes in land use increase the quantity of runoff, leading to:
 - Erosion of soil from the land surface
 - Streambank erosion
 - Flooding and drainage problems
 - Damage to aquatic habitat
 - Damage to infrastructure and property



What is a Stormwater Outfall?



- A *stormwater outfall* is the point where a storm sewer or drainage system discharges to a waterway or to another municipal drainage system.

- Often the end of a pipe, but can be the end of an open ditch or channel.
- Can also be a cross-connection from one municipal system entering another.



Presentation Outline

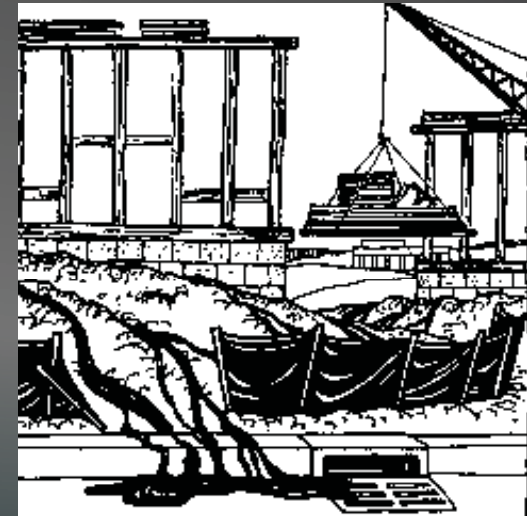
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Background: Phase II Stormwater Regulations

- The Phase II Stormwater Program
 - Federally mandated permit program under Clean Water Act
 - Implements nonpoint source pollution control provisions
 - Part of the National Pollutant Discharge Elimination System (NPDES)
 - In New York State, the Department of Environmental Conservation (NYSDEC) is the executive agency that has been delegated responsibility for the Phase II program
 - State Pollutant Discharge Elimination System (SPDES)

Brief History of the EPA Stormwater Program

- Phased approach to mitigating high levels of pollution in urban stormflow required by the 1987 Amendments to the Clean Water Act
- Phase I addressed
 - Certain industrial activities
 - Construction activities disturbing 5 acres or more
 - Medium and large municipal MS4s



Permit Goals and Intent

- Reduce the discharge of pollutants to the “maximum extent practicable”
- Protect water quality
- Satisfy the requirements of the Clean Water Act
 - No visible contrasts in appearance to natural conditions
 - No sheens of oil
 - No concentrations of grease



What is an MS4?

