

TOWN OF CHARLTON

**New York State Department of Environmental Conservation
SPDES General Permit Coverage
For
Municipal Separate Storm Sewer Systems**

Permit # NYR20A032

STORM WATER MANAGEMENT PROGRAM PLAN

Date of Original Preparation April 2011
Updated October 2023



Town of Charlton
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Introduction:

The Federal Environmental Protection Agency, through the Clean Water Act, has mandated participation in its Storm Water Phase II program. This program is administered in New York State by the Department of Environmental Conservation. As of March 10, 2003, the Town of Charlton was required to obtain a permit as a regulated small Municipal Separate Storm Sewer System (MS4). In compliance with this requirement, the town applied and was issued a State Pollutant Discharge Elimination System (SPDES) permit.

Coverage under the current GP-0-20-001 permit compels the town to continue to comply with specific legislation. Preparation and public disclosure of this stormwater management plan is one requirement as outlined in Part IV-A of that legislation. The main goal of the MS4 program is to reduce the discharge of pollutants to protect water quality. Runoff from snow melts and storm events flows over fields and hard surfaces such as paved roads and parking lots and is collected in municipal culverts, ditches and storm sewers. Storm water runoff picks up oils, litter, animal wastes, fertilizer, pesticides, eroded soils, and sediment causing it to become polluted. This type of contamination is referred to as non-point source pollution. Eventually, this untreated storm water flows into waterways and can impact water quality.

Pursuant to the goal of reducing these sources of pollution, MS4's were mandated to develop storm water management program plans (SWMPP) over the initial 5 years of permit coverage. The SWMPP for the Town of Charlton was prepared in April 2011, and has been revised and updated October 2023. The plan provides for addressing each of the following "minimum control measures" (MCM):

- **MCM #1:** Public education and outreach
- **MCM #2:** Public involvement and participation in program development and implementation
- **MCM #3:** Detection and elimination of illicit discharges
- **MCM #4:** Control of runoff from construction sites disturbing one or more acres, including development, implementation and enforcement of an erosion and sediment control program.
- **MCM #5:** Control of post-construction runoff
- **MCM #6:** Pollution prevention/good housekeeping, including training of staff on pollution prevention measures and techniques such as regular street sweeping, reducing the use of pesticides and road salts, and frequent cleaning of catch basins.

As a small municipality removed from any major water bodies or heavily populated areas, Charlton has always been attentive to balancing the requirements of the MS4 program with continuing to provide responsible financial government for its residents. The Town of Charlton is like its small neighboring communities in that it does not have any significant environmental deficiencies beyond the base line items common to all

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municipalities. As such, Charlton has focused on inexpensive and innovative ways to fulfill its permit obligations. Charlton has also been an active participant in an intermunicipal agreement with 15 other local government entities in Saratoga County. The Town supplies proportional funding to the county program, attends monthly meetings and avails itself of the resources provided. This cooperative effort includes the establishment of a Stormwater Management Coordinator. Activities and training support on each minimum control measure are provided through this central office. Charlton has participated and will continue to commit to the intermunicipal program. A more general stormwater management plan has been developed at the intermunicipal level. An electronic copy of that SWMPP is included at the end of this plan.

Pollutants of Concern:

The pollutants of concern in the Town of Charlton are those that are most common in small communities. They include constituent materials of petroleum products, fertilizers, sediment runoff, and sanitary waste. Charlton has instituted a water quality testing program for the streams that collect runoff from the MS4 watershed. The nine parameters tested in that program include: sodium, alkalinity, chloride, nitrate, nitrite, PH, phosphate, total dissolved solids, and total petroleum hydrocarbons.

Six Minimum Control Measures:

A brief description of the local goals for each of the minimum control measures is as follows.

MCM1 (Public Education and Outreach) addresses the need to inform municipal staff and officials, Town residents, business owners, and the local construction industry of the problems associated with nonpoint source pollution. The goal of the education program is to make these parties aware of activities that they conduct that may have a negative impact on water quality.

MCM2 (Public Involvement & Participation) is intended to create opportunities for residents, citizen groups and business owners to get involved in the implementation of the local Stormwater Management Program (SWMP). MCM2 creates opportunities for individuals and groups to become involved in direct actions designed to control water pollution such as stream clean-ups, Adopt-a-Highway Programs, Household Hazardous Waste Clean-up and Pet Waste Control.

MCM3 (Illicit Discharge Detection and Elimination) focuses on the detection and elimination of pollutants being discharged into the MS4. Illicit discharges in communities such as the Town of Charlton most commonly include direct connections of wastewater and effluent from residential septic systems. Part of the mandated action under this measure requires municipalities to map their stormwater system and its outfalls into surface water bodies. Municipalities were also required to adopt a local law prohibiting illegal connections or dumping into the MS4 storm system. A program of

monitoring the outfalls, particularly during dry weather periods, must be developed as a means of ensuring compliance.

MCM4 (Construction Site Runoff) This minimum control measure mandates local governmental oversight of construction activities within their jurisdiction. Construction projects that result in a land disturbance of greater than one acre are required to obtain a DEC State Pollutant Discharge Elimination System (SPDES) permit. The local municipality has adopted legislation equivalent to or more restrictive than the state permit and has developed a program of inspection and enforcement over construction activities.

MCM5 (Post Construction Runoff Control) This minimum measure is concerned with stormwater runoff from completed development projects. MCM 5 is closely associated with the construction site runoff measure. The two measures are often addressed with similar strategies and can be thought of respectively as short term and long-term applications of the same principles. Urban development increases impervious surfaces and will result in greater runoff volumes and flow rates. Runoff from urbanized areas also has the potential to transport pollutants commonly found on roadways and maintained landscapes. MCM 5 mandates the use and maintenance of permanent stormwater management facilities for development projects. The design of these facilities is specified in the New York State Storm Water Management Design Manual. Properly (copy of this document included with the plan) constructed and maintained, management areas will attenuate runoff rates and volumes to mitigate potential flooding impacts. These same facilities will also provide water quality treatment to protect downstream water bodies. Under MCM 5, municipalities are required to maintain a program for ensuring the use of compliant stormwater facilities in development projects and providing long term maintenance.

MCM6 (Good Housekeeping & Pollution Prevention) This final aspect of the MS4 permit regulates the practices of the local government. Municipalities are required to implement a program to minimize or eliminate pollution from all operations, facilities, equipment, and practices. All Municipal operations must be scrutinized to eliminate or mitigate practices that contribute to nonpoint source water pollution. A program of inspection and maintenance of the MS4 system must also be developed and implemented.

Storm Water Management Program:

MCM1 Public Education and Outreach:

The underlying principle of the public education aspect of the plan is that most people will choose to limit their negative impacts on the environment. The Town of Charlton is primarily an agricultural and residential community with very few industrial and commercial uses. Significant progress on water quality issues can be made by addressing the typical sources of citizen pollution. Since a similar land use profile prevails throughout much of Saratoga County, Charlton's goals, and the goal of the County

Intermunicipal program are very similar. Charlton's participation in the intermunicipal program, therefore, is a significant part of its public education and outreach program.

In addition to the countywide activities, the Town of Charlton has and will continue to provide public education through the following. The Town issues a newsletter twice per year. This newsletter is mailed directly to each address within the town and is available on the municipal website. The newsletter is typically eight to ten pages in length and includes several articles related to pollution prevention. Article topics include direct notification of the MS4 program and how residents are expected to participate, the schedule of brush and grass pickups, bulk item and hazardous waste collection dates, roadside volunteer cleanups, seedling giveaways and the publication of a citizen environmental condition reporting form. These articles are reposted and are updated as necessary.

