

**NEW YORK STATE
DEPARTMENT OF
TRANSPORTATION –
Maintenance for Water Quality**



Maintenance Needs from Environment...

- Clear guidance and training on stormwater and wetlands
- Timely approvals to accommodate needs
- Understand Maintenance must balance:
 - Operational Needs
 - Safety Needs
 - Environmental Needs
- Communicate environmental requirements to budget agencies, to help transportation agencies obtain resources

Maintenance Needs from Environment...

- Information for inventories on wetland locations
- Workable reasonably priced stormwater management practices
- Regular communication to help resolve problems and questions as quickly as possible
- Have environmental funding programs include transportation agencies as eligible applicants

Maintenance needs from Asset Management ...

- Help in designing and maintaining asset inventories
- Technical support and training for hardware and software
 - - GIS and GPS
 - - Integrated software
- Help in making sure transportation agencies are not reinventing the wheel

Washing of Bridges

- EI 07-32 (pg. 2 of 4)
- Streams below bridges are sensitive to pollutants.
- Wash only at times when stream flows are high enough.
- Schedule agreed upon with the appropriate Regional office of DEC.
- Bridges at DEC yearling trout stocking sites should not be washed without the cooperation of DEC in scheduling.

To:		New York State Department of Transportation ENGINEERING INSTRUCTION	EI 07-032
Title: MAINTENANCE CLEANING AND WASHING OF BRIDGES – US CUSTOMARY			
Distribution:		Approved:	
<input checked="" type="checkbox"/> Manufacturers (18)	<input type="checkbox"/> Surveyors (33)	<u>/s/George Christian</u> <u>9/12/07</u> George Christian, Deputy Chief Engineer Date Structures	
<input checked="" type="checkbox"/> Local Govt. (31)	<input checked="" type="checkbox"/> Consultants (34)		
<input checked="" type="checkbox"/> Agencies (32)	<input checked="" type="checkbox"/> Contractors (39)		
	<input type="checkbox"/> _____ ()		

ADMINISTRATIVE INFORMATION:

- This Engineering Instruction (EI) is effective with the letting of 1/10/08.
- EI 02-040 is superseded by this issuance.
- The information transmitted by this issuance will reside in the Special Specifications directory of the Toolbox Server.

PURPOSE: The purpose of this EI is to issue updated special specifications for Maintenance Cleaning and Washing of Bridges.

TECHNICAL INFORMATION:

- The new special specifications for Maintenance Cleaning and Washing of Bridges have a pay item of 'Each' rather than 'Lump Sum' as appears in the current specifications. This will allow the number of special specifications for bridge washing to be reduced by 95%.
- It is intended that all future bridge washing contracts will be in US Customary units, so no metric specifications are being issued.
- Previously, flaking paint that did not contain lead was considered to be inert, and was permitted to be washed. However, all paint is now considered harmful to the environment, and flaking paint should not be washed at all. This would include all bridges that have a paint rating of 3 or less.
- Guidance for Project Designers:

Item 641.3100nm16 Maintenance Cleaning and Washing of Bridges is the general specification for washing bridges that may contain lead based paints, i.e. those bridges built before 1989. However, it should not be specified to wash bridges with paint ratings of 3 or lower based on the latest Inspection report. Washing structural steel with a paint rating of 3 or lower is likely to dislodge significant amounts of lead based paint. Disturbance of lead based paint must be avoided because the specifications make no provisions for collecting, separating, and disposing of lead based paint chips.

Item 641.3200nm16 may be used to wash all painted bridges under Maintenance Washing of Bridges, Concrete Surfaces, because the structural steel is not washed. Not washing the structural steel avoids the possibility of contamination from lead based paints, but does not remove salts and other debris that promote corrosion of the steel.

Item 641.3300nm16 Maintenance Washing of Bridges, No Lead Based Paint may be used to wash bridges built after 1988. This specification may also be used for bridges built before 1989 if the bridge was de-lead by removing all the paint and applying a non-lead based paint or if the structural steel was replaced after 1988. However, it should not be specified to wash bridges with paint ratings of 3 or lower based on the latest Inspection report. Washing structural steel with a paint rating of 3 or lower is likely to dislodge significant amounts of paint. Disturbance of paint must be avoided because the specifications make no provisions for collecting, separating, and disposing of paint chips.

