STORMWATER 101:
SWPPP Review For Planning Boards

Source: NYSDEC Stormwater Program

What Is Stormwater?

Stormwater is rainwater or melting snow that doesn't soak into the ground but runs off into waterways.

It all starts with Stormwater Runoff

Stormwater flows from rooftops, over paved areas, bare soil and lawns – it picks up litter, sediment, pesticides, fertilizers, chemicals from automobiles, bacteria from animal waste and other pollutants.

Why is Stormwater a Concern?

Untreated stormwater runoff can create significant environmental and public health and safety problems.

Polluted runoff is one of the Nation's greatest threats to clean water

Linking Stormwater Runoff to Construction:

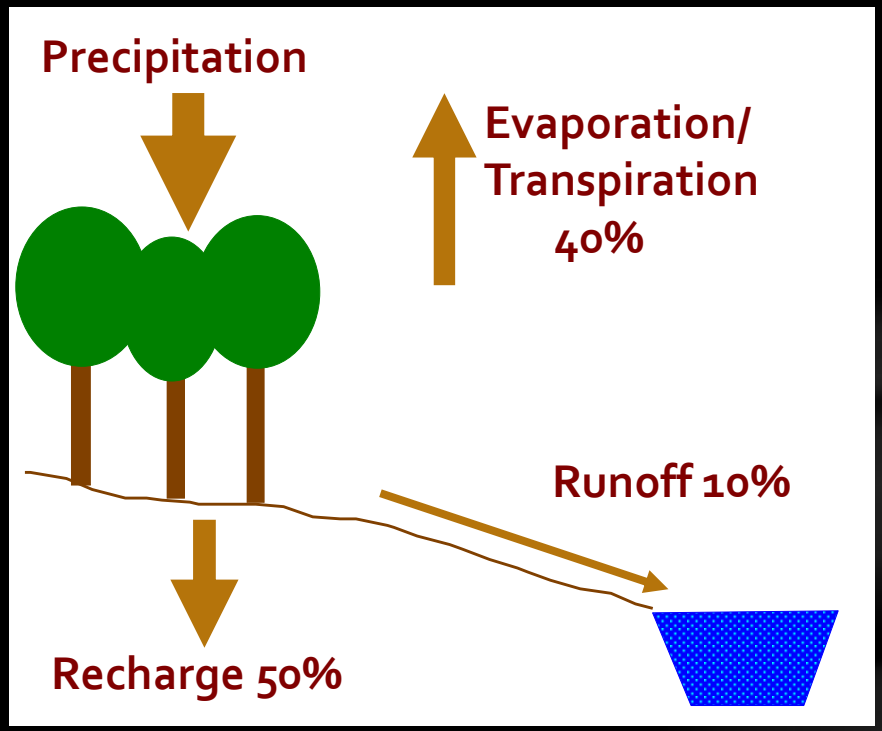
1 acre of land cleared for development → 10 tons of eroded sediment per year

1 acre of impervious cover → 1 million gallons of runoff per year

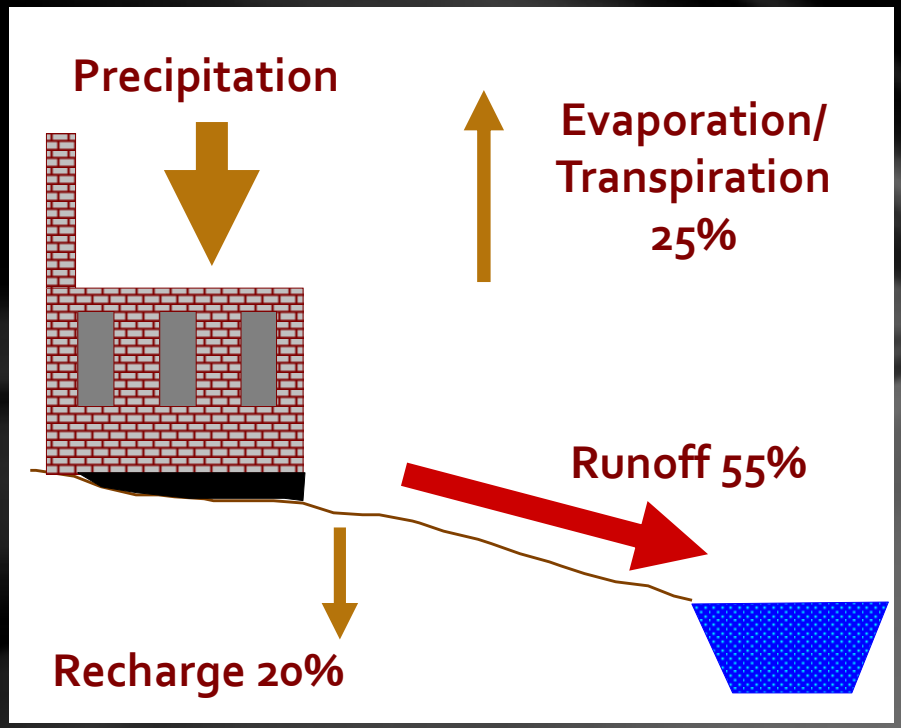
The U.S. loses 600 million tons of sediment per year. That is enough to cover more than 400 football fields per day to a depth of 1 foot.

Sediment runoff from construction sites is 10 to 20 times greater than from agricultural lands

Undeveloped Conditions



Highly Developed Conditions



Stormwater runoff is a natural part of the hydrologic cycle … but as land use changes, runoff can increase, resulting in erosion, pollutant transport, sedimentation, loss of aquatic habitat, & other damages.

Basic concept: We no longer want to pave over as much as possible and send water down the pipe as fast as we can

Benefits of Stormwater Management

Protect drinking water supplies & recreational waterways

- Reduce impacts to aquatic resources
- Enhance property values
- Improve quality of life
- Infrastructure protection
- Savings from loss prevention

Regulatory History: EPA Stormwater Program

Phase I addressed:

- Medium and Large Municipalities
- Construction Activities **> 5 acres**

Phase II addresses:

- Small Municipalities (population >50,000)
- Construction Activities **> 1 acre**

NY State Pollutant Discharge Elimination System (SPDES) General Stormwater Permits Phase II Stormwater Regulations

GP-0-10-001
SPDES General Permit for Stormwater Discharges from Construction Activity

Regulates Construction Activities that disturb 1 acre or more of land

GP-0-10-002
SPDES General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems *(MS4s)*

Regulates Small MS4s located in "urbanized areas"

Federal Government has mandated regulation of Municipal Separate Storm Sewer Systems ("MS4s")

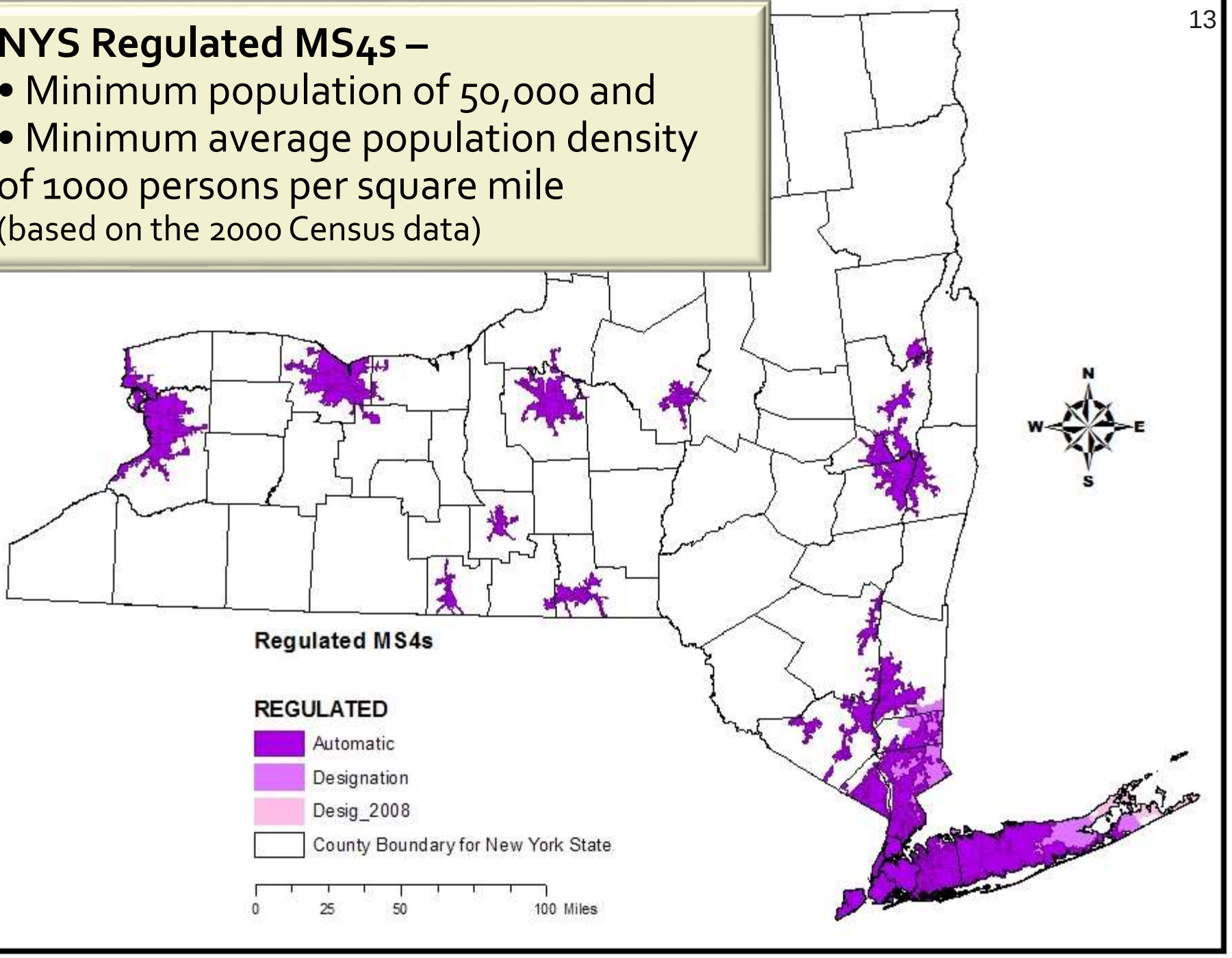
"A conveyance or system of conveyances owned by a State, City, Town, Village, or other public entity that discharges to the Waters of the United States and is:

- designed or used to collect or convey stormwater (includes gutters, pipes, ditches)
- not a combined sewer
- not part of a Publicly Owned Treatment Works (i.e. sewage treatment plant)"
- Town of Owego and portions of Tioga County are only regulated MS4s in the County

NYS Regulated MS4s –

- Minimum population of 50,000 and
- Minimum average population density of 1000 persons per square mile

(based on the 2000 Census data)



Regulated MS4 Stormwater Management Program

1. Public education and outreach
2. Public participation & involvement
3. Illicit discharge detection and elimination
4. ***Construction site runoff control***
5. Post-construction site runoff control
6. Pollution prevention & good housekeeping of municipal operations

Regulated MS4 Stormwater Management Program

What Shapes the Regulated MS4 Program:

- Waterbodies of Concern
  - NYSDEC identified waters
  - Susquehanna River and its tributaries
- Pollutants of Concern
  - Nutrients and Sediment
- Other Factors of Local Concern
  - Flooding, erosion, aquatic habitat concerns

Regulated MS4 Stormwater Management Program

Tioga County and Town of Owego developed SWMP (5 year plan 5/1/10-4/31/15)

Member of Broome Tioga Stormwater Coalition

- Formed in 2004 via inter-municipal agreement
- 15 designated MS4s within Broome and Tioga Counties
- Partners: Broome and Tioga SWCDs, STERPDB, NYSDOT and Broome County EMC

BTSC
Broome-Tioga Stormwater Coalition

Phase II Construction Stormwater Permit

GP-0-10-001

Stormwater Construction Permit

Who Needs a Permit?