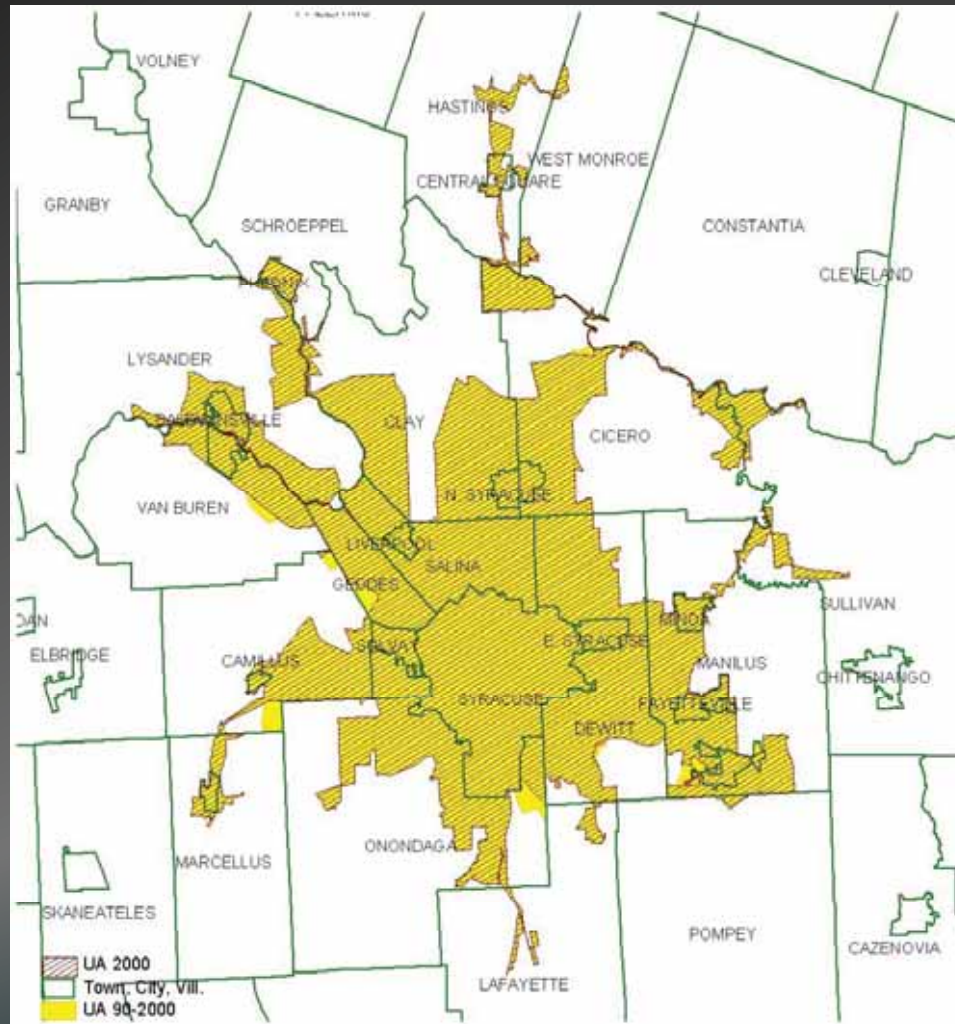


- **MS4** = **M**unicipal **S**eparate **S**torm **S**ewer **S**ystem
- Any system of open or closed pipes or ditches that carry runoff from rainwater or snowmelt (*not* sanitary sewer discharge)
- Owned and operated by a government entity (Town, City, Village, State, County, etc.)
- Also includes certain other entities (e.g. School and Fire Districts, government institutions)

What is a “Regulated MS4”?

- “*Regulated MS4*” is the term used to describe a government entity that owns and operates an MS4 and is subject to the Phase II Stormwater regulations due to the following:
 - It is part of an **urbanized area** of more than 50,000 total population
 - It has a **population density** of greater than 1000 people per square mile
- Regulated MS4s in New York State must obtain coverage under SPDES General Permit GP-0-08-002.

Syracuse Urbanized Area: Regulated MS4s



Baldwinsville Village
Camillus Town and Village
Central Square Village
Cicero Town
Clay Town
DeWitt Town
East Syracuse Village
Fayetteville Village
Geddes Town
Hastings Town
LaFayette Town
Liverpool Village
Lysander Town
Madison County
Manlius Town and Village
Marcellus Town and Village
Minoa Village
North Syracuse Village
Onondaga County and Town
Phoenix Village
Pompey Town
Salina Town
Solvay Village
Sullivan Town
Syracuse City
Van Buren Town
West Monroe Town

Pollutants of Concern

- What pollutants have been identified as problems in streams and lakes to which your municipality drains?
- 303d, TMDL – impaired waters with known pollutants as cause



Pollutants of Concern

- 303(d) list of impaired waters for stormwater runoff
 - Bloody Brook - pathogens
 - Ley Creek - phosphorus and pathogens
 - Ninemile Creek - phosphorus and pathogens
 - Onondaga Creek - phosphorus, pathogens, sediment
 - Harbor Brook - phosphorus and pathogens
 - Limestone Creek - pathogens
 - Seneca River - pathogens
- TMDL (Total Maximum Daily Load) for all sources
 - Onondaga Lake - phosphorus

MS4 Permit (SPDES GP-0-08-002)

- Requires regulated MS4s to implement a Stormwater Management Program consisting of Six Minimum Control Measures (MCMs):
 1. Public Education and Outreach
 2. Public Involvement and Participation
 3. Illicit Discharge Detection and Elimination
 4. Construction Site Runoff Control
 5. Post-Construction Stormwater Management
 6. Pollution Prevention and Good Housekeeping of Municipal Operations

Stormwater Construction Permit (SPDES GP-0-10-001)

- Developers of projects that disturb greater than one acre of land must obtain coverage from New York State under this permit
- Permit applies statewide (not just urbanized areas!)
- In regulated MS4s, the municipality is given regulatory responsibility for this permit (State has delegated to the local level)
 - Municipality responsible for review at design stage
 - Municipality also performs inspections and takes enforcement action during construction
 - However, the developer still must obtain permit coverage from NYSDEC