Item 641.3400nm16 Maintenance Cleaning and Washing of Weathering Steel Bridges

Washing of Bridges: Examples



Bank Stabilization to Reduce Sediment

- *Protect Assets*
- *Protects Stream*
- *Increases Maintainability*



Bio Engineering

NYSDOT does two main types:

- *Vegetation to shade streams*
 - controls water temperature
- *Root wads in streams*
 - Reduces erosion and provides habitat



Check Dams

- *Controlling velocities therefore reducing erosion*
- *Designed as permanent facilities*
- *They need to be located, inventoried, and maintained.*



Seeding and Mulching

- *Immediately after cleaning ditches*
- *Can:*
 - *buy*
 - *rent*
 - *borrow from soil/water conservation districts.*



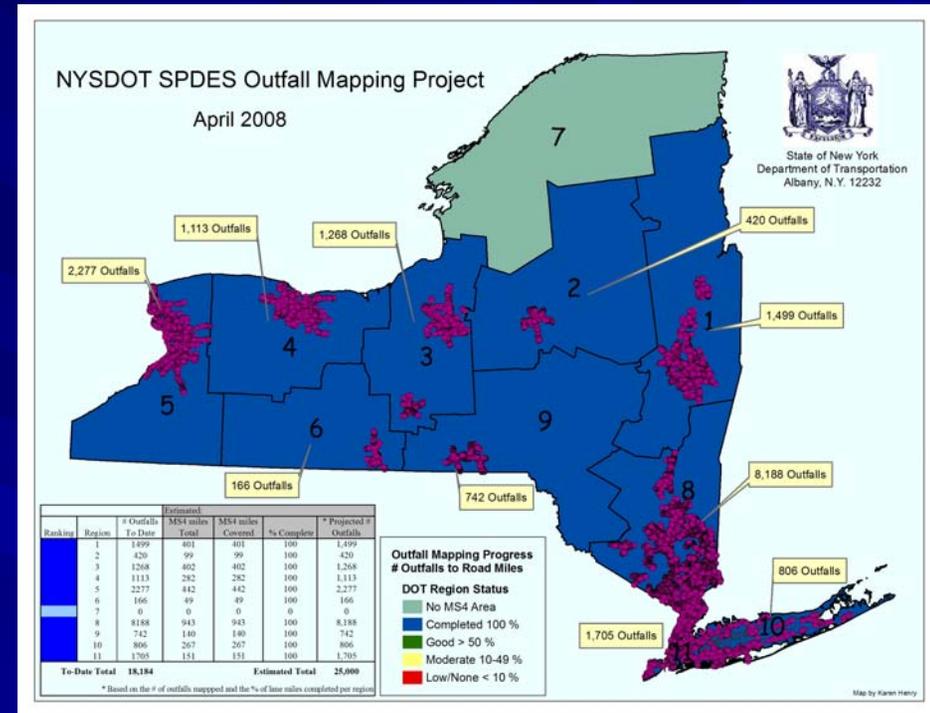
Stormwater Outfall Inventory

- *Collecting Maintenance Information*
 - Location
 - Condition
 - Water quality of Discharge



GIS Map of Stormwater Outfalls

- 18,000+ Locations in NYS so far
- Maintenance Environmental Contacts (MECs) coordinated efforts
- MECs performed Quality Control



Environmental Handbook for Transportation Operations

■ *NYS DOT website:*

<https://www.nysdot.gov/portal/page/portal/divisions/engineering/environmental-analysis/repository/oprhbook.pdf>



Environmental Handbook for Transportation Operations

A Summary of the Environmental Requirements and Best Practices for Maintaining and Constructing Highways and Transportation Systems
April 2006

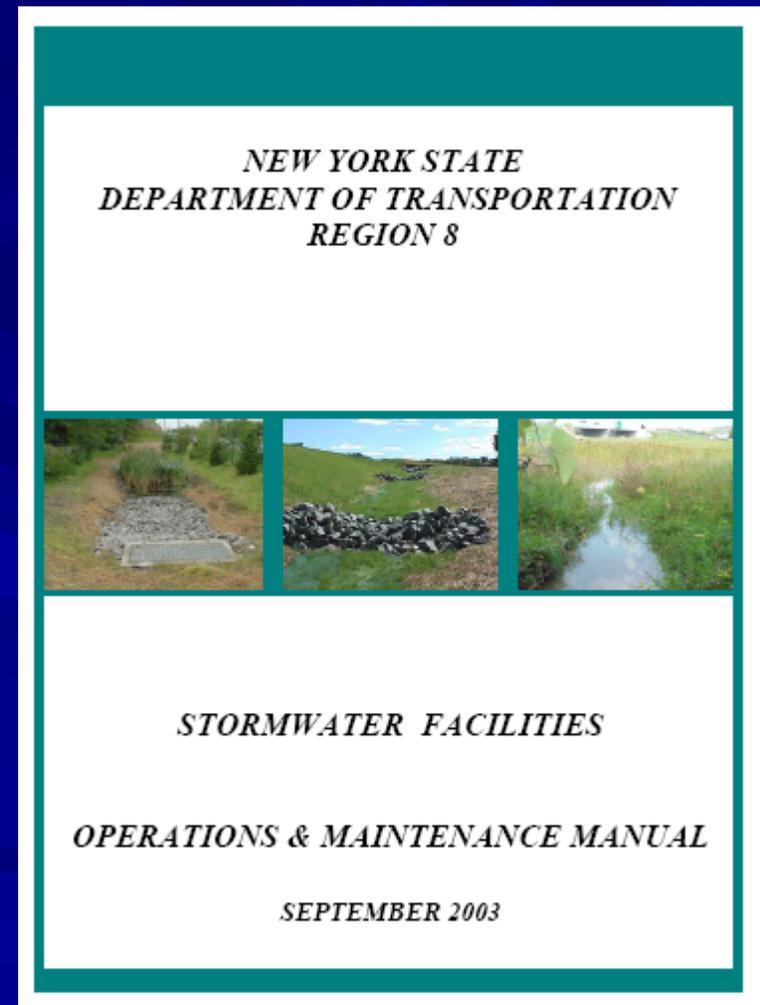
New York State Department of Transportation
"Providing New York State with Safe, Efficient, Balanced, and Environmentally Sound Transportation Systems"