Informational pamphlets are also handed out to the public. These items are maintained constantly in the Town Hall and are also supplied during the two major annual community events. Charlton's Founders Day celebration every June and the town wide road cleanup and seedling give away in April are utilized to promote the MS4 education program. The pamphlets used have been chosen to coincide with the pollutants of concern in the Town and deal with good septic system maintenance and general storm runoff information. The pamphlets have also been posted on the Town's website.

Charlton's Highway Department has also participated in the public education program by completing catch basin stenciling and the installation of pet waste cleanup signage. Most of the Town of Charlton is very rural and slightly populated. A small dense urban area of 1.3 square miles exists along the south boundary of the town. All of the storm sewer catch basins in the town are within this officially designated MS4 area. Stenciling noting that dumping waste is prohibited has been applied to all structures and is refreshed each year as needed. Pet waste signs have also been placed within this urbanized area, primarily within the two town parks.

As part of its public education program, Charlton has also ensured that members of the Municipal Boards have been informed of the MS4 program. Board members are required to attend a minimum number of training seminars to maintain their eligibility to serve. Most individuals complete this currently by attending the annual Saratoga County Planning and Zoning Conference. The County MS4 Coordinator is a regular presenter at this conference maintaining an information booth and presenting a two-hour seminar on the MS4 program and general stormwater management topics.

Stormwater information is also provided to the town's Municipal Boards, the Zoning Administrator and the Highway Department via the Town Engineer and the town's Environmental Conservation Commission (ECC). Engineering review and input is provided on all development applications including written comments on storm management design and erosion and sediment control during construction. The ECC also provides comments on every development project. As the Chair of the ECC is also the

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Town's Stormwater Management Program Coordinator, water quality topics are often singled out. MS4 information has been provided to the Highway Department in the form of policy manuals developed by the Cornell Cooperative Extension program. Highway Department employees also attend seminars where these topics are covered in greater detail. The Zoning Administrator has been provided with a stormwater disturbance check list to determine what projects will require permit coverage and what erosion control measures must be employed. The education of these key Town Officials is critical in the implementation of other aspects of the MS4 program that will be outlined later.

MCM2 Public Involvement and Participation:

Like the public education measure, the Town of Charlton considers its affiliation with the County Intermunicipal program to be a key element of its compliance with the Public Involvement and Participation measure. In addition to the actions of the County, Charlton has promoted public involvement in the MS4 water quality program through several perpetual activities.

An Environmental Condition Reporting Form was created by the town. This simple one-page form is available in the Town Hall, on the website and has been distributed to all residents through the town newsletter. The form provides an organized manner by which residents can report environmental concerns to the town. Although only a very few problems have been reported to date, the town has conducted public meetings and has instituted site-specific testing of surface waters in response to public input in this program.

The Town of Charlton's Road cleanup day is perhaps the most successful example of public involvement and participation. This event has been held annually in April for several years. More than 100 residents participate in the program annually. Garbage bags are distributed by the town and collected debris is picked up by the Highway Department. The event is an opportunity to promote awareness of the connection between roadway drainage and surface water resources. Coinciding with the road cleanup is the annual seedling giveaway. This revegetation program provides several hundred plants at no charge to residents and fosters an environmental consciousness among residents.

Another important aspect of Charlton's public involvement program are the bulk item pickup and household hazardous waste collection days. As is true with the road cleanup and seedling events, the dates are published in the town newsletter and a significant number of residents avail themselves of the services. Charlton cooperates with other municipalities in the hazardous waste collection. This event is considerably more expensive than the other public participation activities. Although conducting the program on an annual schedule may not be feasible, the Town remains committed to coordinating efforts and resources with other communities to hold the event as often as possible. In addition to the hazardous waste collection, Charlton has published information on other hazardous disposal services that are available. The Town's Environmental Conservation

Commission is provided as a contact for the public to inquire about proper disposal methods.

MCM3 Illicit Discharge Detection and Elimination:

The importance of this control measure is to discover sources of potential water pollution that are either unknown to any person or are being discharged surreptitiously. Failing septic systems or graywater discharge to a drainage corridor are perhaps the most likely example of the former within the town. The latter pollution source is often an industrial or commercial business that is either avoiding expensive disposal options or is simply careless with hazardous materials. One requirement of the MS4 permit related to this measure was the adoption of specific legislation prohibiting the discharge of anything other than stormwater to any drainage facilities. The town adopted this legislation in 2007.

Charlton's IDDE program involves two strategies. The first approach is to identify potential locations of illicit discharge and ensure that those parties are made aware of the need for containment and proper disposal. The second element of the program is the monitoring of outfalls and surface water by the town to confirm the absence of violators.

As part of the development of the state permit, water bodies throughout New York were categorized based on their impairment. Section 303d of the MS4 permit legislation lists water bodies with unacceptable water quality and their associated pollutants of concern. Specialized tactics under the MS4 program are necessary in the watersheds of these areas to prevent further degradation and promote improvement. The Town of Charlton does not have any surface waters that are on the 303d list.

A significant MS4 permit requirement is the mapping of the designated MS4 area and all the storm sewer corridors and outfalls within that zone. Charlton completed this requirement and continually updates the map. The map facilitates the identification of potential illicit discharge sources and the flow path for those discharges. Section 4.8 of the New York State Storm Water Management Design Manual defines the term "stormwater hotspot" as a land use or activity that generates higher concentrations of hydrocarbons, trace metals or toxicants. Listed hotspots include facilities with intensive vehicle fueling or maintenance, industrial sites, public works storage areas, marinas and facilities that generate or store hazardous materials. The Charlton MS4 area was reviewed, and no stormwater hotspots exist within the officially designated zone. The town will continue to educate residents and businesses of the concerns of illicit discharge and encourage maintenance of private systems and awareness of how they may interact with the public drainage corridors.

Charlton's second IDDE strategy is to closely monitor the outfalls and water bodies within the MS4 zone. Completion of the drainage map has identified 20 storm system outfalls and their interrelation to the natural stream channels. The map also revealed that all discharge from the MS4 will eventually flow to one of two locations along the south

boundary of the town. Charlton has instituted an annual laboratory testing of the surface water at each of these locations. The testing profile includes nine factors that have been chosen to detect representative components of residential septic waste, hydrocarbon products and common landscaping chemicals. Five years of annual testing to the date of this document have shown no decline in water quality. The receiving waters of the entire town MS4 have remained within drinking water standards without treatment.

In addition to the lab testing, outfall monitoring is also performed twice per year. This schedule greatly exceeds the MS4 permit requirement of inspection on a five-year cycle. Observations of all 20 locations are performed during extended dry periods to rule out normal storm discharges. If consistent dry weather flows are observed at any location, an attempt is made to identify the source and lab testing is performed.

MCM4 Construction Site Runoff:

MCM5 Post Construction Runoff Control:

Minimum control measures 4 and 5 are each related to development projects. Respectively they address the potential storm runoff pollution during construction of a project and after its completion. Construction projects that disturb greater than one acre of land must obtain a SPDES permit under legislation very similar to the MS4 program. This parallel program requires the project proponent to employ specific water quality and flow attenuation designs as part of the development. The permit also specifies temporary measures that must be used during construction to control erosion from the property. Construction sites are particularly vulnerable to stormwater runoff until the property is stabilized in its final condition.