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Roles of Municipal Officials and Departments

- Planning Boards

- Construction Site Runoff Control & Post-Construction Stormwater Management (MCM #4 and MCM #5)
 - Review Stormwater Pollution Prevention Plans (SWPPPs) submitted by developers for construction projects
 - Issue acceptance for compliant SWPPPs
- Public Involvement & Participation (MCM#2)
 - Citizens have opportunity to comment on development proposals
 - Planning Boards take public input into account in their review
- Possible role in land use regulation changes



Roles of Municipal Officials and Departments (continued)

- Code Enforcement Officers
 - Construction Site Runoff Control and Post-Construction Stormwater Management (MCM #4 and MCM #5)
 - Receive SWPPPs, coordinate SWPPP review with Planning Board
 - Site inspections before, during, and at the close of construction
 - Issue violation notices, enforcement actions
 - Illicit Discharge Detection and Elimination (MCM #3)
 - Identify illicit connections to the drainage system and eliminate through voluntary compliance or enforcement action
 - Public Involvement and Participation (MCM #2)
 - Response to complaints regarding polluted runoff or discharges, flooding and drainage concerns

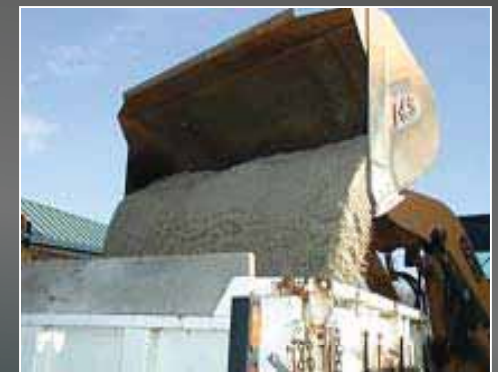
Roles of Municipal Officials and Departments (continued)

- Highway Departments
 - Illicit Discharge Detection & Elimination (MCM #3)
 - Monitor dry-weather flows from stormwater outfalls
 - Post-Construction Stormwater Management (MCM #5)
 - Maintenance of ponds and other practices
 - Public Involvement and Participation (MCM #2)
 - Response to resident complaints (flooding, drainage, etc.)



Roles of Municipal Officials and Departments (continued)

- Highway Departments (ctd.)
 - Pollution Prevention & Good Housekeeping of Municipal Operations (MCM #6)
 - Conduct day-to-day operations so as to minimize pollution
 - Document and quantify activities such as street sweeping, catch basin cleaning, deicer application, fleet maintenance
 - Train all staff in pollution prevention



Photos courtesy of WNY Stormwater Coalition

Roles of Municipal Officials and Departments (continued)

- Who is responsible for MCM #1 (Public Education and Outreach)?
 - Responsibility of departments varies between municipalities (often shared)
 - Distribute information, respond to questions from citizens, develop education and outreach program
- Annual Report and Public Presentation (MCM #2 – Public Involvement and Participation)
 - Responsible department or individual may vary
 - Report is prepared and made available for public review

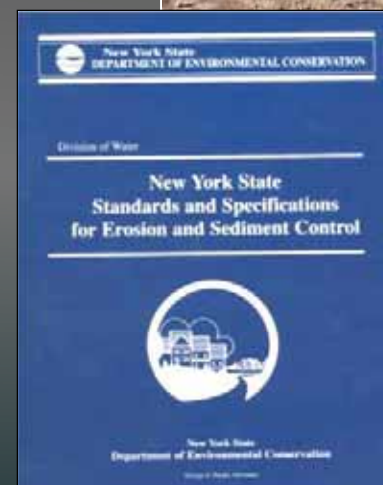
What is a SWPPP?