Prepared by: NYS DOT Environmental Analysis Bureau (EAB)

Region 8 Stormwater Facilities Maintenance Program

- *Ties together Maintenance, Environment, and Asset Management*
- *Maintenance Spreadsheet Schedule*



Facilities Efforts to Improve Water Quality

- *Good housekeeping*
- *Petroleum bulk storage*
 - *Remove old underground storage tanks (USTs)*
 - *schedule to replace with above ground storage tanks (ASTs)*



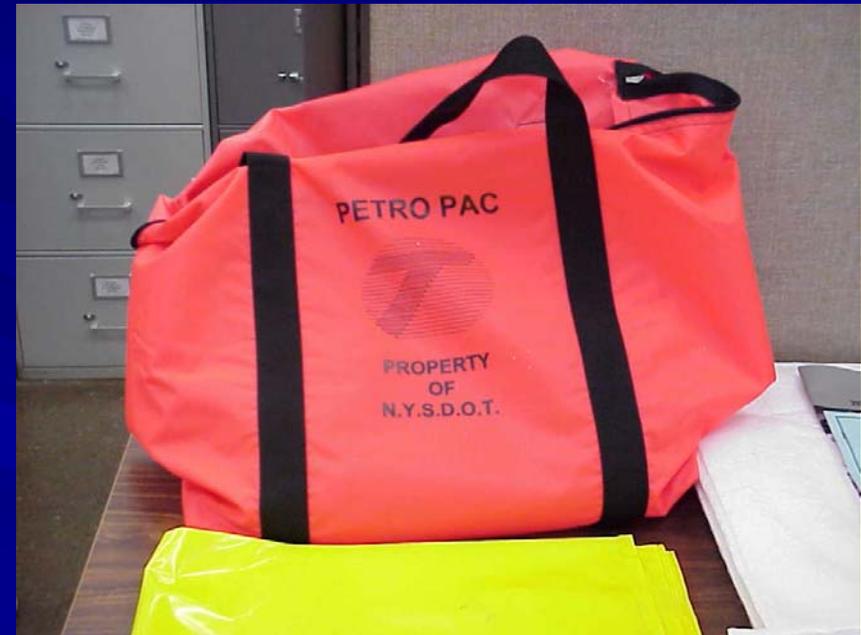
Above Ground Storage Tanks



Facilities Efforts to Improve Water Quality

- *Spill Prevention Control and Countermeasures (SPCC) Program*

- *Spill Prevention Kits*



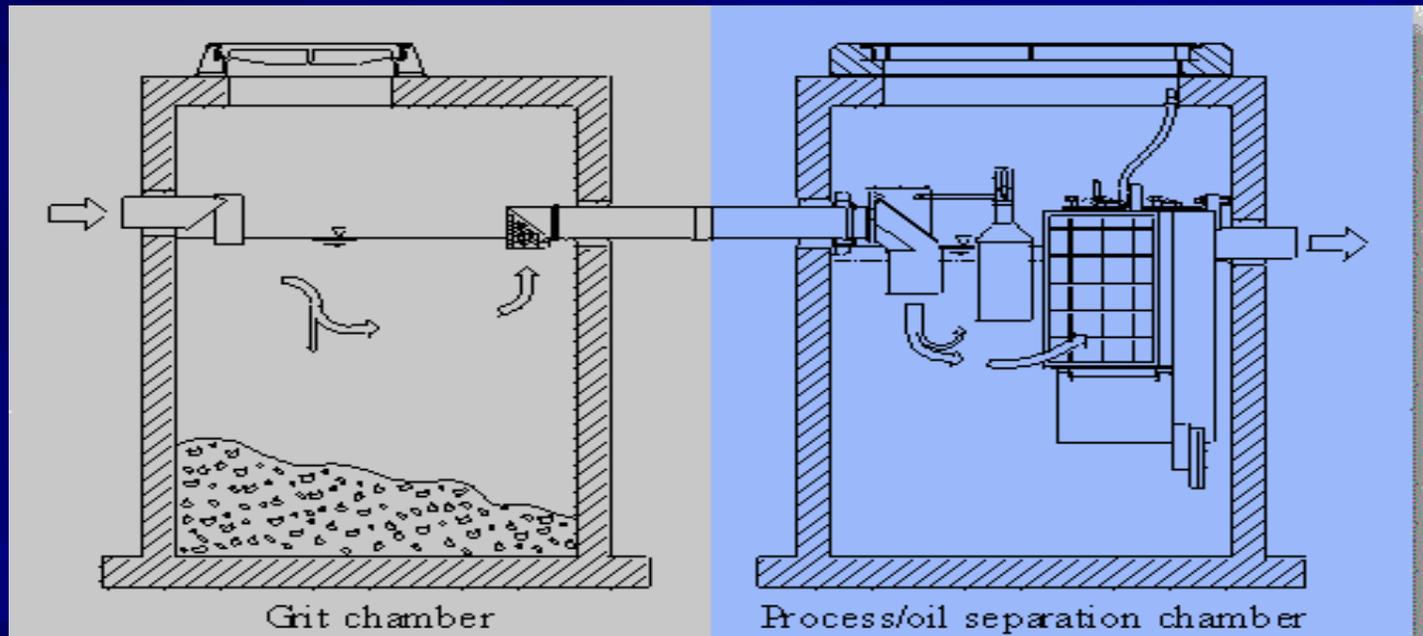
Spill Response Materials



Containment Boom