NOTICE OF INTENT

New York State Department of Environmental Conservation

Division of Water

625 Broadway, 4th Floor

Albany, New York 12233-3505

-IMPORTANT-

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Anyone disturbing **1 acre** or more of soil (about **208' x 208'**)

Even if the soil is not all exposed at the same time

Including single-family homes in subdivisions

Sometimes smaller in protected watersheds or sensitive areas

Soil Disturbing Activities Requiring Permit Coverage

- Grading
- Excavating
- Filling
- Soil Stockpiling
- Demolition*
- Clear-cutting
- Grubbing and Stump Removal
- Construction

* If the concrete slab is removed

Ineligible Construction Activities

Construction activities that are ineligible for coverage under the General Permit (they must obtain an individual permit):

Residential, commercial or institutional projects that disturb 1 or more acres of steep slope* and are tributary to AA and AA-s classified waters (unfiltered drinking water)

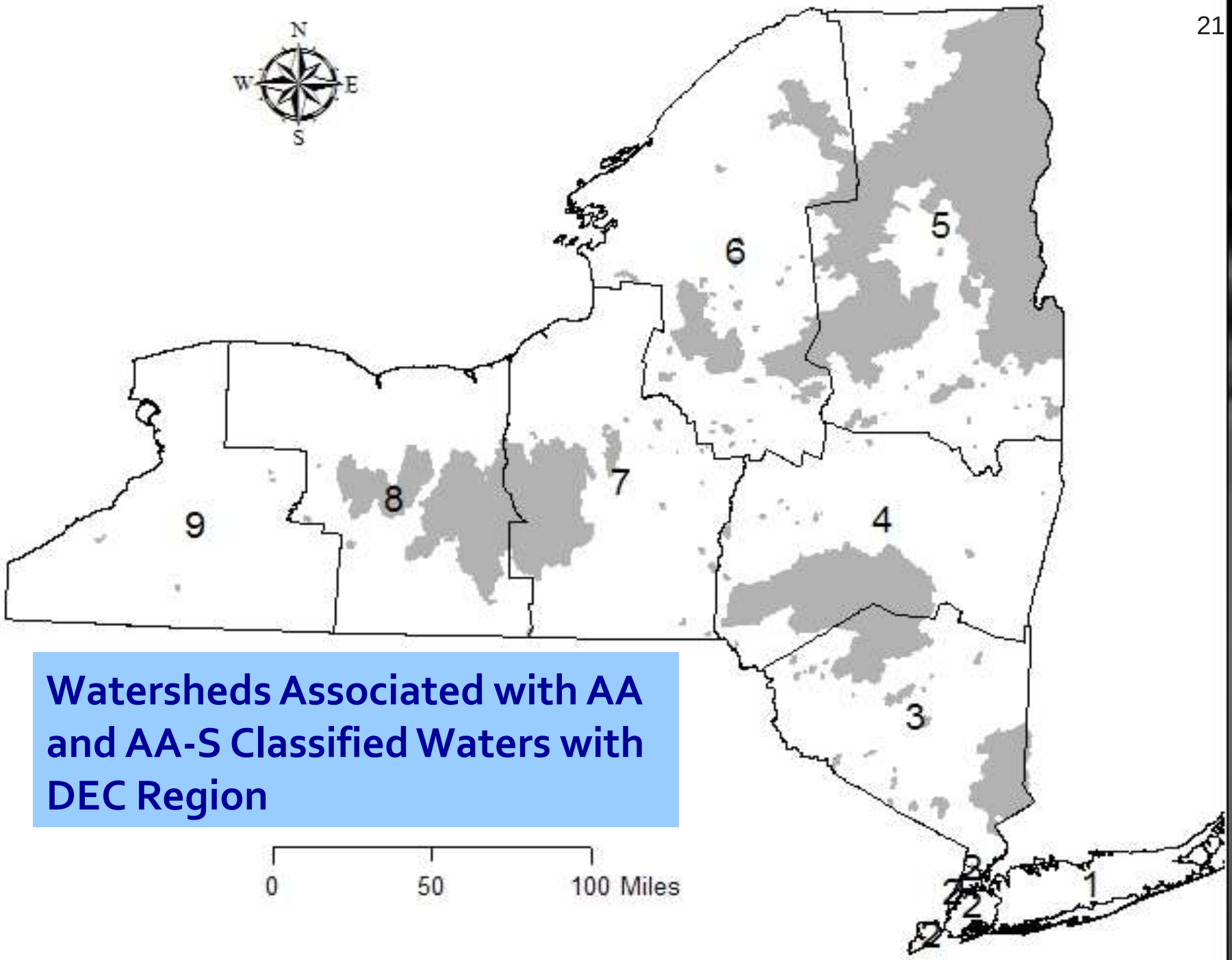
Roadway or linear utility projects disturbing 2 acres or more on steep slopes* tributary to AA or AA-s waters

Ineligible Construction Activities

* Steep slope = 25% or greater

http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

AA classified waters will be added to DEC Stormwater Interactive Map



Watersheds Associated with AA and AA-S Classified Waters with DEC Region

Ineligible Construction Activities

Construction activities **ineligible** for coverage under GP-0-10-001:

Construction activities that adversely affect property listed or eligible for listing on the State or National Register of Historic Places

NYS Historic Preservation Act, Section 14.09

http://nysparks.state.ny.us/shpo/resources/index.htm

Requires Individual Permit to be obtained

Construction Activities that Require SWPPP Preparation

Single-family Residential and Agricultural construction:

- disturbance between 1 and 5 acres, and
- 25% or less impervious cover, and
- not discharging directly to an impaired waterbody listed in Appendix E of the general permit, and
- not located in a watershed identified in Appendix C of permit

✓include **Erosion and Sediment Control Plan**

All other construction projects disturbing one acre or greater:*

✓include **Erosion and Sediment Control Plan**

✓and **Water Quality and Quantity Control Plan**

**Some grading or linear construction projects only require Erosion and Sediment Controls – see Appendix B of GP-0-10-001*

Obtaining Permit Coverage – Projects within Regulated Traditional Land-Use Control MS4s

Owner submits SWPPP to **MS4 Reviewer** → MS4 Reviewer reviews SWPPP and signs "MS4 SWPPP Acceptance" → Owner submits NOI and signed "MS4 SWPPP Acceptance" to DEC in Albany → DEC issues permit coverage: **5**-business-day authorization *

To find MS4 boundaries, check the Stormwater Interactive Map at: http://www.dec.ny.gov/imsmaps/stormwater/viewer.htm

* Permit coverage begins in **5** business days (including projects with SWPPPs that are not in conformance with technical standards – ***IF*** *the MS4 reviewer accepts it*)

Obtaining Permit Coverage – Projects Not Located in Regulated MS4s

SWPPP conforms to DEC technical standards → Owner submits NOI to **DEC in Albany** → DEC issues permit coverage: **5**-business-day authorization

SWPPP **does not conform** to DEC technical standards → Owner submits NOI to **DEC in Albany** → DEC issues permit coverage: **60**-business-day authorization → **Owner must submit SWPPP to Regional DEC office for review**

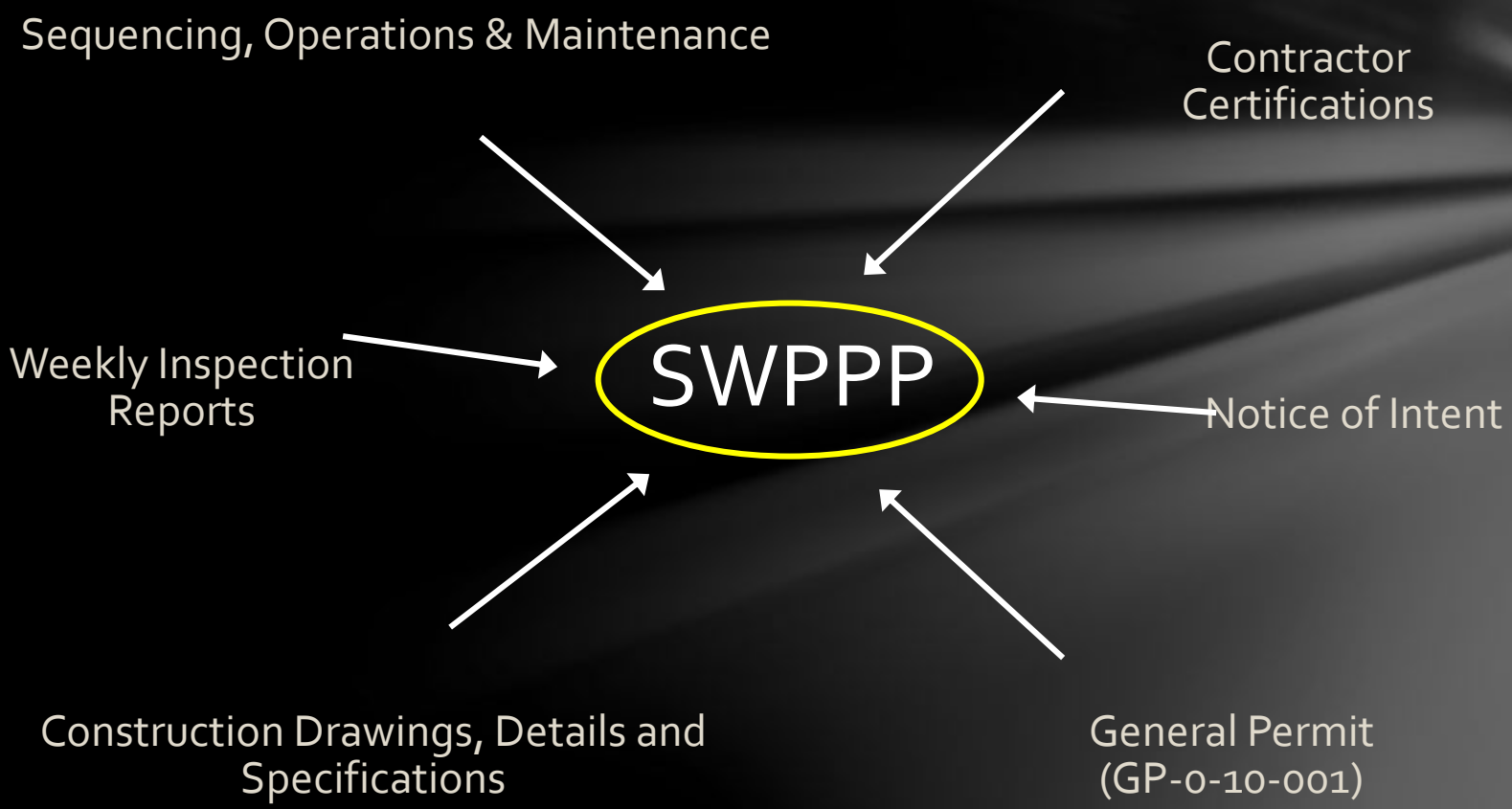
60 business days = about 3 months' wait before construction can start

Purpose of the SWPPP

Protect on-site and off-site resources and waterways by:

- Minimizing erosion
- Controlling volume and peak rate of runoff
- Reducing Channel Erosion
- Improving Water Quality
- Reducing Flooding

What is a Stormwater Pollution Prevention Plan?