- A *Stormwater Pollution Prevention Plan (SWPPP)* is a document that describes the practices (actions and structures) to be implemented on a site to prevent polluted runoff from leaving the site to enter a body of water, wetland, or drainage system.
- Required for all development projects and other land-disturbing activities where **greater than one acre of soil disturbance** occurs

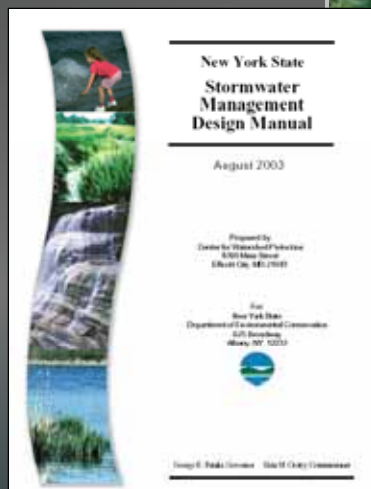
SWPPP Contents

- Notice of Intent (form used to apply for New York State coverage under General Permit)
- Erosion and Sediment Control Plan (required for all SWPPPs)
 - Non-structural practices (application of mulch, establishment of vegetation, soil treatments to minimize erosion, etc.)
 - Structural practices (e.g. silt fence, stone check dams, stabilized construction entrances, sediment trapping devices, etc.)



SWPPP Contents (continued)

- Post-Construction Stormwater Management Plan
 - Required for most projects where impervious surface is created
 - Components include:
 - Water Quality Treatment (Water Quality Volume)
 - Water Quantity Control (Attenuation of 1-year storm runoff volume and peak discharge from 10-year and 100-year storms)



- Accomplished through standard stormwater management practices (ponds, swales, filtration systems, bioretention, etc.) and site design

SWPPP Contents (continued)



Onondaga Lake Watershed requirements

- Compliance with Enhanced Phosphorus Removal Design Standards required for Post-Construction Stormwater Management Practices
- Must be reflected in local law
- Water Quality Volume = runoff from 1-year, 24-hour storm

SWPPP Contents (continued)

- Construction Site Waste Management Plan
 - Spill prevention and cleanup procedures
 - Storage and handling of materials and debris at the site
- Certification Statements
 - Owner/Operator (i.e. the developer)
 - Contractors and Subcontractors
- Procedures for maintenance of all erosion and sediment control and stormwater management practices
- Forms for documentation of site inspections



Planning Board Review Role

- Planning Board is responsible for "*administrative review*" of the SWPPP (i.e. **are all required components present?**) during subdivision or site plan review
 - Can rely on P.E. recommendations for technical aspects
 - SWPPP Completeness Checklist – NYSDEC Division of Water
 - Developer also applies for State coverage under the Construction General Permit (GP-0-10-001)
 - In MS4s only - Planning Board must complete the **MS4 SWPPP Acceptance Form** for the project to receive coverage
 - It is the *developer's responsibility* to submit this form to NYSDEC along with the NOI

Code Enforcement Officer Role

- Construction Site Inspections
 - Review owner/operator's inspections and ensure they are being completed accurately and that deficiencies are being corrected
 - Initiate voluntary compliance and/or enforcement actions, including stop work orders and fines, where deficiencies persist or are not addressed
 - Inspect post-construction stormwater management practices prior to municipal acceptance at termination of construction
- Code Enforcement Officer or other municipal inspector must be adequately trained in erosion and sediment control and stormwater management

Where does the authority come from?

- Passage of regulatory mechanism is required as a condition of the stormwater permit (GP-0-08-002)
 - Illicit Discharge Detection and Elimination Local Law
 - Stormwater Management and Erosion and Sediment Control Local Law
- Local laws designate:
 - Planning Board with SWPPP review powers (usually under Subdivision and/or Site Plan Review Regulations)
 - Stormwater Management Officer (usually Code Enforcement Officer) with inspection and enforcement powers (construction sites and illicit discharges)

Questions/Dinner

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Acceptance of Post-Construction Stormwater Management Practices

- Ownership and maintenance responsibility for most post-construction stormwater management practices is transferred to the municipality.
 - Under an alternative option, some residential practices may be maintained by homeowner associations.
 - In commercial and industrial projects, the site owner often retains ownership and responsibility for the practice.
- The MS4 permit regulates management of post-construction stormwater practices owned by municipalities.



Expectations at time of acceptance

- Practice should be online, functioning, and constructed according to an accepted SWPPP.



- As-built engineering plans stamped by licensed engineer are required for all stormwater management practices.
- Under the new General Construction Permit, developers are required to notify the MS4 prior to proceeding with any modifications to stormwater control practices that differ from the original SWPPP.

Expectations at time of acceptance



- No maintenance by the municipality should be necessary at the time of acquisition. This is the *developer's responsibility* and should be specified as such in the local law.
- The municipality should have access to all practices through easements or other means for future maintenance activities.
- The SWPPP should describe the required maintenance regime to be followed.
- A financial security mechanism should be used to guarantee satisfactory completion of the stormwater management practices.