Oil / Water Separators



Facilities Efforts to Improve Water Quality

■ *Covered Salt Storage*



Environmental Efforts of Winter Maintenance

- *Cascade Lakes & Chapel Pond Final Report*
 - Vegetative effects on water quality
 - External Website Address:

https://www.nysdot.gov/portal/page/portal/divisions/engineering/environmental-analysis/repository/cascade_lakes_final_report.pdf

ENVIRONMENTAL IMPACTS OF WINTER ROAD MANAGEMENT AT THE CASCADE LAKES AND CHAPEL POND

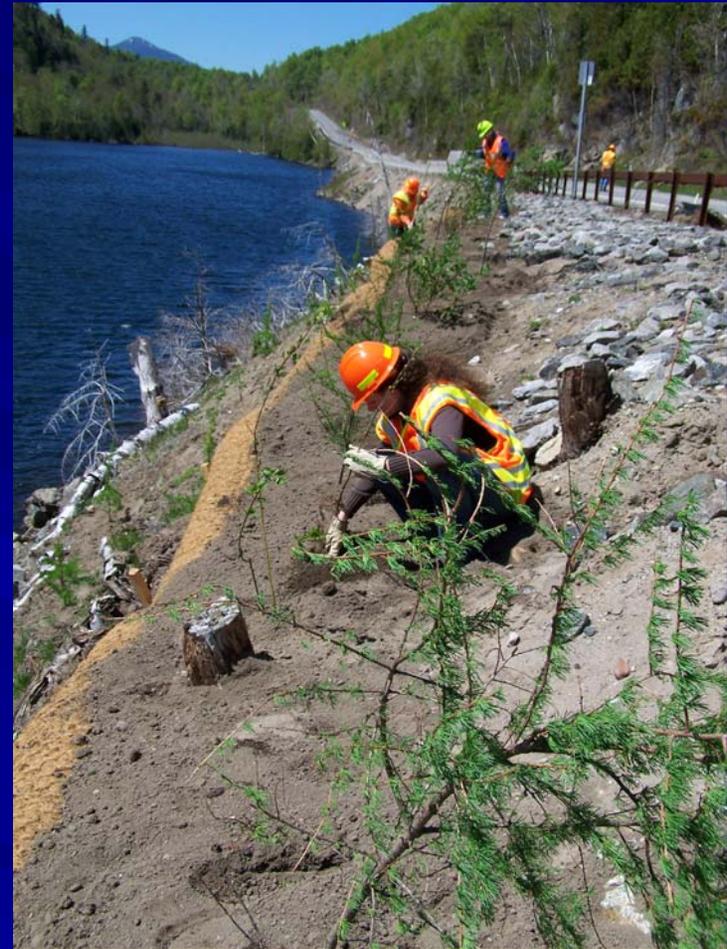
THE FINAL REPORT



Route 73 at Upper Cascade Lake, looking west. Photo by Kerop Janoyan.

Environmental Efforts of Winter Maintenance

- *Cascade Lakes & Chapel Pond Final Report*
 - Vegetative effects on water quality