Municipal Stormwater Plan Review

DEC *does not review* all Stormwater Pollution Prevention Plans and encourages local governments to review the plans

Reasons why stormwater plans should be reviewed locally:

- Local review may be the only review
- Assurance of quality and longevity of stormwater management systems
- Municipalities have a responsibility to ensure that stormwater impacts are mitigated
- Protection of municipal infrastructure and natural resources

Stormwater Pollution Prevention Plan (SWPPP) Components

- Narrative Report
- Location and Resources Maps
- Existing Conditions Plans
- Future Conditions Plans
- Sequence of Construction
- Practice Specifications and Details
- Site Log/Certifications
- Routine Inspections by Qualified Inspector
- Maintenance Plan

Post-Construction Stormwater Management Design and Details

Hydrologic Analysis

Runoff Reduction Practices

SWPPP Review Checklist

Identifies the required components of Basic and Full SWPPPs

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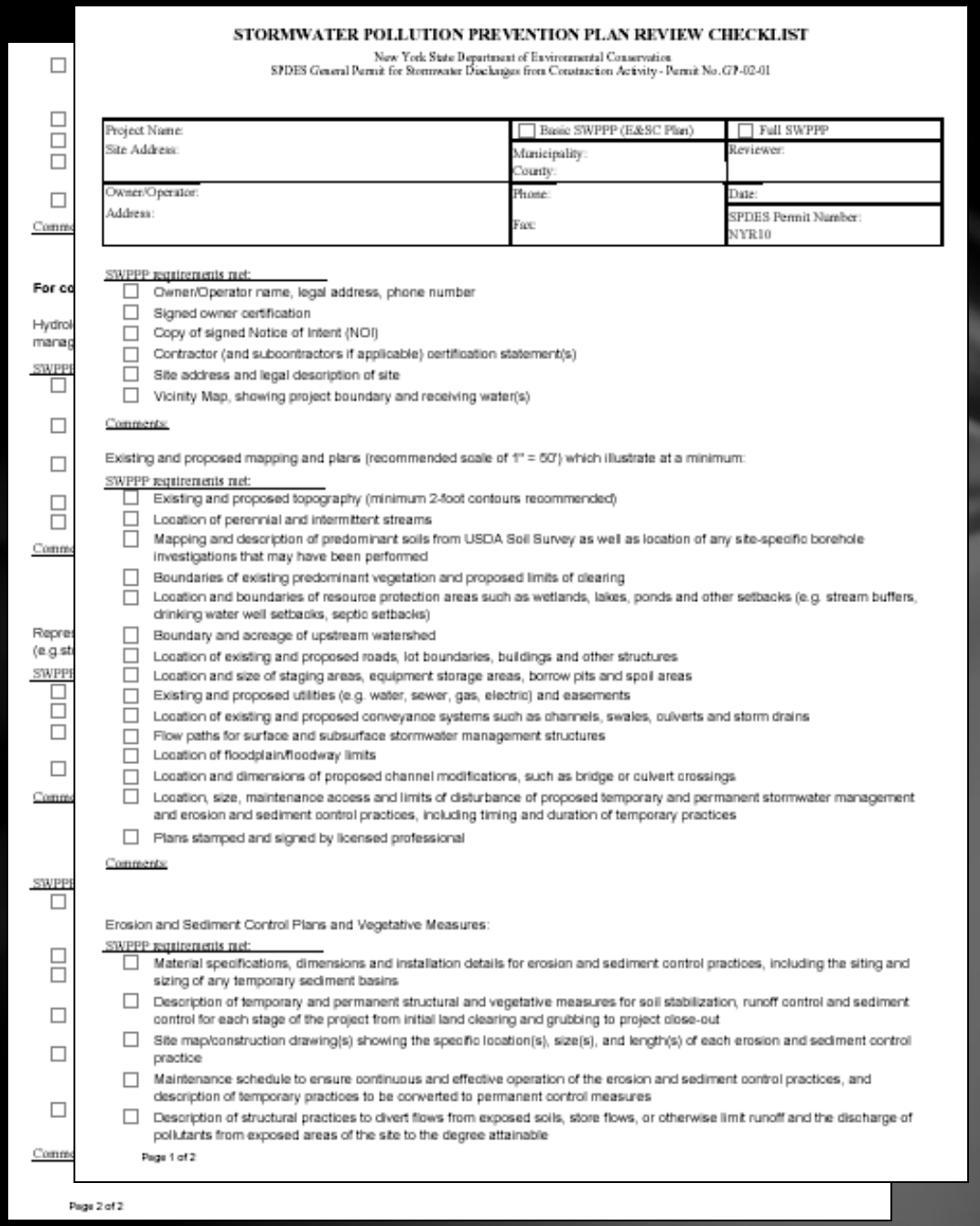


STORMWATER POLLUTION PREVENTION PLAN REVIEW CHECKLIST

New York State Department of Environmental Conservation
SPDES General Permit for Stormwater Discharges from Construction Activity - Permit No. GP-02-01

Project Name: Site Address:	☐ Basic SWPPP (E&SC Plan)	☐ Full SWPPP
	Municipality: County:	Reviewer:
Owner/Operator: Address:	Phone: Fax:	Date: SPDES Permit Number: NYR10

SWPPP requirements met:

- ☐ Owner/Operator name, legal address, phone number
- ☐ Signed owner certification
- ☐ Copy of signed Notice of Intent (NOI)
- ☐ Contractor (and subcontractors if applicable) certification statement(s)
- ☐ Site address and legal description of site
- ☐ Vicinity Map, showing project boundary and receiving water(s)

Comments:

Existing and proposed mapping and plans (recommended scale of 1" = 50') which illustrate at a minimum:

SWPPP requirements met:

- ☐ Existing and proposed topography (minimum 2-foot contours recommended)
- ☐ Location of perennial and intermittent streams
- ☐ Mapping and description of predominant soils from USDA Soil Survey as well as location of any site-specific borehole investigations that may have been performed
- ☐ Boundaries of existing predominant vegetation and proposed limits of clearing
- ☐ Location and boundaries of resource protection areas such as wetlands, lakes, ponds and other setbacks (e.g. stream buffers, drinking water well setbacks, septic setbacks)
- ☐ Boundary and acreage of upstream watershed
- ☐ Location of existing and proposed roads, lot boundaries, buildings and other structures
- ☐ Location and size of staging areas, equipment storage areas, borrow pits and spoil areas
- ☐ Existing and proposed utilities (e.g. water, sewer, gas, electric) and easements
- ☐ Location of existing and proposed conveyance systems such as channels, swales, culverts and storm drains
- ☐ Flow paths for surface and subsurface stormwater management structures
- ☐ Location of floodplain/floodway limits
- ☐ Location and dimensions of proposed channel modifications, such as bridge or culvert crossings
- ☐ Location, size, maintenance access and limits of disturbance of proposed temporary and permanent stormwater management and erosion and sediment control practices, including timing and duration of temporary practices
- ☐ Plans stamped and signed by licensed professional

Comments:

Erosion and Sediment Control Plans and Vegetative Measures:

SWPPP requirements met:

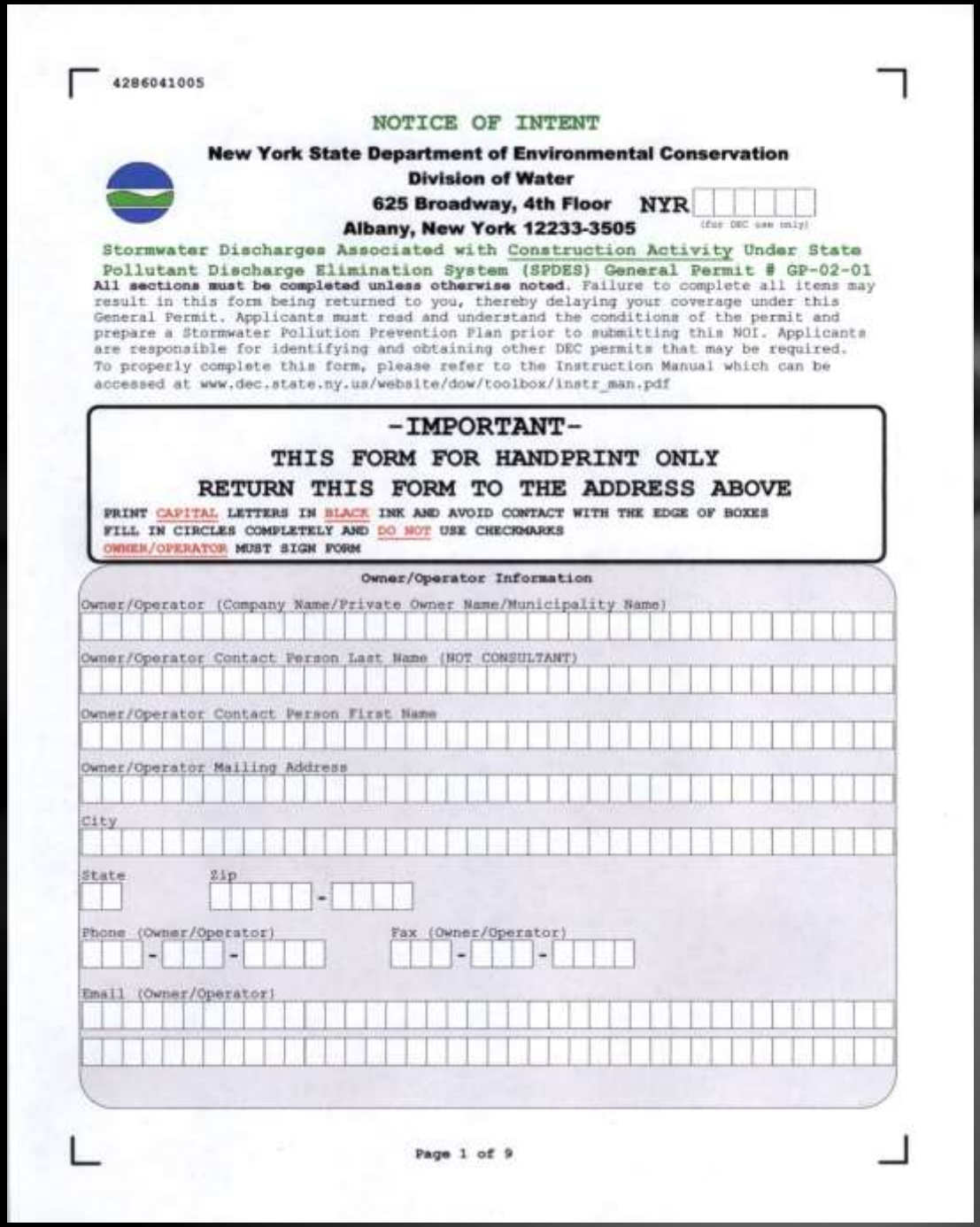
- ☐ Material specifications, dimensions and installation details for erosion and sediment control practices, including the siting and sizing of any temporary sediment basins
- ☐ Description of temporary and permanent structural and vegetative measures for soil stabilization, runoff control and sediment control for each stage of the project from initial land clearing and grubbing to project close-out
- ☐ Site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice
- ☐ Maintenance schedule to ensure continuous and effective operation of the erosion and sediment control practices, and description of temporary practices to be converted to permanent control measures
- ☐ Description of structural practices to divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable

Page 1 of 2

Page 2 of 2

☑ Notice of Intent

- Must use new 14-page NOI
- Must be signed by SWPPP Preparer
- Must be signed by owner/operator



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NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR (for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-02-01

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required. To properly complete this form, please refer to the Instruction Manual which can be accessed at www.dec.state.ny.us/website/dow/toolbox/instr_man.pdf

-IMPORTANT-

THIS FORM FOR HANDPRINT ONLY

RETURN THIS FORM TO THE ADDRESS ABOVE

PRINT CAPITAL LETTERS IN BLACK INK AND AVOID CONTACT WITH THE EDGE OF BOXES
FILL IN CIRCLES COMPLETELY AND DO NOT USE CHECKMARKS
OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

Owner/Operator Contact Person First Name

Owner/Operator Mailing Address

City

State Zip -

Phone (Owner/Operator) - -

Fax (Owner/Operator) - -

Email (Owner/Operator)

Page 1 of 9

☑ General Requirements

Owner/Operator name, legal address, phone number

Copy of signed NOI (must be 14-page NOI)

SWPPP Preparer's signature on NOI

Contractor certification statement(s)

Site address and legal description of site

Acreage of site and acreage of disturbance

☑ Narrative Report

- Existing conditions:
  - Land use
  - Soil descriptions
  - Waterbodies
  - Vegetation type and location
  - Utilities
  - Natural drainages
  - Key natural resources – wetlands, streams, lakes and ponds
- Future conditions:
  - New land use and drainage patterns
  - Duration of construction
  - Clearing and grading phasing
  - Measures to minimize erosion
  - Measures to protect natural resources

☑ Narrative Report

- Determination of permit eligibility regarding Historic Places

  - Project's effect on property listed or eligible for listing on State or National Register of Historic Places
  - Results of historic places screening determinations
  - Description of necessary measures to avoid or minimize impacts
  - Written mitigation agreements with State OPRHP

☑ Contractor Certification Statement

The SWPPP must clearly identify the contractor(s) and sub-contractor(s) that will implement each pollution control measure identified in the Plan.

All contractors and sub-contractors responsible for SWPPP implementation must sign the certification statement.

- All certifications must be included in the SWPPP.
- Violations of the Permit may incur fines of up to $37,500 per day for each violation.

Contractor Certification Statement

I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the New York State Pollution Discharge Elimination System (SPDES) general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of State of New York and could subject me to criminal, civil and/or administrative proceedings.

Name _____ Title_____

Signature_____ Date_____

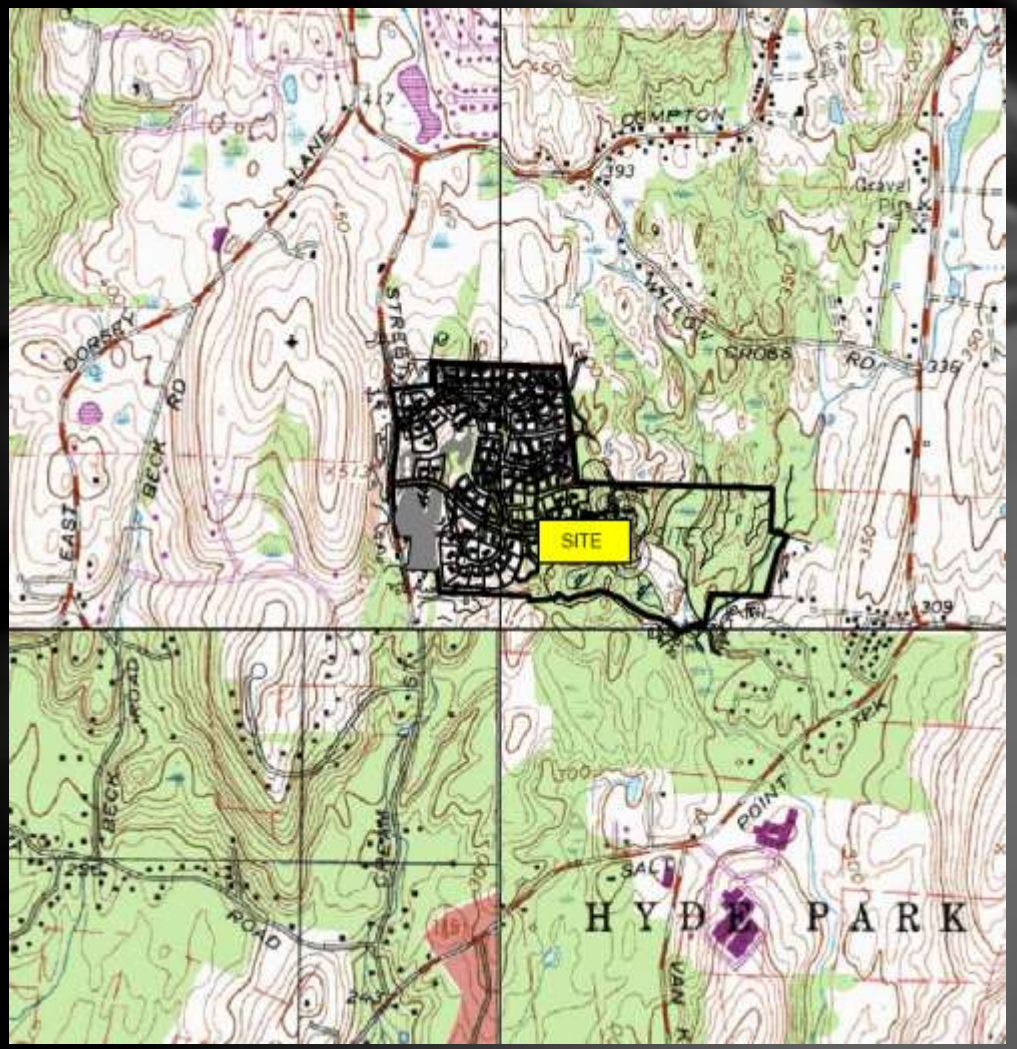
Contractor Address_____ Phone_____

Project Name _____ Site address_____

Provisions Responsible for_____

☑ Location Map

- Site location and boundaries
- Receiving water
- Other affected water bodies
- Boundary and acreage of upstream watershed



☑ Site Maps and Plans
Existing Conditions

(1" = 50' scale recommended)

- Property boundaries
- Existing roads and structures
- Existing utilities and easements
- Well setbacks, septic setbacks, etc.
- Soils – mapping and descriptions of predominant soils from USDA Soil Survey

☑ Site Maps and Plans
Existing Conditions (Continued)

- Natural resources boundaries and buffers (wetlands, lakes, ponds, streams, etc.)
- Floodplains/floodways limits
- Topography (recommended minimum 2' contours)
- Drainage areas, flow paths, ground cover
- Location of existing and proposed conveyance systems such as channels, swales, culverts and storm drains

☑ Site Maps and Plans

Conditions During Construction

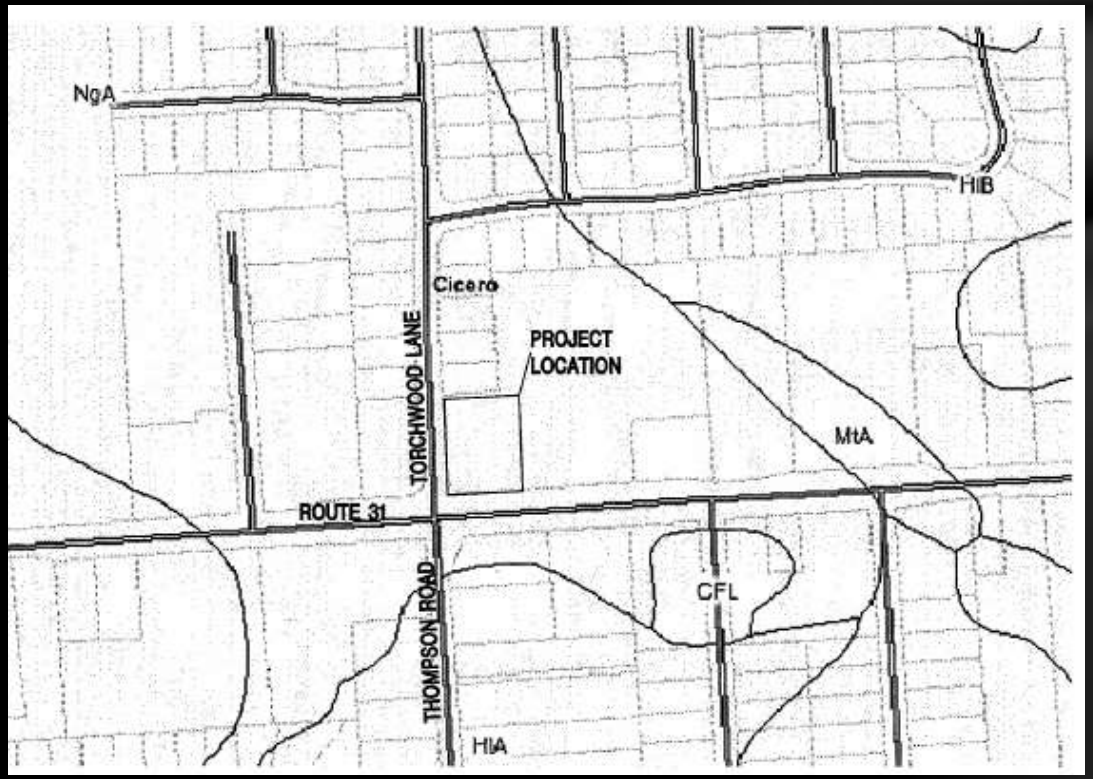
- Location, size and maintenance access of temporary and permanent E&SC and stormwater management practices
- Limits of disturbance