Maintenance plan requirements

- When operators apply for termination of permit coverage, they must report:
 - Party responsible for long-term maintenance of the practice(s)
 - What maintenance will be needed
- This information is the basis for the MS4's ongoing oversight of the practice(s)
 - Identifies responsible party against whom the MS4 should enforce if practice(s) fail



Financial security mechanisms

- Options (in effect during construction):
 - Irrevocable letter of credit or performance bond / guarantee
 - Must name municipality as beneficiary
 - Must guarantee satisfactory completion of the project
 - Cash escrow account to be repaid upon satisfactory completion of the construction of the practice
 - Amount based on actual construction and landscaping costs
- Mechanism should be specified in local law
- Typically held open for 1 to 2 years after project completion

The municipality never should have to pay to repair a practice that was improperly constructed or non-functioning at the close of construction!

Permanent funding mechanisms

- Drainage Districts
 - Needed after the initial 1 to 2 years if municipality is solely responsible for operation and maintenance
 - Established prior to building construction on the first lot
 - Can increase the district fee as necessary
 - “Water quality” not covered through existing municipal law provisions
- Stormwater Districts (difficult to establish in NY State)
 - Lack of a state stormwater law as a legal mechanism
 - Currently no precedent exists in New York State
 - Regional Stormwater Entity in new MS4 permit may provide a possible avenue

Maintenance agreements

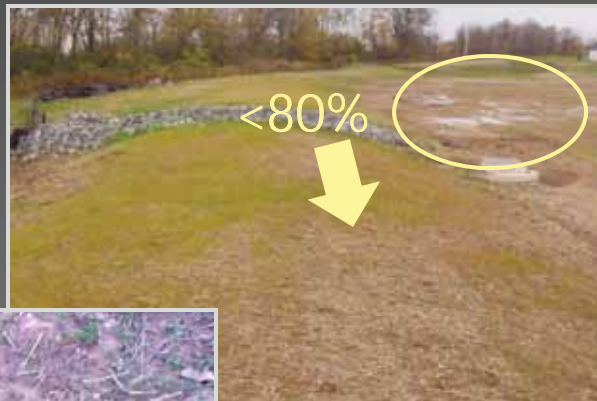
- For sites where the owner (developer) is to maintain the practice permanently, a formal maintenance agreement is recommended and included in NYSDEC's model local law.
- Prior to the issuance of an approval, the applicant or developer enters into an agreement with the municipality to:
 - Ensure the facility is maintained in proper working condition
 - Design standards and any other provisions established by local law are met
 - Issue an irrevocable letter of credit from an approved financial institution that the municipality may draw upon if necessary to properly maintain the facility

Notice of Termination Process

- Under the new stormwater permits, MS4s are required to sign off on the “Notice of Termination” (NOT) form when a developer closes Construction General Permit coverage.
- The Stormwater Management Officer should ensure:
 - Final stabilization (80% or greater vegetative cover across *all* pervious surfaces of the site)
 - Building construction on all lots is complete, lawns in place
 - Permanent drainage, erosion and sediment control, and stormwater management practices are built in accordance with the SWPPP and are properly functioning
 - Temporary practices are removed
- This is the point at which acceptance of stormwater management facilities typically occurs.



Acceptable vegetation density (>80% across entire site)



Not acceptable (<80%)



Temporary Shutdown or Suspension

- Normally, the qualified inspector acting on behalf of the Owner conducts inspections a minimum of once every seven days.
 - Twice every 7 days if greater than 5 acres disturbed at once.
- If temporary stabilization is in place and operations are temporarily suspended (e.g. winter shutdown), owner inspection frequency decreases to every 30 days.
 - *Must notify MS4 in writing first!*
- If final stabilization is in place for temporary shutdown with *partial project completion*, inspections by owner may be stopped.
 - *Must notify MS4 in writing first!*
 - If construction does not resume within 2 years, NOT must be filed.