Environmental Efforts of Winter Maintenance



Environmental Efforts of Winter Maintenance: Living Snow Fence



Detention Structures to Reduce Salt Water Runoff



Creating Wetlands to Improve Water Quality

- *Reduces runoff and flows downstream*
- *Increases Wildlife Habitat*



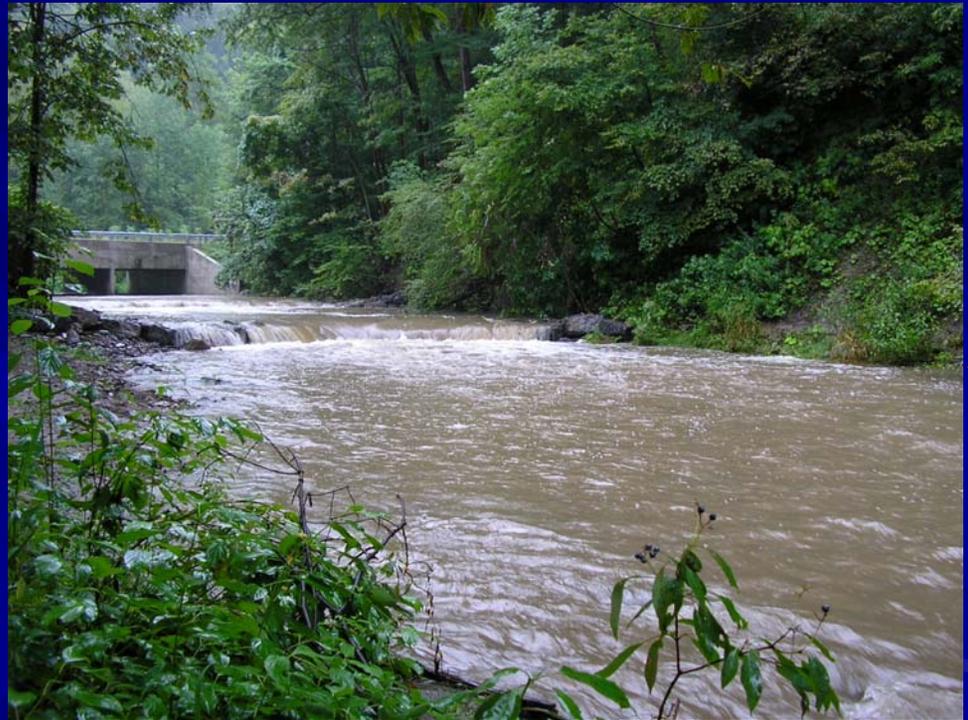
Stream Restoration Efforts to Improve Water Quality

- *Interagency Partnering: InterACT*
- *Environmental Stewardship*



Stream Restoration Efforts to Improve Water Quality

- *Staff Training that normally occurs anyway:*
 - e.g. Operator training for bulldozers, excavators, etc.
- *Synergistic: Pulls together Maintenance, Environment, Asset Management*



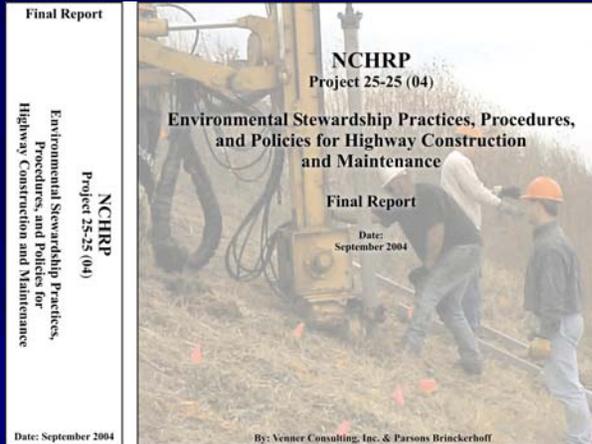
Training

- *In-house*
- *Worker Experience*
- *Agency/Consultants:*
 - USACE
 - State Resource and Reg Agencies
 - Soil Water Conservation Services
 - Product Vendors
- *Drainage Decision Tool*

Green and Blue Highways Roadside Maintenance
Initiative:
New York State Department of Transportation:
December, 2006



NYS DOT Green and Blue Highways Initiative



– NCHRP Compendium

- Has nearly 7,000 stewardship practices
- Practices from all over North America
- “We” drew from Compendium and MECs’ excellent track record

Maintenance Environmental Roadside Worksheet: May, 2005

This worksheet includes environmental activities along the roadside, which require maintenance organizations may use to advance the Department's Green and Blue Highways Initiative.

Category	Issue or need	Stewardship opportunity (project, activity or idea)	N/A	Comments/Notes
Prepare	Reduce erosion control	• Soil fence, mulch/matted, composting		
	Reduce soil pollution	• Sediment control, silt traps, silt fences		
	Reduce water pollution	• Install living or engineered snow fence		
	Reduce water pollution	• Control runoff near drainage ways		
Protect	Reduce water pollution	• Work with DEC to mark wetlands		
	Protect	• Install/repair man enclosures stormwater treatment systems (e.g., Vortex/Trick)		
	Protect	• Disturb vegetation activities coordinate with		
	Protect	• Integrated		
Manage	Protect and Vegetation Management (MVEP/MA)	• Technology practices to limit herbicide use to legitimate TDU purposes		
	Protect and Vegetation Management (MVEP/MA)	• Remove/contain invasive species		
	Protect and Vegetation Management (MVEP/MA)	• Plant species to use native species		
	Protect and Vegetation Management (MVEP/MA)	• Biological herbicides in drainage basins		
Habitat	Connectivity	• Plant native fish in large points		
	Connectivity	• Connect ecologists and habitat with		
	Connectivity	• Create crossings or fish passages		
	Connectivity	• Create Conservation Alternative Mapping		
Improve	Improve public recreation by making or repairing	• Plant native species		
	Improve public recreation by making or repairing	• Deer refuges		
	Improve public recreation by making or repairing	• Enhance/replace wetlands		
	Improve public recreation by making or repairing	• Plant wildlife friendly vegetation		
Enhance	Enhance cultural and aesthetic resources along highways	• Use native plants for habitat of sale		
	Enhance cultural and aesthetic resources along highways	• Manage for natural restoration		
	Enhance cultural and aesthetic resources along highways	• Re-landscape impact landscapes		
	Enhance cultural and aesthetic resources along highways	• Habitat improvements		
Monitor	Monitor and maintain materials, labor control	• Stream improvements		
	Monitor and maintain materials, labor control	• Trails		
	Monitor and maintain materials, labor control	• Visual quality viewing along road		
	Monitor and maintain materials, labor control	• Rest areas/parking areas		