☑ Site Maps and Plans
Future Conditions

- Topography (recommended minimum 2' contours)
- Limits of clearing and grading for each phase
- Staging areas, borrow pits and spoil areas
- Location of new structures, roads, lot boundaries, utilities and easements
- Proposed conveyance systems & channel modifications
- Proposed drainage areas

☑ Soils Map and Descriptions

- A map of the site with soil boundaries and soil types
- Descriptions of the soils
- Hydrologic Soil Group for soil on the site



NgA SOILS-NIAGARA SILT LOAM (HYDROLOGIC SOIL GROUP "C")

Niagara silt loam, 0 to 4 percent slopes (NgA).—This level to very gently sloping soil is on moderately low landforms of the lake plains. Individual areas are irregular in shape and range from less than 10 acres to more than 100 acres in size. The smaller areas generally are around the fringes of depressions, and they receive a large amount of runoff and seepage from adjacent higher soils. The large areas generally are on broad flats from which runoff water drains slowly.

Ap—0 to 9 inches, very dark grayish-brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; common, fine distinct yellowish-brown mottles; moderate, medium, granular structure; friable; many fine roots; slightly acid; abrupt, smooth boundary.

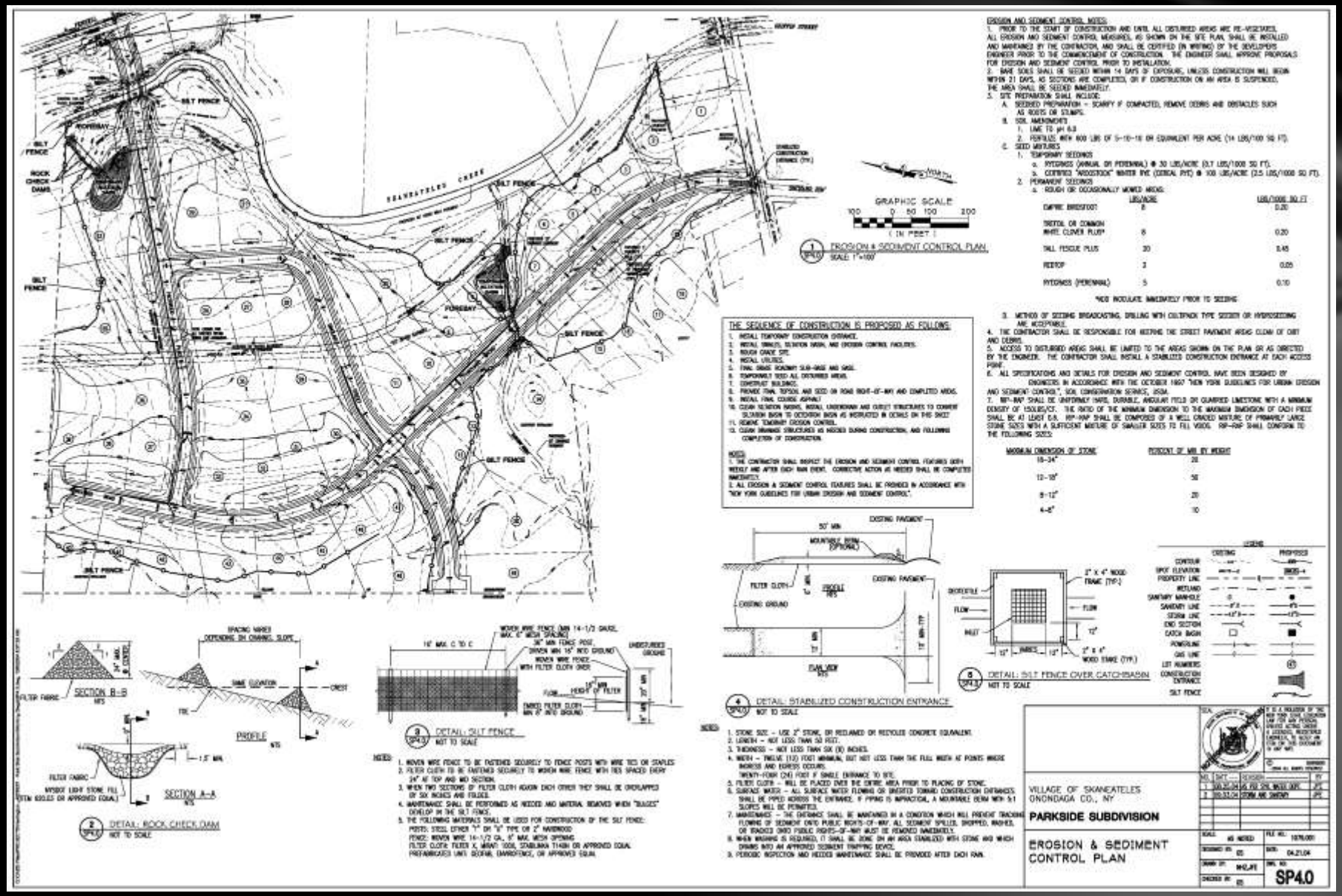
B1—9 to 11 inches, pale-brown (10YR 6/3) silt loam; common, fine, distinct yellowish-brown and dark yellowish-brown and few, fine, faint light brownish-gray mottles; very weak, medium, subangular blocky structure; friable; few fine roots; few fine pores; slightly acid; clear, smooth boundary.

B21—11 to 23 inches, brown (7.5YR 4/4) very fine sandy loam; common, medium, distinct strong-brown and light brownish-gray mottles; weak, medium, subangular blocky structure; friable; grayish-brown (10YR 5/3) ped faces; few fine roots; many pores; thin patchy clay linings in larger pores; neutral; clear, wavy boundary.

B22t—23 to 39 inches, grayish-brown (10YR 5/2) heavy silt loam; many coarse, distinct dark yellowish-brown (10YR 5/6) mottles; weak, very thick, platy structure parting to weak, medium, subangular blocky; friable, slightly sticky; few fine roots; many fine and medium pores that have clay linings; very thin clay films on ped faces; neutral; clear, wavy boundary.

C—39 to 50 inches, brown (7.5YR 5/2), weakly stratified silt loam and very fine sandy loam that has thin layers of loamy very fine sand; many coarse, distinct yellowish-brown (10YR 5/4, 5/6), dark yellowish-brown (10YR 4/4), dark-brown (7.5YR 4/4), and light brownish-gray (10YR 6/2) mottles in upper part, decreasing in size and number with increasing depth; weak, thick, platy structure; friable; few fine pores; mildly alkaline (weakly calcareous).

☑ E & SC Construction Plans



☑ E & SC Construction Plans

- Description of temporary and permanent structural and vegetative measures for soil stabilization, runoff control and sediment control

For example:

- Annual ryegrass will be applied at a rate of 100 lbs./acre
- Permanent rock check dams shall be constructed of 2" to 9" angular limestone with the downslope dam crest even with the upslope dam toe
- Silt fence and orange snow fence will be installed along the 100-foot wetland adjacent area before clearing and grubbing

☑ E & SC Construction Plans

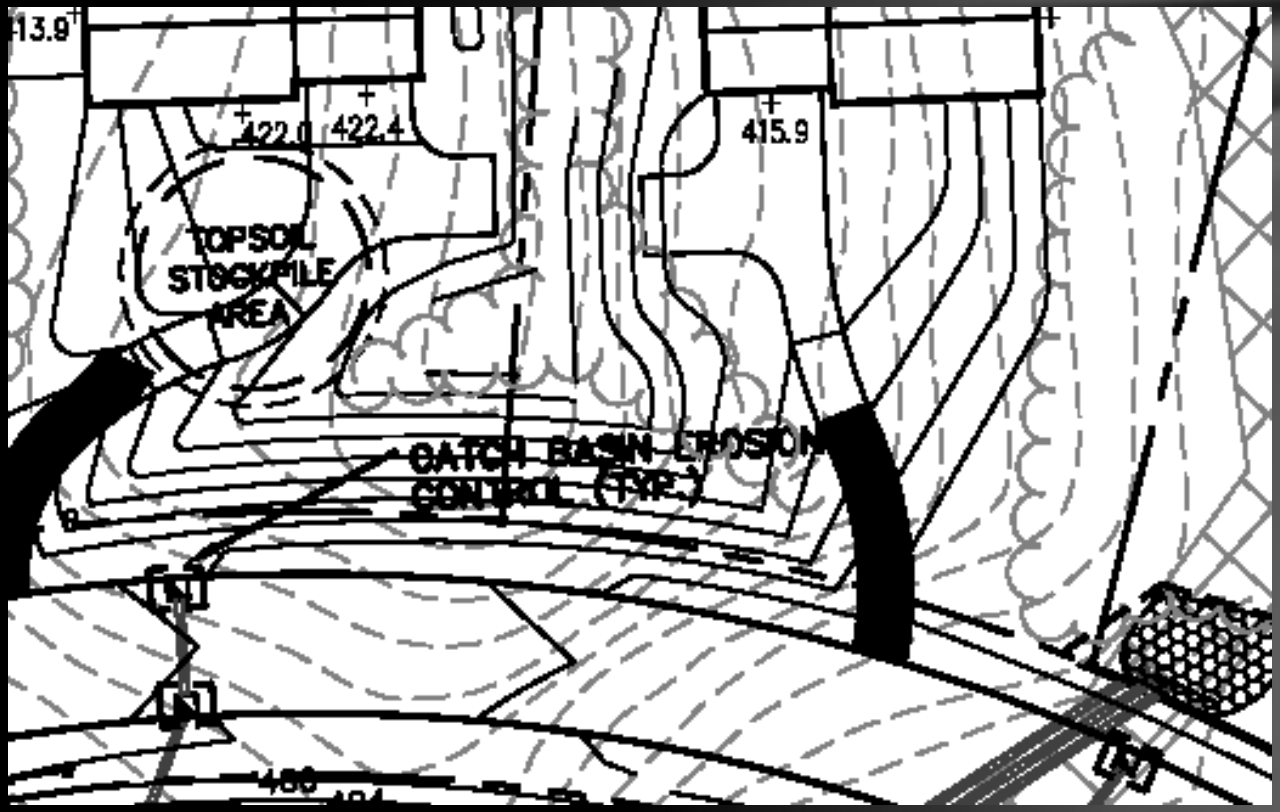
- Implementation and Maintenance Schedule for E&SC measures, including timing of placement and minimum time frame each practice will remain in place