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MS4 Jurisdictional Issues

- The regulatory authority of the MS4 permit pertains only to portions of the drainage system that are *owned by the municipality*.
- The MS4 is not responsible for privately owned discharges to waters of the state that occur within its regulated boundaries if they do not pass through a municipal drainage system *unless* the MS4:
 - *Caused or contributed to* a discharge that resulted in a contravention of water quality standards **OR**
 - *Failed to enforce* its own local law, resulting in a discharge that caused a contravention of water quality standards

What is an Illicit Discharge?



- The term "*Illicit Discharge*" encompasses most types of flow entering an MS4 that are *not* comprised solely of stormwater runoff.
Examples:
 - Septic system discharges
 - Sanitary sewer cross-connections
 - Floor drains
 - Dumping into catch basins
- The permit aims to *eliminate* these discharges.
- A few exceptions exist for flows that are generally clean water (fire hydrant flushings, foundation drains, etc.)
 - These discharges are legal if determined by the MS4 to be free of contamination

MS4 Jurisdictional Issues

- If polluted discharge enters one MS4 from another MS4, the **originating MS4** is responsible for enforcement and elimination of the discharge.
 - However, the receiving MS4 **must notify** the originating MS4 as soon as the discharge is discovered, and follow up if it persists.
 - (e.g. a Village discharges to a County drainage system, State DOT discharges to the Town drainage system, etc.)



MS4 Jurisdictional Issues

- Discharge of turbid water or sediment from a construction site:
 - Handled the same as an illicit discharge by NYSDEC in terms of determining violation of water quality standards, BUT
 - MS4 would take enforcement action through its Stormwater Runoff Control Local Law rather than its Illicit Discharge Detection and Elimination Local Law
 - Under new permit, MS4 authority will be extended to municipal boundary, not only urbanized area, for Stormwater Runoff Control (MCM 4 and 5)



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New Stormwater Management Design Manual



- Revisions to the New York State Stormwater Management Design Manual are scheduled to take effect later this year
 - Designers will be required to implement runoff reduction through Green Infrastructure, Better Site Design, and related practices to the Maximum Extent Practicable
 - If standard practices must be used, they must meet a “runoff reduction volume” requirement based on the soil type(s) in which they are constructed



New permit requirements for Green Infrastructure/Better Site Design

- MS4 Permit will require that municipalities *consider* Low Impact Development, Better Site Design and Green Infrastructure in land use planning
 - Comprehensive or Master Plans
 - Local laws, ordinances and land use regulations
 - Open space preservation programs and watershed plans
- Other aspects to be considered
 - Maintenance of natural hydrologic conditions
 - Protection of environmentally sensitive areas
 - Smart growth principles
 - Natural resource protection
 - Impervious area reduction



Georgia Stormwater Manual, 2001

New permit requirements for Green Infrastructure/Better Site Design

- Draft 2010 MS4 Permit indicates that municipalities must incorporate green infrastructure in routine upgrades to existing drainage systems to the maximum extent practicable.
- Examples:
 - Sunken islands in parking lots instead of raised islands
 - Incorporate trees and landscaping into previously paved areas
 - Use of open drainage systems or sheet flow instead of closed pipes along roadways
- It is understood that there will be instances where the above practices are not practical, but feasibility should be assessed.