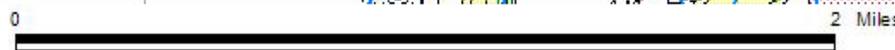
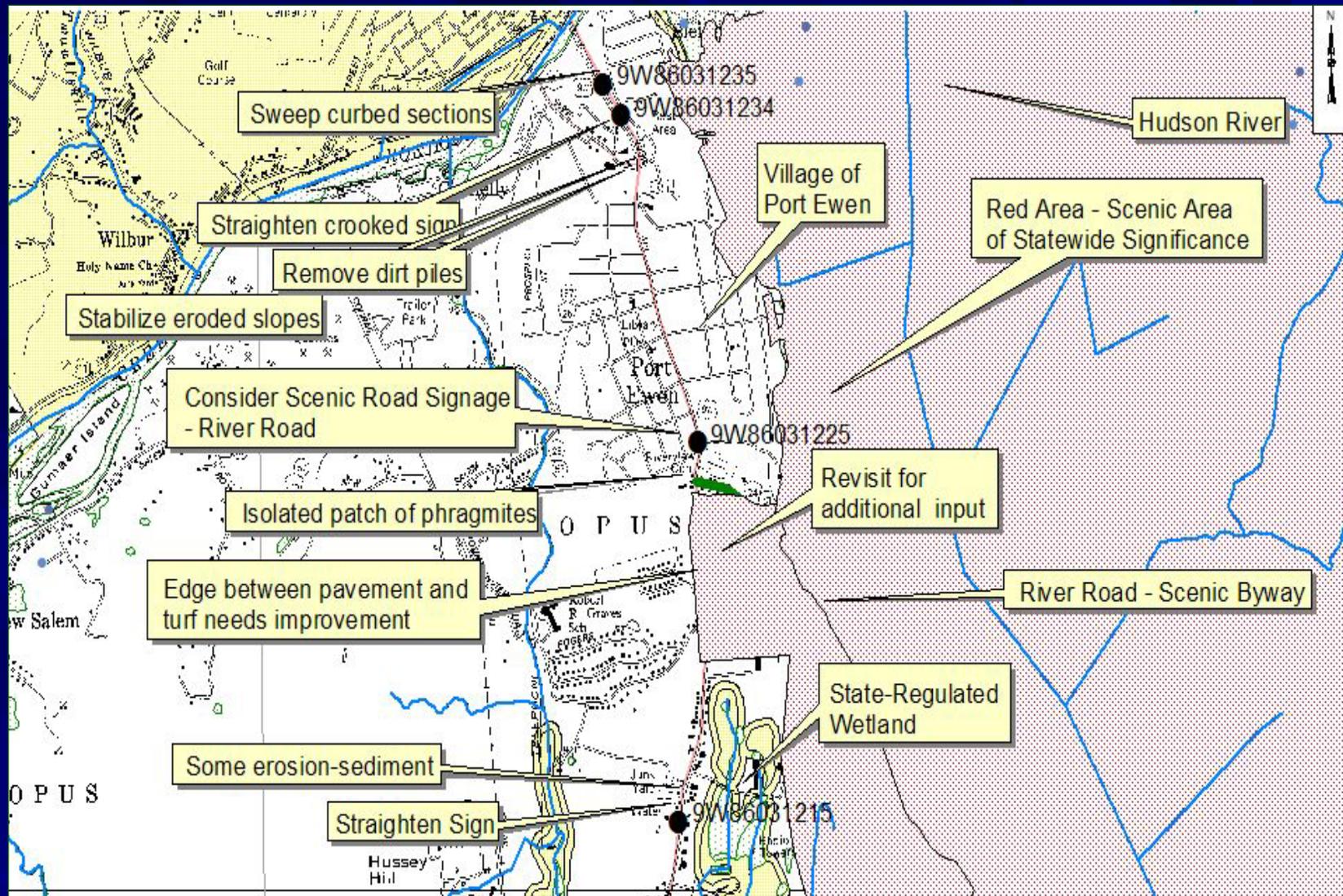
NYS DOT Green and Blue Highways Initiative

- Survey tool
- Lists all possible stewardship opportunities
- Location info supplemented with
 - mile markers or
 - GPS

Maintenance Environmental Roadside Worksheet: May, 2005

This worksheet includes environmental activities, along the roadside, which regional maintenance organizations may use to advance the Department's Green and Blue Highways Initiative.