For example:

- Bare soil areas will be seeded and mulched within 14 days of the last grading activity in that area
- Contractor will keep pavement areas free of soil and debris
- Sediment trap #1 will be constructed before dry swales

☑ E & SC Construction Plans

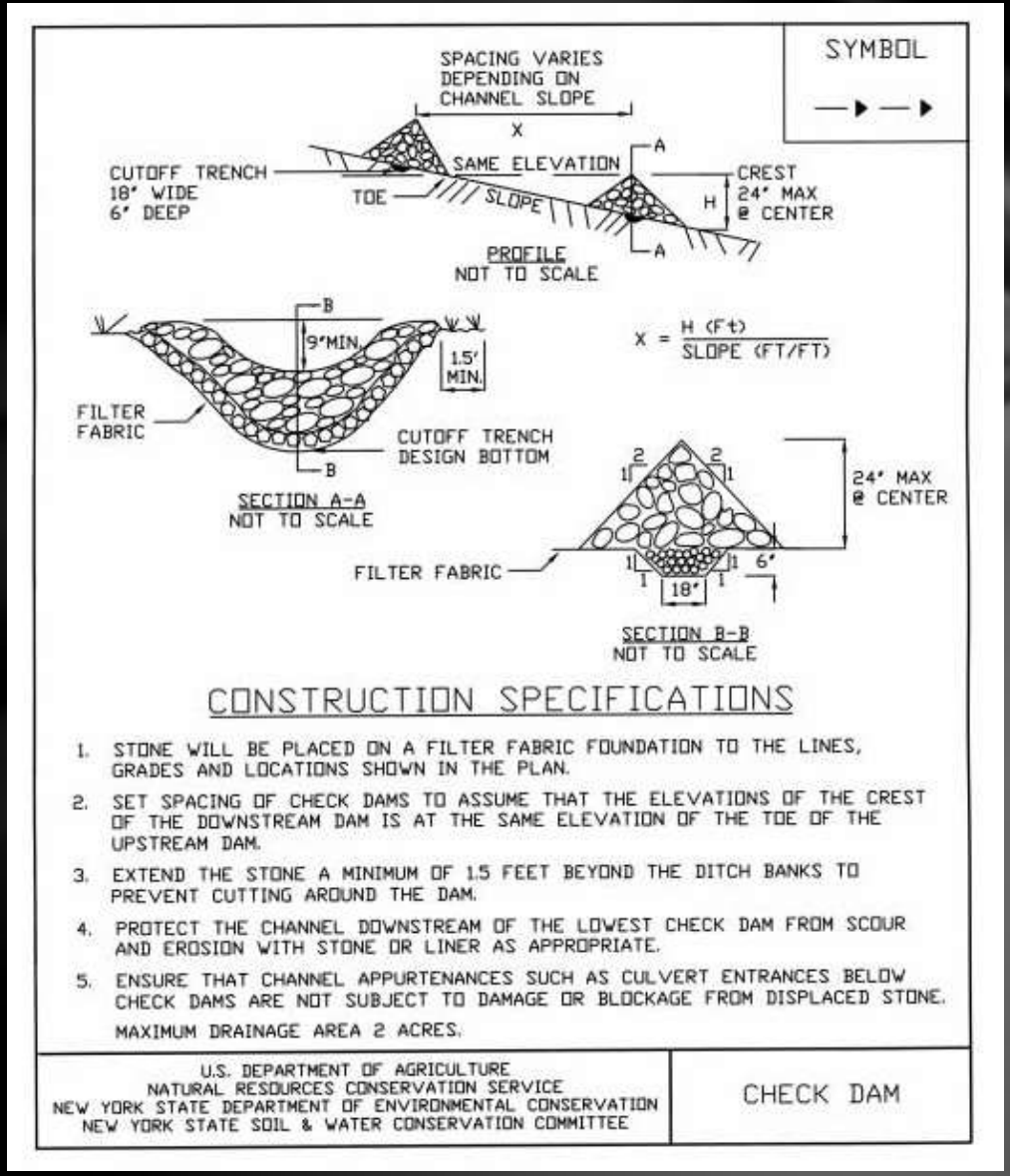
Construction drawing(s) showing specific locations, size and length of each erosion and sediment control practice



☑ E & SC Construction Plans

- Material specifications, dimensions and installation details

Must be in conformance with the **New York State Standards and Specifications for Erosion and Sediment Control ("Blue Book")**



☑ Pollution Prevention Measures

- Fuel, paints and solvents containment
- Spill prevention and spills response
- Temporary sanitary facilities
- Litter control
- Dust control

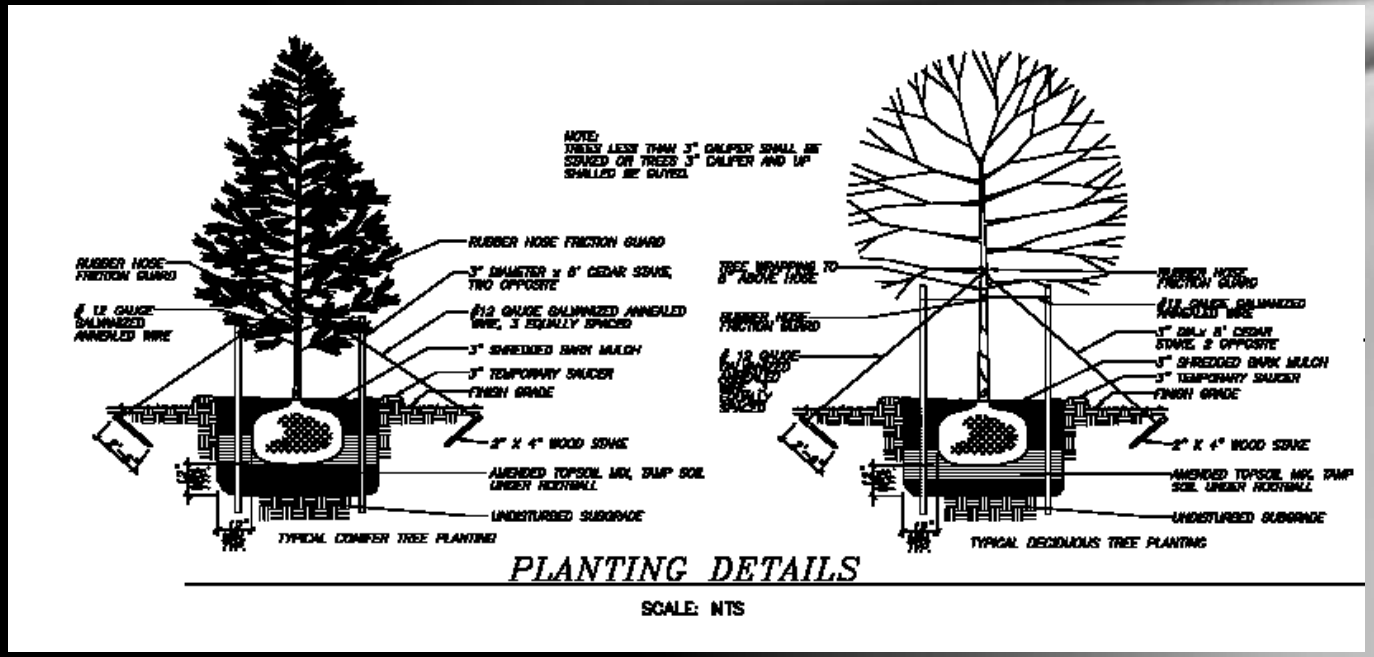
No secondary containment = spills and possible surface water or groundwater contamination

☑ Pollution Prevention Measures

- Designated spoils and waste disposal areas
- Locate waste away from sensitive areas
- E&SC for borrow and spoil areas

☑ Final Landscaping Plans

- Upland and aquatic plant species list and locations on construction plans
- Schedule for planting, mowing, pruning, fertilizer application



Remember! – No tree plantings inside pond berms

☑ Other Requirements

- Stabilization and maintenance
- Construction Sequencing
- Construction Site Phasing
- Inspection and Maintenance Plan