The MS4 requirement for these measures requires the municipality to oversee construction and development within its jurisdiction to enforce the SPDES permit. For the municipality, this process normally begins with zoning and planning review. Projects before the Charlton Planning Board are referred to the Town Engineer for comment. The amount of disturbance is reviewed to determine the appropriate need for permit coverage. Consideration is also given to the site-specific environment. Development along stream corridors, on steep slopes or in soil or vegetation conditions that may be conducive to runoff problems are given greater scrutiny. Avoidance or additional mitigation measures are discussed with the project applicant.

Project review by the municipality is also conducted on the permanent stormwater management facilities. Design of stormwater management is prescribed by the New York State Storm Water Design Manual. Adherence to the principles in that publication is confirmed by the town. Town review also ensures that the applicant's design is appropriate for the native site conditions. A final element of the review is to ensure the long-term maintenance of stormwater facilities. If the storm management area is not to be dedicated to the town for ownership, the town requires the applicant to execute a maintenance agreement. The purpose of this "contract" is to guarantee that a responsible

and perpetual entity will exist to maintain and repair drainage facilities as needed. A copy of the sample agreement used by the town is included in section 4 of this plan.

Upon completion of a project review, the Town of Charlton is required by its MS4 permit to review and authorize the developer's Storm Water Pollution Prevention Plan (SWPPP). Once construction begins, field inspections of the project by the town are also required. These supervisory inspections must ensure that the project applicant is fulfilling their obligations under their own SPDES permit to conduct stormwater inspections and provide erosion and sediment control.

The Town of Charlton recognizes that not all construction projects in the town will be routed through its Planning Board and Town Engineer review. Development on pre-existing lots can be applied for through the building permit process. To address these situations, Charlton has implemented a small construction activity program. An information check list and fact sheet were developed for use by the Zoning Administrator. These documents provide a decision-making framework for the administrator to determine what permits, erosion control measures and SWPPPs are necessary for each project. The check list suggests review by the Town Engineer when needed to give continuity to the consideration of development projects. In addition to the fact sheet and check list, a sample plot plan illustrating methods for determining disturbance and showing typical erosion and sediment control measures was prepared for use by the Zoning Administrator. Although smaller construction projects may not be regulated under either the MS4 or SPDES permits, the Town of Charlton's small project program is also intended to provide information to contractors and developers on the use of erosion control measures. Structural inspections associated with the building permit program in Charlton are now also field reviewed for erosion and earth disturbance issues. Clean project sites and common-sense protection of public lands are emphasized for all construction projects.

An additional requirement of the MS4 permit for minimum control measures 4 and 5 is the adoption of legislation regarding runoff control from construction sites and permanent post-construction runoff management. The Town of Charlton passed legislation according to the New York State sample model in November of 2007. A copy of the legislation and the Town Attorney's certification of its compliance with the MS4 permit requirements is included with this storm management plan.

MCM6 Good Housekeeping & Pollution Prevention:

The good housekeeping control measure is specifically intended for municipal operations. The MS4 permittee must review its own facilities and policies and implement improvements related to water quality. The targeted Town of Charlton facilities include the Town Hall, the prior Town Hall, and the Highway Garage. Although each of these establishments are located outside the designated MS4 area, they will be subjected to a good housekeeping program. In addition to public buildings, municipal operations themselves have been modified under this program.

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The new Charlton Town Hall was designed in early 2006, midway through the five-year implementation of the MS4 program. The facility was completed and opened in 2009. The building, like all municipal buildings in the town, utilizes an on-site septic system for sanitary treatment. Obviously, this system is almost new and needs little maintenance. However, as part of its good housekeeping program, Charlton is committed to pumping and inspecting the system on a two-to-three-year schedule like its maintenance of other town sanitary facilities. Stormwater management for the new Town Hall was also compliant with current standards. The storm system includes a pretreatment organic filter followed by an array of infiltration devices. All but the largest stormwater events are recharged to the ground with no surface discharges.

The most sensitive municipal operation is the town highway garage. Fuel and road salt are stored at the facility and vehicle maintenance and cleaning are also performed. A self inspection of the highway garage was performed as part of the MS4 program and modernization of some equipment was completed. A new salt storage shed was constructed during the first year of the MS4 permit. A concrete pad, walls and a roof now protect the stored road salt from being transported off site or into the ground by storm runoff. Secondary containment of the fuel storage is also now available. The town retains 1,000-gallon tanks of both gasoline and diesel, a second diesel tank of 300 gallons and a 500-gallon tank of Kerosene on site. All these tanks are of a modern design with either built in secondary containment or a surrounding concrete containment. The tanks are in highly visible areas of the garage that are observed several times a day but are protected from vehicle collisions. The town garage also has absorbent pads and “speedy-dry” type materials in adequate quantities to control any spills that may occur. A list of emergency phone numbers including the New York State DEC spill hotline and several local environmental industrial cleaning contractors is kept at the garage. A copy of DEC’s spill response program document is also on file at the garage.

Municipal operations of the Highway Department have also been scrutinized as part of the good housekeeping minimum control measure. Road cleaning is performed each spring in the Town of Charlton. The town has a sharing agreement with the neighboring Village of Ballston Spa for street sweepers. All town roadways are cleaned every April to remove residual sand and road salt. The road mix that is used on roads during winter storms was also modified. A substantial reduction of the salt content was completed in the first year of the program.

The Highway Department is also involved in the annual road cleanup event. The department organizes the pickup and disposal of debris removed from town roadways by volunteers. The department also picks up brush and leaves during the summer and autumn as well as the bulk household items once per year.

The general practices of road maintenance have also been examined. Members of the highway department and the Superintendent attend seminars on an annual basis. These educational classes are presented by the Cornell Local Roads Program and are hosted by

the Cornell Cooperative Extension office at the Saratoga County Municipal Center. Several roadway handbooks related to environmental considerations during road maintenance have also been made available to the Highway Department for review. The department also maintains a log of activities to better track areas of the town that require attention.

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EMERGENCY TELEPHONE NUMBERS

Supervisor Joe Grasso (518) 257-0224
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Town Board Member David Robbins (518) 669-5028
(Stormwater Management Program Coordinator)
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Zoning Administrator Terry Anthony (518)384-0152 x204
(518) 857-4109

Town Engineer Environmental Design Partnership (Charles Baker) (518) 371-7621

NYS DEC SPILL HOTLINE 1-800-457-7362

ENVIRONMENTAL CLEANUP SERVICES:
Miller Environmental Group (518) 465-4000
Glenmont, N.Y.

OP-Tech Environmental Services (315) 437-2065
Syracuse, N.Y.

North American Industrial Services Inc. (518) 885-1820
Ballston Spa, N.Y.

Aztech Technologies, Inc. (518) 885-5383
Ballston Spa, N.Y.