Land Use Planning for Stormwater Management

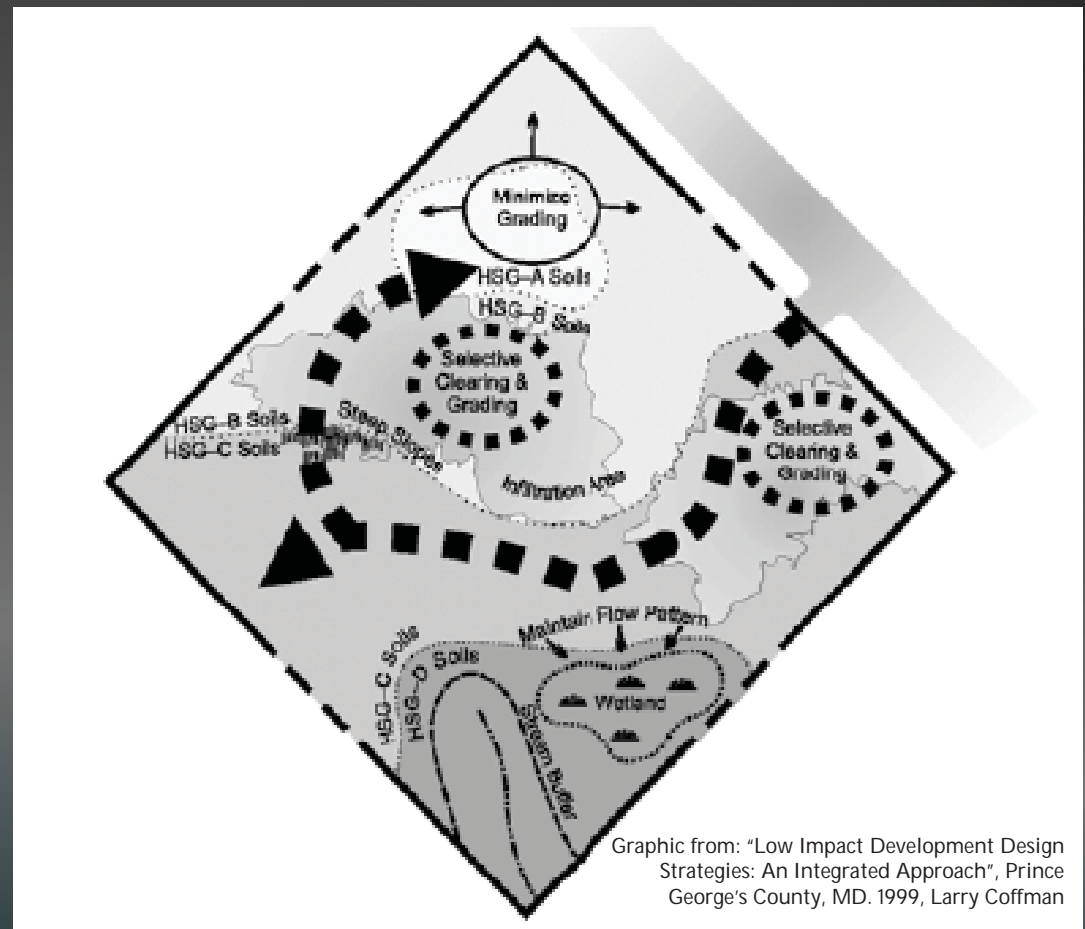
- Don't view projects in a vacuum! Realize larger landscape context
 - How does the proposal fit in with Comprehensive Plan, open space preservation and natural resource protection priorities?
 - Consider protected resources and watersheds and how they are affected by a given proposal and SWPPP
 - Avoid development or consider design changes in areas where risk of resource damage is high



Georgia Stormwater Manual, 2001

Land Use Planning for Stormwater Management

- Maintain natural drainage patterns
- Minimize total disturbance
- Protect soils that are valuable for infiltration
- Avoid work on highly erosive soils
- Preserve vegetation for buffering or filtering
- Protect stream corridors, wetlands

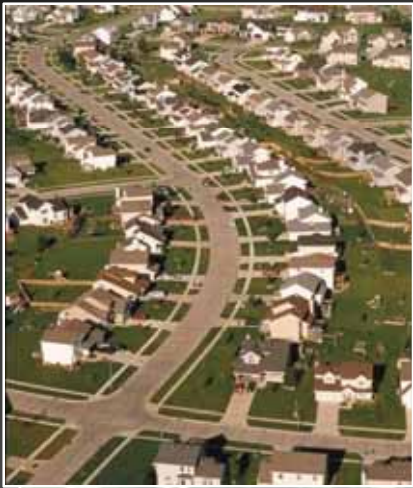


Graphic from: "Low Impact Development Design Strategies: An Integrated Approach", Prince George's County, MD. 1999, Larry Coffman

Land Use Planning for Stormwater Management

- Planning tools for conservation of open space
 - Local code may require:
 - Preservation of outstanding natural features (watercourses, wetlands, wooded areas, etc.)
 - Percentage of total subdivision, or number of acres per dwelling unit, dedicated as open space
 - Offsets from building envelope to natural resource or buffer areas
 - Overlay and performance districts
 - Transfer or purchase of development rights
- Make the developer aware of available options!

Land Use Planning for Stormwater Management



< The old way



The new way

- Stormwater design in NYS is placing increasing priority on low impact development and green infrastructure
 - Look for opportunities to use the existing landscape, vegetation, and soils with high infiltration capacity to attenuate runoff
 - Depending on authority granted by local laws, you may not have to settle for conventional development and BMPs

Questions?

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