Conventional Stormwater Site Design

"Good Drainage" Paradigm

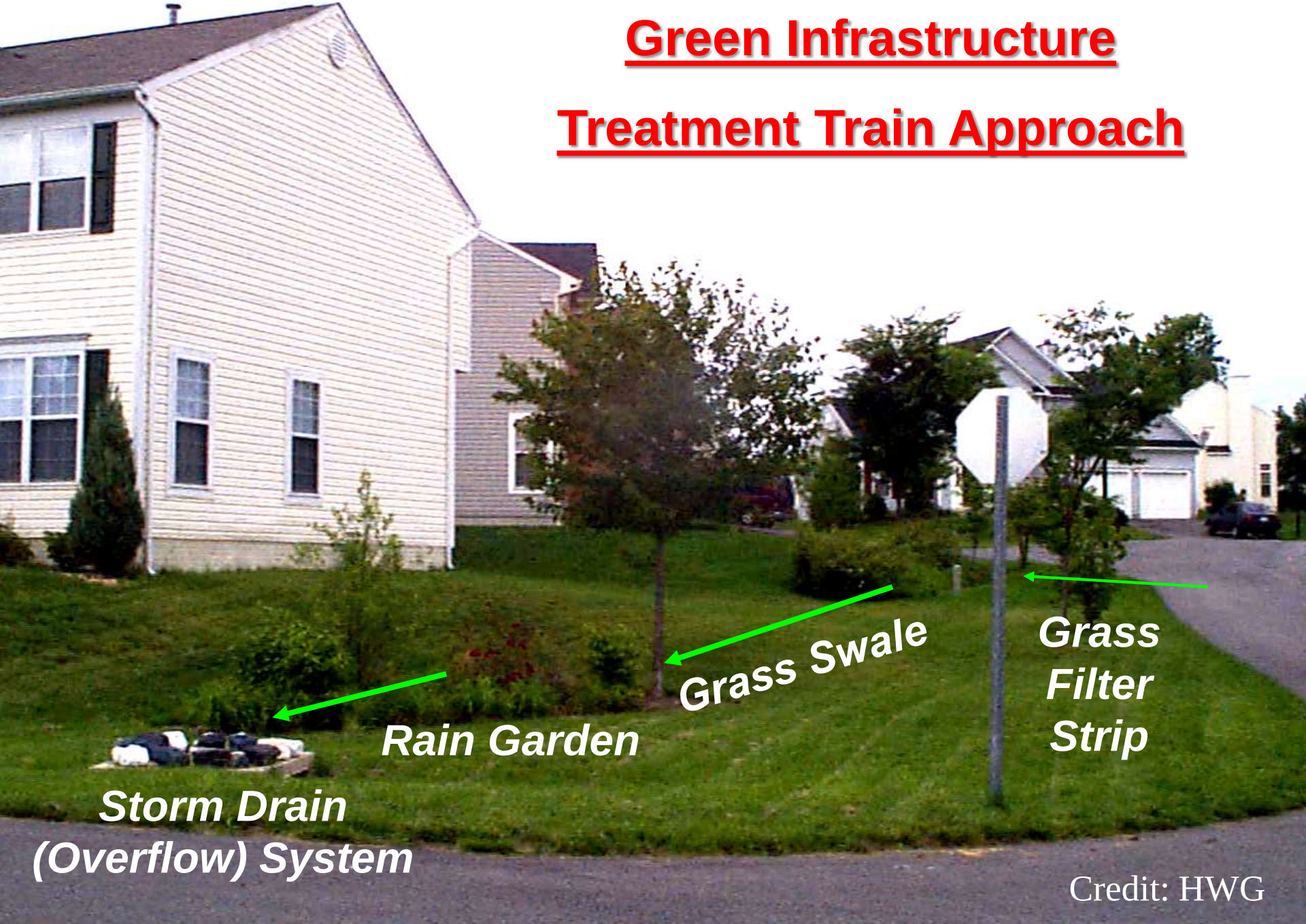
Credit: HWG

GREEN INFRASTRUCTURE

CONSTRUCTION TECHNIQUES & POLLUTION PREVENTION MEASURES

Green Infrastructure

Treatment Train Approach



Credit: HWG

The Essence of Green Infrastructure

- **Runoff Reduction Mechanisms**
  - Infiltration
  - Evapotranspiration
  - Reuse

Challenges of Green Infrastructure

- Building Codes
- Maintenance Issues
- Traditional methods vs. GI
  - Planning
  - Computation
  - Design
- Public Acceptance

Avoid the Impacts

Preserve Natural Features

Preservation of Undisturbed Areas

Preservation of Buffers

Reduction of Clearing & Grading

Locate Sites in Less Sensitive Areas

Soil Restoration

Section 5.1

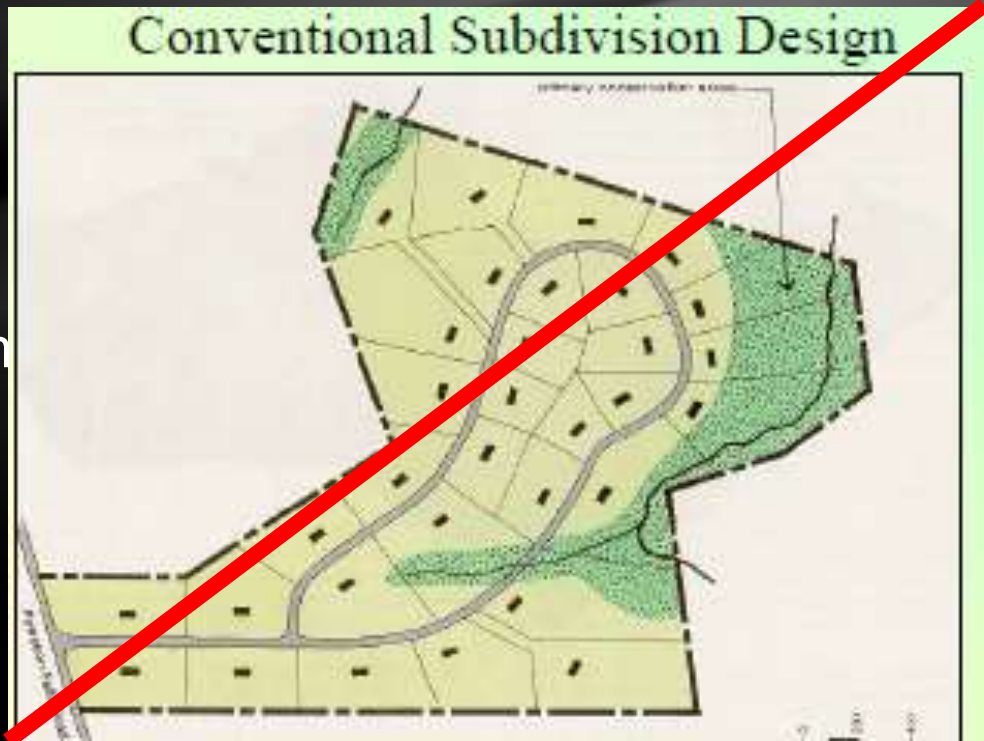
Avoid, Minimize, Preserve

Preservation of Natural Areas

Avoidance of Sensitive Areas

Minimize Clearing and Grading

Open Space/Conservation Design



Soil Restoration

- Soil Restoration reduces costs of long-term fertilizer and pesticide use and thereby improves water quality through lower inputs

REQUIRED:

Increase Runoff CN if restoration is not applied.

Manage the Impact

Slow it down, Spread it out, Soak it in

Runoff Reduction (RR) Techniques:

- Conservation of natural areas
- Sheetflow to riparian buffers or filter strips
- Vegetated open swale
- Tree planting / tree box
- Rooftop Runoff disconnection
- Stream daylighting
- Rain garden
- Green roof
- Stormwater planter
- Rain tank/Cistern
- Permeable paving

Conservation of Natural Areas

- Delineate on plans & in the field
- Place in permanent Conservation Easement:
  - Stream/wetland buffers
  - Undisturbed vegetated or wooded area
- Size by deduction of area from WQv calculation

Runoff Reduction Technique: Vegetated Buffer/Filter Strips

- **Treat & control runoff with:**
  - Forested areas
  - Stream buffers
  - Vegetated filter strips

Runoff Reduction Technique:

Rooftop Runoff Disconnection

Convey & treat runoff with:
Open Vegetated Channels

- Natural drainage paths
- Properly designed & constructed channels
- On certain sites use in street right-of-way

Stream Daylighting for Redevelopment

- Increases aesthetics
- Improves water quality
- Prevents flooding – increased storage
- Improves in-stream habitat
- Increases public use
- Increases property values
- Sunlight

Rain Gardens

Applications

- Treats small volumes of runoff using a conditioned planting soil bed and planting materials to filter runoff stored within a shallow depression.

Limitations

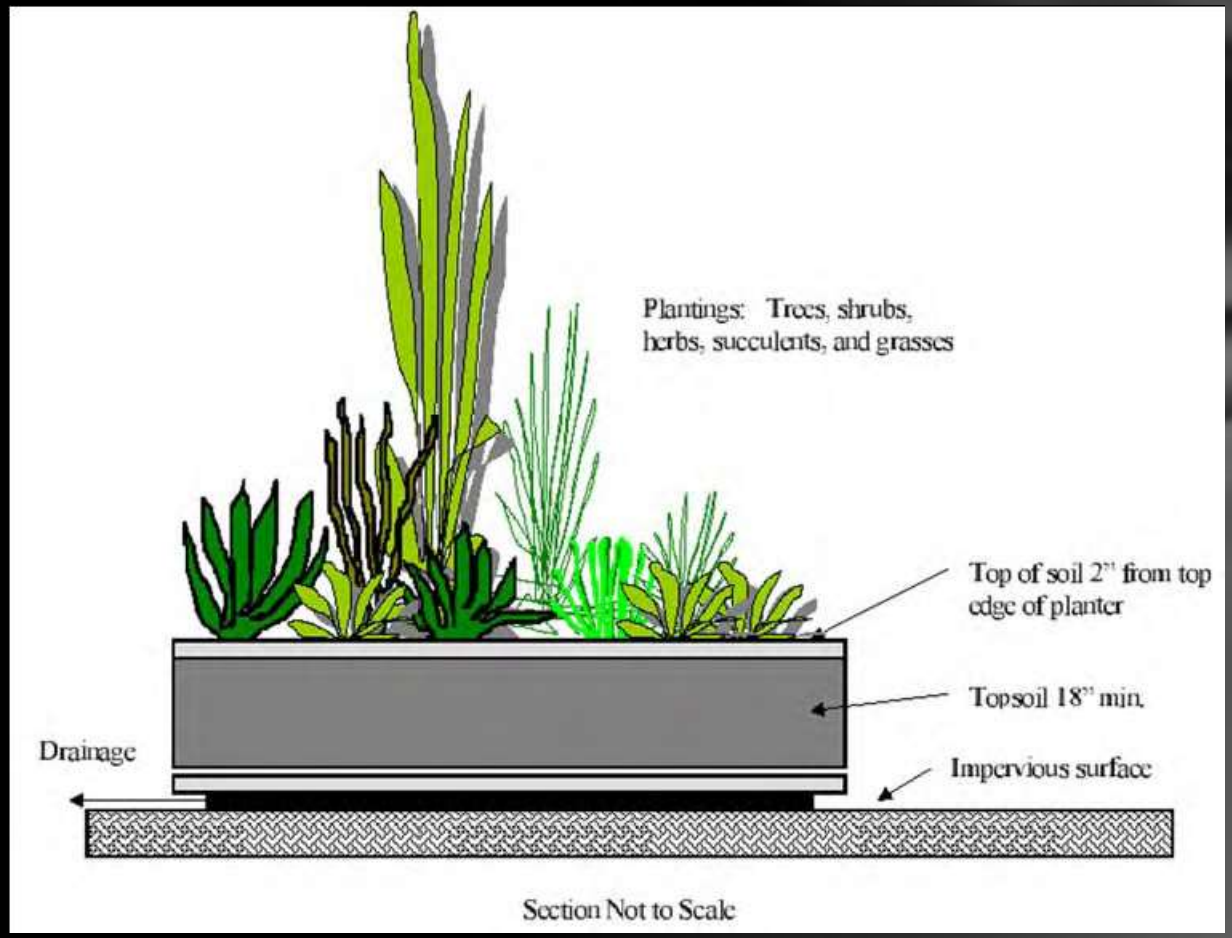
- Steep slopes
- Compacted and clay soils
- Sheet / shallow concentrated flow; roof drain downspout < 1,000 square feet
- Heavy tree cover or root systems

Cost estimate $10-12/sf

Green Roofs

- Applications
  - Reducing total annual runoff volumes
  - Insulation from the heat and cold, energy conservation
  - Reduce the urban heat island effect
  - Creates habitat, aesthetically pleasing
  - Count them pervious area
- Limitations
  - Damage to or failure of waterproofing
  - plant survival
  - Maintenance
- Sizing based on WQv reduction, soil engineering, evapotranspiration

Stormwater Planters



Contained Stormwater Planter

Permeable Paving

Applications

- low-traffic areas
- overflow parking
- Residential single family home
- GW recharge

Limitations

- suitability of the site grades
- Subsoils
- Drainage characteristics
- Groundwater conditions