KEY PERSONNEL/STATE & LOCAL CONTACTS

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<p style="text-align: center;"><u>Charlton (T)</u></p> Alan Grattidge; Town Supervisor supervisor@townofcharlton.org 784 Charlton Road Charlton, NY 12019 Ph: 518-384-0152	<p style="text-align: center;"><u>Clifton Park (T)</u></p> Steve Myers; Director of Building & Planning smyers@cliftonpark.org 1 Town Hall Plaza Clifton Park, NY 12065 Ph: 518-371-6701
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Local MS4 Contacts:

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<p style="text-align: center;"><u>Round Lake (V)</u></p> <p>John Stevenson; Director of Public Works PO Box 85 Round Lake, NY 12151 Ph: 518-899-2800</p>	<p style="text-align: center;"><u>Saratoga County</u></p> <p>James Clark, Engineering Tech 3654 Galway Road Ballston Spa, NY 12020 Ph: 518-885-2235</p>
<p style="text-align: center;"><u>Saratoga Springs (C)</u></p> <p>Albert Flick; DPW Engineering Tech al.flick@saratoga-springs.org 474 Broadway Saratoga Springs, NY 12866 Ph: 518-587-3550</p>	<p style="text-align: center;"><u>Stillwater (T)</u></p> <p>Lindsay Zepko Director, Building & Planning lzepko@stillwaterny.org 881 Hudson Avenue Stillwater NY 12170 Ph: 518-664-6148</p>
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<p style="text-align: center;"><u>Wilton (T)</u></p> <p style="text-align: center;">Ryan Riper; Town Engineer rriper@townofwilton.com 22 Traver Road Wilton, NY 12831 Ph: 518-587-1939</p>	

Intermunicipal Stormwater Management Program Cooperative Resolution

WHEREAS in 2003 the New York State Department of Environmental Conservation (DEC) issued the first State Pollution Discharge Elimination System (SPDES) General Permit for Stormwater Discharges for Small Municipal Separate Storm Sewer Systems (MS4; GP-02-02 or as amended or revised); consisting of six (6) Minimum Control Measures (MCM) which are:

1. Public Education and Outreach
2. Public Participation and Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Site Runoff Control
5. Post-Construction Runoff Control
6. Good Housekeeping and Pollution Prevention; and

WHEREAS the Saratoga County/Cornell Cooperative Extension (CCE) Intermunicipal Stormwater Management Program (I-SWM Program) was created in 2004 to assist, where possible affect direct works, and facilitate a framework of intermunicipal cooperation among the MS4 Permit holders of Saratoga County for the express purpose of meeting the requirements of the DEC SPDES MS4 Permit; and

WHEREAS a contractual agreement has been entered into by the County of Saratoga and Saratoga County Cornell Cooperative Extension (CCE) for the administration of this Program (ref. Saratoga County Resolution 69-09); and

WHEREAS these MS4 Municipalities include: Town of Ballston, Village of Ballston Spa, Town of Charlton, Town of Clifton Park, Town of Greenfield, Town of Halfmoon, Town of Malta, Town of Milton, Town of Moreau, Village of Round Lake, Saratoga County, City of Saratoga Springs, Village of South Glens Falls, Town of Waterford, Village of Waterford and the Town of Wilton;

WHEREAS it is understood by all involved MS4 Municipalities that the I-SWM Program works include:

- County-wide Public Education & Outreach
- Material support for Local Stewardship activities
- Material, technical and training support for MS4 Illicit Discharge Detection and Elimination (IDDE; MCM 3) Programs
- Material, technical and training support for MS4 Construction Site Runoff (MCM 4) Programs
- Material, technical and training support for MS4 Post-Construction Runoff (MCM 5) Programs
- Material, technical and training support for MS4 Good Housekeeping/Pollution Prevention (MCM 6) Programs
- All required record keeping and administrative support as required by DEC for Annual Reporting and/or auditing purposes for actions and outputs of the I-SWM Program and are detailed in the I-SWM Plan v1; 2009; and

WHEREAS it is understood that the I-SWM Program Coordinator will be responsible for the production, record keeping, and reporting on behalf of the involved MS4s for such outputs of the I-SWM Program AND report the results annually to the NYS DEC; and

WHEREAS it is further understood by all the involved parties that the MS4 Municipalities shall provide "in-kind" service to the I-SWM Program through designated representative/s to the I-SWM Program for the purposes of direct participation

in, direction to, and the development and implementation of the substantive outputs of the I-SWM Program for any or all of the works cited above; and

WHEREAS the DEC has ruled that "...when a permittee relies upon any third party entity to develop or implement any portion of its SWMP [Stormwater Management Program]." a certification statement must be signed by that 3rd party or a duly authorized representative thereof (GP-0-08-002 Part IV.G); and

WHEREAS the DEC has concluded that the signing of such a statement would affect a formal agreement and enable the signatory to provide some or all of the required annual reporting to the DEC and other specific outputs herein described on behalf of one or all of MS4 Permittees; and

WHEREAS the DEC has further concluded that cooperative efforts, like the I-SWM Program, must have a formal agreement signed and adopted by all parties and participants in order to qualify for any current or future State funding through the Water Quality Improvement Projects Grant Program

THEREFORE it is the intent of this certifying statement to hereby formally recognize the intent, structure, and arrangements of the Saratoga County/Cornell Cooperative Extension Intermunicipal Stormwater Management Program between all the aforementioned parties listed above for the purposes herein described.

Contracted Entity Certification Statement:

Saratoga County/Cornell Cooperative Extension Intermunicipal Stormwater Management Program Contractor/Organization

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the Town of Greenfield stormwater management program and agree to implement any corrective actions identified by the Town of Greenfield or a representative.

I also understand that the Town of Greenfield must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from the Municipal Separate Storm Sewer Systems ("MS4s") and that it is unlawful for any person to directly or indirectly cause or contribute to a violation of water quality standards. Further, I understand that any noncompliance by Town of Greenfield will not diminish, eliminate, or lessen my own liability."

Signed,

Executive Director CCE
Title/Duly Authorized Rep


Signature

10/16/09
Date (dd/mm/year)

William Schwerd
Print name of Signatory

Town Supervisor
Title/Duly Authorized Rep


Signature

10/14/09
Date (dd/mm/year)

Richard Rowland
Print name of Co-Signatory

Town of Greenfield
Name of Co-Signatory MS4 Municipality

Town of Charlton Storm Water Management Program Plan

Public Education & Outreach

Activity Checklist

- The goal of Charlton's Public Education & Outreach minimum control measure is to increase public awareness of the connection between the individual and the water quality of the community's streams and lakes. Activities within the town and Charlton's participation in the county program will focus on informing residents to use caution with their application of lawn products, their disposal of wastes and the importance of maintaining private sanitary facilities.
- Actively participate in the Saratoga County Intermunicipal Storm Water Management Program. Provide proportional financing, attend monthly County meetings, utilize available training from central office, utilize public outreach services of central office.
- Continue providing informational articles in the town newsletters related to the goals of the MS4 program, methods by which residents can minimize their impacts, septic system maintenance, the prohibition of dumping to the drainage system, the schedule of clean up events and hazardous waste collection days.
- Continue to make available to the public pamphlets related to proper septic system maintenance and facts related to storm runoff pollution. Utilize the Town website to provide similar information.
- Continue to maintain field signage on storm catch basins. Re-stencil as necessary after winter months to ensure legibility.
- Continue to maintain field signage related to disposal of pet wastes. Target park areas along the Alplaus Kill.
- Continue education of Board members – support attendance of conferences and require continuing education as a condition for service on municipal boards, provide training for code enforcement office and highway department personnel.

**Suggested MS4 Information Article
For
Town Newsletter & Website**

As of March 10, 2003, the Town of Charlton has been required to participate in a Federal Environmental Protection Agency (EPA) mandated program for Municipal Separate Storm Sewer Systems (MS4). The purpose of this program is to control the inflow of pollutants into the town's storm sewers and drainage ditches. Products such as oil, antifreeze, litter, animal wastes, fertilizer, pesticides and sediment from erosion can be washed into the storm drain system during rain storms or by melting snow. Eventually this untreated storm water flows into our streams, and lakes and can impact water quality.