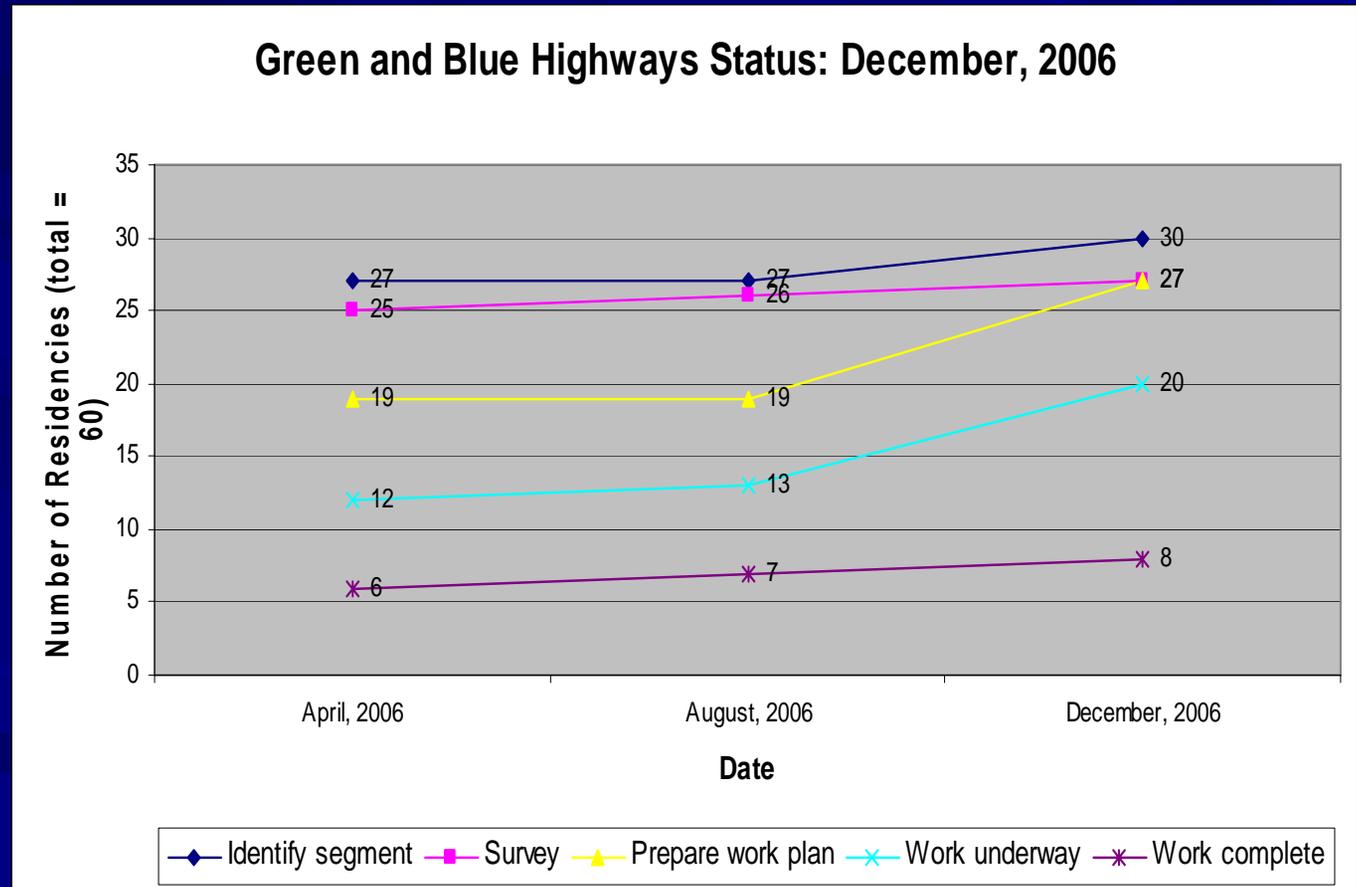
Location (GIS or reference marker)			
Preparer			
Issue or need	Stewardship opportunity (project, activity or service)	Y/N	Comments/location
Improve erosion control	<ul style="list-style-type: none"> • Silt fence, mulch/reseed, composting • Sediment control, such as check dams 	Y	Existing silt fence at road cut (2.5 miles)
Reduce salt pollution	<ul style="list-style-type: none"> • Install living or engineered snow fence • Control runoff near private wells 	N/A	Success in spring, will explore other options
Reduce water pollution	<ul style="list-style-type: none"> • Work with DEC to mark wetlands • Install/maintain innovative stormwater treatment systems (e.g. Vortechics) 	N	Wetlands marking software. No stormwater treatment systems planned
Promote Integrated Pesticide and Vegetation Management (IVM/IPM)	<ul style="list-style-type: none"> • Deliver vegetation activities consistent with long-term IVM principles. • Technology/practices to limit herbicide use • Remove/contain invasive species • Post signs for no spray areas • Biological larvicides in drainage basins. • Insect eating fish in recharge ponds 	Y N N N N	Remove vegetation from edge of Post Office Purchased at M&D No concern to flow Signage
Habitat connectivity	<ul style="list-style-type: none"> • Connect ecosystems and habitat with animal crossings or fish passageways 	N/A	No need to connect here
Strengthen wildlife and forest conservation	<ul style="list-style-type: none"> • Execute Conservation Alternative Mowing Plans (CAMPS) • Birdhouses/nesting boxes • Deer reflectors • Enhance/create wetlands • Plant wildlife friendly vegetation • Leave tree trunks for habitat (if safe) 	Y Yes No No N/A	Check P&D maps M&D considering a location No apparent need No apparent need
Improve public access to recreation by building or repairing:	<ul style="list-style-type: none"> • Manage for natural reforestation • Re-landscape vacant land/roadsides • Habitat improvements • Stream improvements 	N/A N/A N/A	None noted Check P&D maps Check for stream improvements
Improve public access to recreation by building or repairing:	<ul style="list-style-type: none"> • Trailheads • Vistas/wildlife viewing sites/pullouts • Rest areas/parking areas • Bike paths/lanes (improve shoulders) • Rails to trails • Boat launches/fishing access/parking 	N/A Yes Yes Yes Yes	Check for existing pullout area Can be upgraded? Rest? Need to work with fisherman
Enhance cultural and aesthetic resources along/near State highways	<ul style="list-style-type: none"> • Landscape (e.g. street trees, flowers) • Provide/replace details in streetscape • Roadside screening • Signs (gateway) or historic markers • Signs to identify streams, rivers, lakes or watershed boundaries 	Y N/A N/A N/A N/A	Signage on trees, signage? None needed Some landscape opportunities Signage on trees, lakes, rivers and fisherman Signage
Recycled and reused materials; litter control	<ul style="list-style-type: none"> • Increase recycled/reused material use, including millings, wood chips or crushed glass for drainage. • Improve litter control 	Y	Not needed Will consider expansion to other projects