Sizing

- based on surface area

Yes, Rooftops <u>are</u> impervious

Impervious areas:

- Driveways
- Parking areas
- Rooftops
- Ponds / Pools
- *<u>All</u>* paved surfaces

Stormwater Management Practices are not permitted in New York State or Federal regulated wetlands, and not within 100-foot adjacent areas to NYS wetlands without a wetland permit

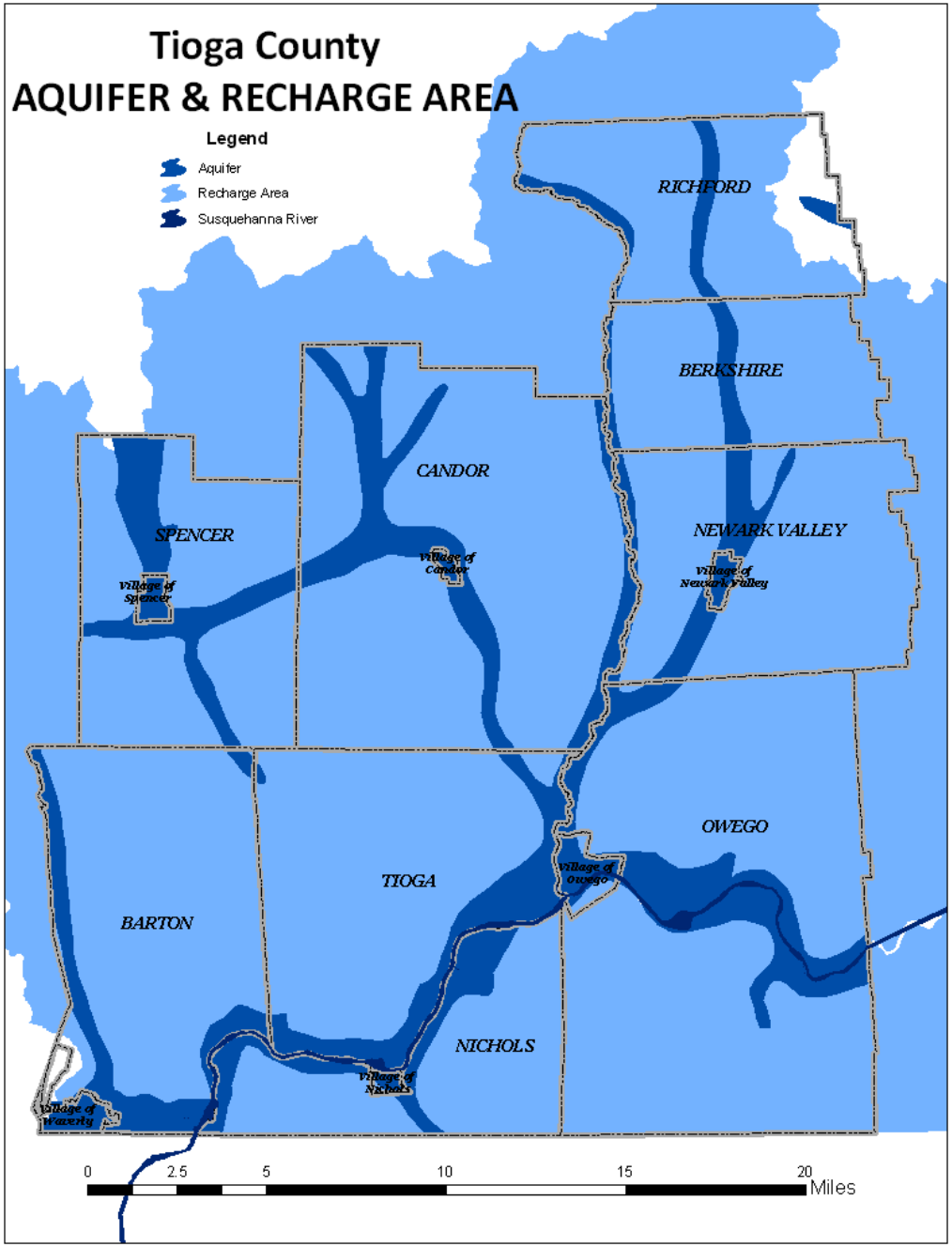
Watch out for poor execution of good ideas:

Something to remember…

Better Site Management **improves your development projects and communities**

- Preserve vegetation
- Reduce impervious cover
- Use pervious areas for stormwater treatment
- Promote groundwater recharge
- Reduce required stormwater treatment (pond) size

"More Recharge, Less Runoff"

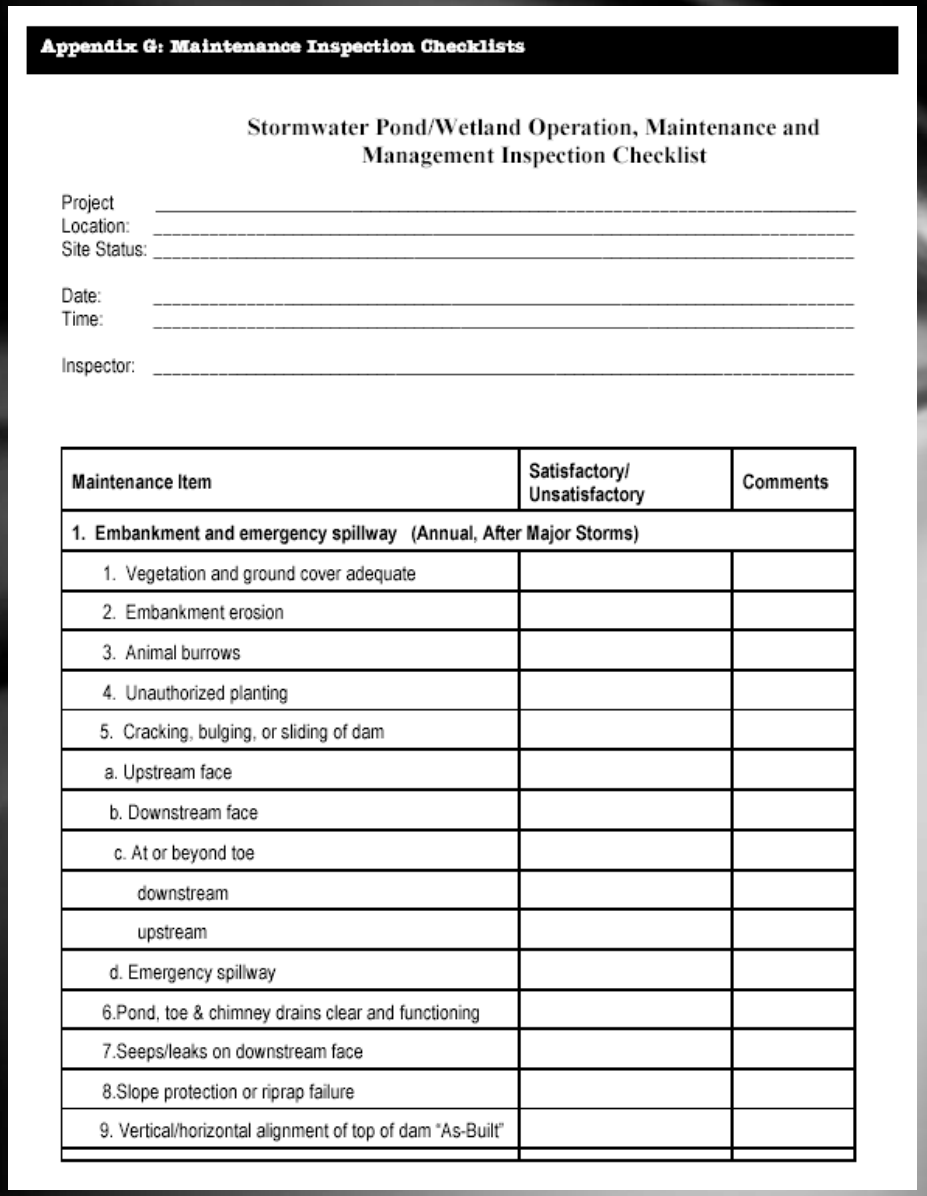

Tioga County
AQUIFER & RECHARGE AREA
Legend
Aquifer
Recharge Area
Susquehanna River
RICHFORD
BERKSHIRE
CANDOR
SPENCER
NEWARK VALLEY
Village of Candor
Village of Spencer
Village of Newark Valley
OWEGO
TIOGA
Village of Owego
BARTON
NICHOLS
Village of Nichols
Village of Waverly
0
2.5
5
10
15
20
Miles

Additional Components of Full SWPPPs

- *Stormwater Management practices with hydraulics must be designed by a P.E. or L.A.*

☑ Post-Construction Maintenance

- Operations and Maintenance Plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each practice
  - Entity responsible for all maintenance must be identified in SWPPP and Notice of Termination
  - Identification of access easements included in SWPPP



Appendix G: Maintenance Inspection Checklists

Stormwater Pond/Wetland Operation, Maintenance and Management Inspection Checklist

Project _____
Location: _____
Site Status: _____

Date: _____
Time: _____

Inspector: _____

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
1. Embankment and emergency spillway (Annual, After Major Storms)		
1. Vegetation and ground cover adequate		
2. Embankment erosion		
3. Animal burrows		
4. Unauthorized planting		
5. Cracking, bulging, or sliding of dam		
a. Upstream face		
b. Downstream face		
c. At or beyond toe		
downstream		
upstream		
d. Emergency spillway		
6.Pond, toe & chimney drains clear and functioning		
7.Seeps/leaks on downstream face		
8.Slope protection or riprap failure		
9. Vertical/horizontal alignment of top of dam "As-Built"		

Who will own, operate, and maintain stormwater management facilities?

- Drainage District established by municipality to fund stormwater facility maintenance
- Home Owners Association by legal agreement with municipality

☑ Redevelopment Projects (Chapter 9)

- Only applies to acreage on the site where impervious surface already exists
- Does not apply to new development acreage on the site
- 25% reduction in Impervious – waive WQv
- No increase in Impervious and no change in hydrology that increases discharge rate – waive Quantity Controls

Let's give the re-developer a break!

NYS DEC Regional Stormwater Contacts

Region 6:	315-785-2524	Herkimer, Jefferson, Lewis, Oneida, St. Lawrence
Region 7:	**315-426-7504 or 426-7503**	**Broome, Cayuga, Chenango, Cortland, Madison, Onondaga, Oswego, Tioga, Tompkins**
Region 8:	585-226-5452 or 226-5450	Chemung, Genesee, Livingston, Monroe, Ontario, Orleans, Schuyler, Seneca, Steuben, Wayne, Yates
Region 9:	716-851-7070	Allegany, Cattaraugus, Chautauqua, Erie, Niagara, Wyoming

Questions?

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(607)-687-3553
walshw@co.tioga.ny.us