The MS4 program contains six techniques designed to reduce these "nonpoint" sources of water pollution. Two of these measures include public education and public participation. It is important that all of us recognize our role in protecting the environment. Steps that each individual can take to protect water quality include:

- Never dump automotive waste materials or used household products into a storm drain, anywhere on the ground or in a basement sump pit.
- Make an effort to buy environmentally sound household products
- Always use household and lawn care products in accordance with instructions
- Be conscious of what lies "downstream" when washing cars or applying lawn care products
- Avoid long term exposure of uncovered soil stockpiles, establish vegetation to prevent erosion
- Clean up pet waste and dispose in a method that will prevent introduction into storm sewers or ditches

Residents interested in a more proactive role are encouraged to volunteer for a cleanup event. Several "adopt a road" and "adopt a stream" cleanups have been conducted in town and more will be planned in the future. These events are a fun way to enjoy a beautiful day, meet new people and serve a worthwhile cause. Watch for announcements in upcoming Town Newsletters and on the Charlton website.

The MS4 program is a continuous plan for implementing practices to protect our community's waterways. For more information on the program and ways that you can help, please visit:

www.dec.state.ny.us/website/dow/mainpage.htm
www.epa.gov/OWOW/NPS/qa.html
www.naturallyhome.com
www.townofcharlton.org

NYS DEC
Federal EPA
Enviro-products
Town of Charlton

Operation and Maintenance

- The contents of the septic tank should be pumped every two to three years or when the total depth of sludge and scum exceeds one-third of the liquid depth of the tank (see Figure 1). If the tank is not cleaned periodically, the solids are carried into the absorption field; rapid clogging occurs; premature failure follows; and finally, the absorption field must be replaced. Pumping your septic tank is less expensive than replacing your absorption field.
- Detergents, kitchen wastes, laundry wastes and household chemicals in normal amounts do not affect the proper operation of household sewage treatment systems. However, excessive quantities can be harmful.
- Avoid the disposal of cigarette butts, disposable diapers, sanitary napkins, plastics, trash, etc., into your household sewage system. These items are not readily decomposed.
- Septic tank additives are not recommended. Additives are unnecessary to the proper operation of household systems and may cause the sludge and scum in the septic tank to be discharged into the absorption field, resulting in premature failure. Some additives may actually pollute groundwater.



SEPTIC SYSTEMS

operation & maintenance

System Components

A typical household sewage treatment system consists of a house sewer, septic tank, distribution box and absorption field or seepage pit.

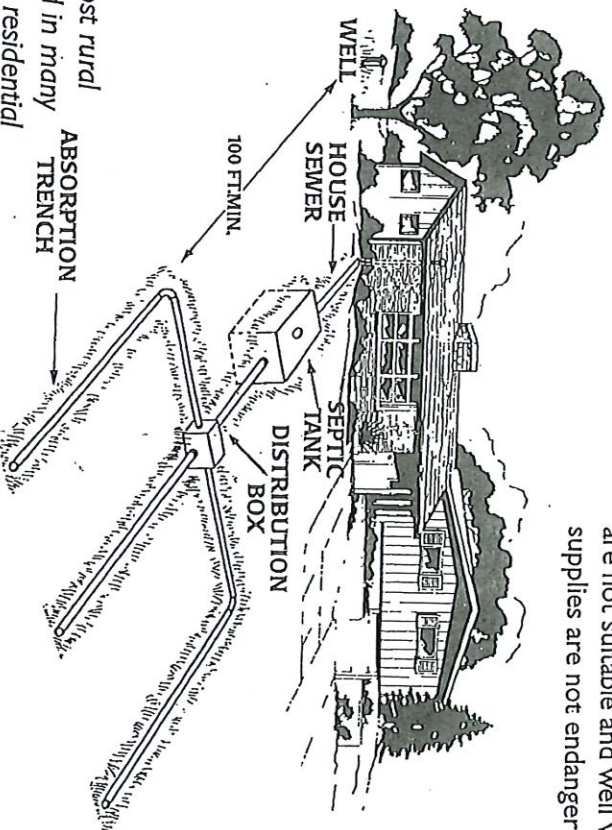
House Sewer — The pipeline connecting the house and drain and the septic tank.

Septic Tank — Untreated liquid household wastes (sewage) will quickly clog your absorption field if not properly treated. The septic tank provides this needed treatment. When sewage enters the septic tank, the heavy solids settle to the bottom of the tank, the lighter solids, fats and greases partially decompose and rise to the surface and form a layer of scum. The solids that have settled to the bottom are attacked by bacteria and form sludge. Septic tanks do not remove bacteria and, therefore, what is discharged cannot be considered safe.

Distribution Box — Serves to distribute the flow from the septic tank evenly to the absorption field or seepage pits. It is important that each trench or pit receive an equal amount of flow. This prevents overloading of one part of the system.

Absorption Field — A system of narrow trenches partially filled with a bed of washed gravel or crushed stone into which perforated or open joint pipe is placed. The discharge from the septic tank is distributed through these pipes into the trenches and surrounding soil. The subsurface absorption field must be properly sized and constructed to assure satisfactory operation and a long life.

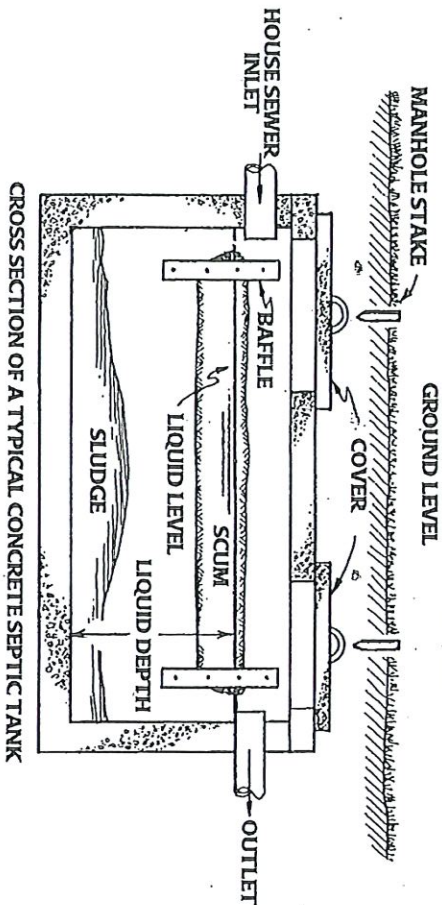
Seepage Pit — A covered pit with a perforated or open-jointed lining through which the discharge from the septic tank infiltrates into the surrounding soil. It is generally installed in sandy or gravel-type soils. Like the absorption field, the seepage pit also must be properly sized and constructed. While seepage pits normally require less land area to install, they should be used only where absorption fields are not suitable and well water supplies are not endangered.



In most rural areas and in many suburban residential areas, individual household sewage treatment systems are relied upon for the disposal of household wastes. Wherever possible, sewage should be collected in community sewers connected to a central treatment plant.

A household sewage treatment system will serve a home satisfactorily only if it is properly located, designed, constructed and maintained. The purpose of this brochure is to explain how your system works and how it should be operated and maintained.