BASE MAP COPYRIGHTED BY THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION

Facilities ★ Residency ☆ Subresidency ● Miscellaneous ▲ Salt Domes	Roads — Interstate — Federal — State — Local	Boundaries □ Town ▨ Village □ City — County □ Residency □ Quad	Capital Program — Highway Projects ■ Bridge Projects — Maintenance Projects	Wetlands ■ DEC ▨ NWI ▨ TIDAL	Pavement Score — Poor (4-5) — Fair (6) — Good (7-10) — Under Construction — Scenic Byways — State — Local
■ Bridges ● Culverts × Mines	Accident Data — Priority Investigation Location — Safety Deficient Location	NYCDEP Data ▨ Drainage Basins ▨ NYCDEP Property — Streams — Aqueducts	DEC Spills CD ◆ Spills	— DEC Streams ■ Bridges Over Trout Streams	

NYSDOT Green and Blue Highways Initiative: Status as of December 7, 2006



Source: Regional Status Reports

NYSDOT Green and Blue Highways Initiative



- Region 1: Interstate 90
- Installed Deer Reflectors to Address DVA issue

NYSDOT Green and Blue Highways Initiative



Denton Nature Preserve, Region 1:

- Nature Conservancy Preserve in Washington Residency
- Natural and historical resources
- Residency improved parking lot
 - Enlarged slightly
 - Aligned for safety
 - Provided informational signs

NYS DOT Green and Blue Highways Initiative

Dresden Rest Area, Route 22, Region 1



- During Vendor Placed Paving project, Residency repaved rest area overlooking Lake Champlain and Vermont's Green Mountains.
- Residency staff surveyed Route 22 in Town of Dresden and identified rest area improvements as best project
- Project will have an operational benefit: improvements will make illegal trash and garbage dumping more difficult

NYSDOT Green and Blue Highways Initiative Region 5 Phragmites Control on Route 219



NYSDOT Green and Blue Highways Initiative: Region 6 Improved Access Parking at Appalachian Marsh



NYS DOT Green and Blue Highways Initiative:

Region 8 Vegetation Improvements along the Palisades Interstate Parkway



- Residency trimming trees for stream/waterfall view
- Residency/Region to install deer reflectors
- Ongoing issue is invasives: note thick vines on

NYS DOT Green and Blue Highways Initiative: Region 10 Work along Rt 25/Sunrise Highway



- Restoration of eroded and degraded roadside on Route 25 (left picture)
- Installation of living snow fence at Sunrise Highway interchange (right picture)

NYSDOT Green and Blue Highways

■ Partnerships:

- Nature Conservancy
- Scenic Byways
- DEC
- Soil Water Conservation
- Local natural history group
- Local museum/DEC
- Parks
-