- Garbage grinders substantially increase the accumulation of solids in the septic tank, as well as the solids entering the absorption fields and pits. Their disadvantages outweigh the convenience they provide and are not recommended for households with their own sewage treatment systems. If used, the septic tank size should be increased.



CROSS SECTION OF A TYPICAL CONCRETE SEPTIC TANK

- Roof downspouts should not drain toward the absorption field.
- Backwash from water softeners and/or iron/manganese removal equipment may be discharged to the septic tank and absorption system or to a separate system.
- Roots from trees in the immediate area of the absorption lines may clog the system.

- Connecting your laundry wastes to a separate waste system (dry well or seepage pit), while not normally necessary, will reduce the load on the regular system and permit the survival of a marginal system.

- All roof, cellar and footing drainage, and surface water must be excluded from the system. This drainage water can be discharged to the ground surface without treatment; make sure it drains away from your sewage treatment system.

- Keep swimming pools (above or in-ground) away from the absorption field.

Caution

- Avoid entering your septic tank.
- Individuals have **died** from gas asphyxiation.
- Never permit heavy equipment to pass over the absorption field.

- Conserve your water usage; this can prolong the life of your sewage treatment system. Check defective toilet tank valves, repair leaky fixtures, install appliances and fixtures that use less water and avoid wasteful practices.

- Your sewage treatment system is normally designed to accommodate two persons per bedroom. If your household is larger than this, or if you add additional bedrooms, enlarge the system.

- If surface water from higher ground is flowing onto your absorption field, install a ditch or berm to intercept this surface water.

For more detailed information concerning special conditions in your area, contact your local health department.



State of New York
George E. Pataki, Governor
Department of Health
Antonina C. Novello, M.D., M.P.H., Dr.P.H.,
Commissioner



For more information contact:

or visit

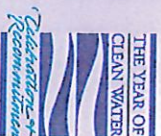
www.epa.gov/npdes/stormwater

www.epa.gov/nps



EPA 833-B-03-002

January 2003



After the Storm



*A Citizen's Guide to
Understanding Stormwater*



What is stormwater runoff?

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.



Why is stormwater runoff a problem?



Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

The effects of pollution

Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- ◆ Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- ◆ Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- ◆ Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.
- ◆ Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- ◆ Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.



- ◆ Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.



Stormwater Pollution Solutions

Residential



Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them onto the ground or into storm drains.

Lawn care

Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.



- ◆ Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- ◆ Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- ◆ Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- ◆ Cover piles of dirt or mulch being used in landscaping projects.

Auto care

Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.

- ◆ Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- ◆ Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.



Septic systems

Leaking and poorly maintained septic



systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.

- ◆ Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- ◆ Don't dispose of household hazardous waste in sinks or toilets.

Pet waste

Pet waste can be a major source of bacteria and excess nutrients in local waters.



- ◆ When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.

Education is essential to changing people's behavior. Signs and warnings near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.



Residential Landscaping

Permeable Pavement—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.

Rain Barrels—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.

Rain Gardens and Grassy Swales—Specially designed areas planted



with native plants can provide natural places for



rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.

Vegetated Filter Strips—Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.



Commercial

- Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.
- ◆ Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
 - ◆ Cover grease storage and dumpsters and keep them clean to avoid leaks.
 - ◆ Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

Erosion controls that aren't maintained can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

- ◆ Divert stormwater away from disturbed or exposed areas of the construction site.
- ◆ Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- ◆ Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.



Construction



Agriculture

Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.

- ◆ Keep livestock away from streambanks and provide them a water source away from waterbodies.
- ◆ Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- ◆ Vegetate riparian areas along waterways.
- ◆ Rotate animal grazing to prevent soil erosion in fields.
- ◆ Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.



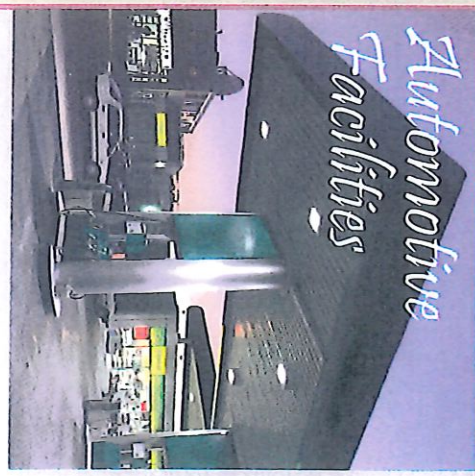
Forestry



Improperly managed logging operations can result in erosion and sedimentation.

- ◆ Conduct preharvest planning to prevent erosion and lower costs.
- ◆ Use logging methods and equipment that minimize soil disturbance.
- ◆ Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- ◆ Construct stream crossings so that they minimize erosion and physical changes to streams.
- ◆ Expedite revegetation of cleared areas.

Automotive Facilities



Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil, and other harmful fluids that can be picked up by stormwater.

- ◆ Clean up spills immediately and properly dispose of cleanup materials.
- ◆ Provide cover over fueling stations and design or retrofit facilities for spill containment.
- ◆ Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local water bodies.
- ◆ Install and maintain oil/water separators.

Town of Charlton Storm Water Management Program Plan

Public Involvement and Participation

Activity Checklist

- The goal of Charlton's Public Involvement and Participation minimum control measure is to motivate residents to become involved in activities that will have a positive impact on existing water quality and upstream watershed conditions. Activities within the town and Charlton's participation in the county program will focus on community cleanup events, tree planting give aways, responsible waste disposal and encouragement of awareness of environmental conditions and reporting of problems to the proper authority.
- Actively participate in the Saratoga County Intermunicipal Storm Water Management Program. Provide proportional financing, attend monthly County meetings, utilize available training from central office, utilize public outreach services of central office.
- Continue to provide public access to an Environmental Condition Reporting form. Post form periodically in the newsletter and on the website. Make form available in the Town Hall.
- Continue funding of public events such as Founders Day in June and the roadside clean up activities in April.
- Continue providing free tree seedlings to residents.
- Continue coordination with neighboring municipalities to hold hazardous waste collection days as often as possible.
- Continue to provide information on the proper disposal of hazardous wastes by periodically publishing articles in the town newsletter.
- Continue to periodically offer speaking appearances at community groups related to stormwater pollution issues.

TOWN OF CHARLTON
ENVIRONMENTAL CONDITION REPORTING FORM

As part of its mandatory storm sewer program regulated by the NYS Department of Environmental Conservation, the Town of Charlton is seeking public participation in identifying threats to surface water quality. Residents are encouraged to use this form to report their observations to the Town on circumstances that may adversely impact water quality. This includes conditions such as odors, discoloration, visible sheen, soapy water, spills of harmful products or chemicals etc... Remediation of these conditions is important, not only along waterbodies, but also along roadside drainage ditches and storm sewers that eventually lead to our streams. Please complete the following information and submit as noted at the bottom.

YOUR NAME: _____ **DATE:** _____
ADDRESS: _____ **TIME:** _____
TELEPHONE: _____

LOCATION: (give waterbody name or road name, side of road, distance to intersection or recognizable feature. For example: "north side Charlton Road, drainage ditch, 20 feet from power pole NM #50")

OBSERVATIONS: (describe as thoroughly as possible. For example: "soapy water seeping out of ground and into stream", "garbage bags dumped in drainage ditch", "bright green discharge from storm pipe into stream", "oily sheen on water surface", "observed disposal of illicit materials into storm basin", "observed spill of hazardous materials onto roadway". If applicable, include license plates, company name or some means of identifying responsible parties.

TO SUBMIT FORM:

In Person: Drop off form at Town Hall or Highway Garage

By Mail: MS4 Coordinator
Charlton Town Hall
784 Charlton Road
Charlton, N.Y. 12019

By Fax: 384-0385

In Emergencies: NYS DEC Spill Hotline 1-800-457-7362
Town of Charlton Highway Dept.: 399-3425



TOWN of CHARLTON
Town Hall
758 Charlton Road
Charlton, NY 12019

www.townofcharlton.org
518-384-0152

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Town of Charlton TOWN BOARD NEWSLETTER

Town Hall, 758 Charlton Road, Charlton, NY 12019 • 518-384-0152 • www.townofcharlton.org • Spring 2023



IMPORTANT DATES

APRIL
22 Roadside Cleanup, 9am-12pm
22 Tree Seedling give-away, 12-1pm
24-28 Brush Pick-up (have ready by 23rd)

MAY
23 Rabies Clinic (4H Training Ctr)
23 Grievance Day
25 Water Reading Cards due
29 Memorial Day
(Town offices closed)
29 Memorial Day Svc
Gideon Hawley Pk 2:00

JUNE
3 5k race, Party in the Park
4 Founders Day parade,
Farmers Mkt.
27 Rabies Clinic (4H Training Ctr)

JULY
4 Town offices closed

AUGUST
22 Rabies Clinic (4H Training Ctr)

SEPTEMBER
4 Labor Day (Town offices closed)
5 Rabies Clinic (4H Training Ctr)

OCTOBER
30 Brush Pick-up (have ready by 29th)

NOVEMBER
11/6-10 Bagged Leaf Pick-up

For updates please see Calendar
at www.townofcharlton.org

Town Board meetings are held the
2nd and 4th Monday of each month,
unless holiday.



TOWN of CHARLTON
Town Hall
758 Charlton Road
Charlton, NY 12019

www.townofcharlton.org
518-384-0152



TOWN of CHARLTON CONTACT INFORMATION

Web site: www.townofcharlton.org • Fax: 384-0385

TOWN SUPERVISOR Joe Grasso 257-0224 supervisor@townofcharlton.org	DEPUTY TOWN CLERKS Margo Jones, Laurie Kruppenbacher, Teresa Hart	JUSTICES Hours: Thurs, Eve 6pm Sean Piasecki 384-0152 ext. 219 Kevin Hart 384-0152 ext. 218	HISTORIAN Marv Livingston 384-0152 ext. 212 historian@townofcharlton.org
TOWN BOARD MEMBERS 384-0152 Dave Robbins councilmanrobbs@townofcharlton.org Jim Glavin councilmanglavin@townofcharlton.org Paul St. John councilmanstjohn@townofcharlton.org Chris Tasse councilmantasse@townofcharlton.org	HIGHWAY SUPERINTENDENT Marshall Heritage 399-3425 highway@townofcharlton.org ASSESSOR Hours: Tues. & Thurs. 9am-1pm Tues. Eve 6-8pm Sat. 9am-12 (except June-Oct.) Kim Caron, Clerk: Mary Beth Frewin 384-0152 ext. 210 assessors@townofcharlton.org	COURT CLERK Hours: Mon., Wed. & Thurs. 9:00-11:00 am Bev Pashley 384-0152 ext. 220 courtdclerk@townofcharlton.org CONSTABLES Tom Parks Gary Parks Gregory Parks Randy Angerosa 384-0152 ext. 203 470-0788 (cell) charltonpolice@townofcharlton.org	DOG CONTROL Gary Parks 365-8271 (cell) WATER DEPARTMENT Water Superintendent Doug Flynn 858-8032 (cell) Assistant Superintendent Dennis Russell 857-4665 (cell) Water Clerk: Kim Caron 384-0152 x210 water@townofcharlton.org
TOWN CLERK Brenda Mills 384-0152 ext. 201 townclerk@townofcharlton.org Hours: Mon.-Fri. 9am-1pm Tues. Eve 6-8pm Sat. 9am-12 (except June-Aug.)	ZONING ADMINISTRATOR & BUILDING INSPECTOR Hours: Tues. 2-4pm, Eve 6-8pm Thurs. 9am-12 and by appointment Terry Anthony 384-0152 ext. 204 857-4109 (cell) zoning@townofcharlton.org Zoning Clerk: Laurie Kruppenbacher	TAX COLLECTOR Hours: January Only Tues., Thurs. & Sat. 9-12 Tax Collector: Sue McBurnie 384-0152 x 205 taxcollector@townofcharlton.org Deputy: Teresa Hart	



Joe Grasso



Dave Robbins



Jim Glavin



Paul St. John



Chris Tasse

NEWS FROM CHARLTON OFFICIALS

FROM THE TOWN SUPERVISOR

I've had the good fortune to do some distant traveling over the last couple months, experiencing different geographies, cultures and communities in other countries and the Midwest. It's given me ample opportunity to reflect on our Town of Charlton and reaffirm my appreciation of all Charlton has to offer... a strong sense of small-town feel, rural character, and working landscapes. A hard working, help your neighbor type of town. These traits are nothing new to Charlton, and are things I expect will continue for many decades to come.

One of the ways we are looking to maintain our rural character and support agricultural land uses is through an in-depth review of our land use laws governing new development in town. I expect these ongoing efforts will culminate into some land use law changes over the next year. There has been, and will continue to be, many opportunities to gather public comment throughout the process.

2022 finished up to be a very good year for Charlton as we were able to host a number of community-centered events, kept up with our road maintenance program and ended the year as financially strong as I can remember in my ten years on the Town Board.

I expect 2023 to be just as great. Even though we are in an economic downturn, based on our prudent investments in our infrastructure and the services most sought after by our town, we will continue to take a long-term conservative fiscal approach for the future of our town.

The Town's Community Center located in the middle of our hamlet will be a continued focus of ours for the next couple years, as we maximize grant funds made available to us to rehabilitate this structure that's rich in Charlton's history. We want to ensure the Center can continue to serve as a gathering space for community groups for another 130+ years.

As you'll see in this newsletter, we will have numerous community events throughout the year including Founder's Weekend and other events that all residents are encouraged to participate in.

I look forward to seeing you around town, at a meeting, or at one of our many community events!

Joe Grasso

BRUSH PICKUP 4/24 – 4/28

Land Conservation

Attention Large Lot Landowners: If you are interested in permanently conserving all or a portion of your property, and in return obtain some of its cash value, you are encouraged to reach out to the Town. There are currently County and State programs to help landowners fund the purchase of development rights. Programs are strictly voluntary and grants are typically awarded through a competitive process. There have been several landowners in Charlton that have successfully sold development rights on their property, and others that are going through the process now. Undeveloped open space lands and former or active farmlands are preferred. If you are interested in learning more about the programs and what's involved, please contact Supervisor Joe Grasso at Supervisor@townofcharlton.org

From The Town Clerk's Office

New York State has recently passed legislation allowing any adult to apply to officiate a wedding in New York State. To obtain a one-day Officiant License, you can apply at the Town Clerk's office. The fee is \$25.00 and identification is required.

The Town Clerk's office issues dog licenses, marriage licenses, Certificates of Residency for Community College tuition reduction, handicap parking tags, and applications for use of Town Parks and the Community Center. We also sell hunting/fishing licenses.

Check out the Town website (townofcharlton.org) for pertinent Town information. You can sign up to receive emails from the Town with important information by clicking on the Subscribe button on our homepage and entering your email address.

As always, feel free to contact my office if you have questions or things that we can assist you with.

Highway Department
Spring Brush Pick-Up

The Highway Department will be picking up brush from winter tree damage during the week of April 24th to April 28th. As there will be only one pass-by, please be sure to have your brush out by Sunday night (April 23rd) so you do not miss the pick-up. Remember, put cut ends toward the road to assist the highway crew. Please DO NOT put out large piles of brush, tree trunks or stumps. If you have a larger than normal amount of brush, the Town can drop off a truck for you to fill. Contact Superintendent Marshall Heritage at 518-857-3431 to arrange for the truck..

Dog Control

New York State Law requires that **all dogs be licensed** and be vaccinated for rabies. Licenses can be purchased at the Town Clerk's office. The fee is \$8 for spayed /neutered and \$13.50 for unspayed/unneutered dogs. If you need assistance from the Dog Control Officer, he can be reached at: 518-365-8271.

Rabies Clinics are held at the 4-H Training Center, 556 Middleline Road, Ballston Spa. Questions? Call the Animal Shelter at 518-885-4113. The cost is free, however donations are accepted.

2023 Clinic Dates: May 23rd, June 27th, August 22nd, September 5th
Times: Cats: 5:30-6:30 pm and must be in a carrier.
Dogs: 6:30-7:30 pm and must be on a leash.

Assessors' Office

The 2023 Tentative Assessment Roll will be available for review beginning on May 1st. The Roll will be on the shelf outside of the Assessor's Office and will be available for review 9:00 a.m. to 1:00 p.m. M-F and Saturdays 9:00 a.m. to 12:00 p.m. If your assessment has changed, you will receive a Change of Assessment Notice in early May. I encourage residents to discuss their assessment with me prior to Grievance Day, as many times adjustments can be made that are acceptable to both parties. An appointment is required. Grievance Day is Tuesday, May 23, 2023. The Board of Assessment Review will be present 2 - 4 p.m. and 6 - 8 p.m.

Tax Collector

After April 1st, the Tax office in the Town Hall is CLOSED until December 26. Taxes remaining unpaid at the end of the period will be turned over to Saratoga County for collection. Please call the Saratoga County Treasurer at (518) 884-4724 for amount due and payment instructions.

You may view, print, and pay your Town and County Tax Bill bills by visiting: **www.townofcharlton.org** where the link is on the left side of our home page: "Saratoga County Tax Bills". Viewing and printing is free, but there is a charge if you choose to pay online.

If you have any permanent address corrections or ownership changes on your property, please contact our Town Assessor at 518-384-0152 ext 210, by mail or email. Residents needing assistance can reach me at: taxcollector@townofcharlton.org or by contacting me directly at (518)366-9235.

MS4 Annual Report

The Town of Charlton's annual report for its State mandated municipal separate storm sewer system (MS4) permit will be available for public review and comment beginning April 14, 2023 on the Town website https://www.townofcharlton.org/ms4-program/pages/ms-4-reports and at the Town Clerk's office. Interested residents can submit comments at the Town Hall.

Water Department

Water Department Billing Information:

Water Reading Cards: we mail by April 30th, due back with reading by May 25th. If you do not receive a card in the mail to read your meter, please call the Water Department at (518) 384-0152, ext 210. An \$85.00 penalty is charged for the following two reasons:

- 1. No reading card is returned with a reading.
- 2. The card was received with a postmark after May 25th

Water Bills are mailed June 30th each year and payable until July 31st without penalty. Water Bills can be paid to Charlton Water District #1 until October 15th. After this date, delinquent water bills are sent to the county to be added to the tax bill for the following year.

Hydrant flushing can happen at anytime, anywhere in the district.

Building & Zoning Dept

Spring is here and that is the start of the building season for outdoor projects. We are a part time department but will make every effort to accommodate your needs. The Building & Zoning hours are Tuesday 2:00-4:00 & 6:00 -8:00 pm, and Thursday mornings 9:00 am to 12:00 noon. Permit applications are available in file box outside Zoning office. Applications can be dropped off anytime the Town Clerks Office is open. Just a reminder, In-ground & Above ground pools do require a permit, along with decks.

Be Advised there is a Burn Ban per DEC from March 16th -May 15th.

Community News

Roadside Clean-Up

The Town of Charlton's Environmental Conservation Commission (E.C.C.) will host a Roadside Cleanup event from 9am until noon on Saturday, April 22nd. Participants will be able to sign-up for a road or a section of a road. Safety vests, trash bags and gloves will be available, as well as refreshments for participants. For information contact Robert Killeen at (518) 882-1283.

Tree Seedlings Available

Tree and shrub bare root seedlings will be available for distribution to Town residents **free of charge**. The seedlings include blue spruce, norway spruce, paper birch, red maple, forsythia and white flowering dogwood. Pickup will be inside the Town Highway Dept Garage on Jockey Street on Saturday, April 22nd between Noon and 1 PM **on a first come basis**. Planting instructions will be provided. Proof of your Town address will be required.

Party in the Park June 3

Our Party in the Park occurs during Founders Day Weekend. As plans are finalized they will be announced on the town website. We will have **Live Music, Food vendors, Games for kids and adults, and other activities**. The evening will end with our traditional awesome **fireworks** display. If you are interested in helping in any way, contact Dave Robbins councilmanrobbs@townofcharlton.org. The event is paid for by **donations**, which you can mail or drop-off to: Town Clerk, 758 Charlton Rd, Charlton, NY 12019.

DONATIONS FOR FIREWORKS ARE APPRECIATED

Charlton Historical Society

Founder's weekend June 3 and June 4

Saturday 10:00am - 5K Charlton Heritage 5K Run/Walk and Kids' Fun Run

Note: This is our fundraiser that is partially funded by our generous Sponsors.

Saturday at 5:00 **Party in the Park**

Sunday at 11:00 AM – 4:00 **Farmers' Market**

Contact Teresa Hart at 518-366-4350 for a table or booth.

Sunday at 2:00 – **Charlton Parade**

Contact John Hussey 518-557-2410 if you wish to be in the Parade.

Saturday 8:30 to 12:00 **Museum** will be opened.

Sunday 11:00 to 4:00 **Museum** will be opened.

- **Museum Summer Hours**

2:00 to 4:00 weekends from July 8 to Aug 27

Charlton Garden Club

Charlton Garden Club meets once a month for a business meeting & special speaker or event.

We participate in Charlton Founders Day along with Maintaining the many gardens of our town.

If you are interested in learning more about the Charlton Garden Club, please contact

Anne Varcasio at 518 384-0194 or Wynne Trowbridge at 518 882-5433.

Charlton Seniors

If you are 55 or older, you may join the Charlton Seniors. We have about 200 members and publish a monthly newsletter where our events are listed. The cost to become a member is \$10 a year. If you are not a member yet, send your \$10 membership fee to Darleen Kelly, P.O. Box 13, Galway, NY 12074. We keep our members informed by our newsletter, email, and mail when we have planned activities. You can also follow us on Facebook.

This year we are planning to hold two Food Drives to benefit the Greater Galway Food Pantry, dates to be determined. We will also soon be making our schedule of 2023 trips and theatre dates. Sue Olmstead hosts our Library in the Charlton Community Center every second Friday where Seniors can get and return books, puzzles, and DVDs. The Charlton Chatter Book Club meets the 3rd Wednesday of each month. Contact Lynn Barber at cminpinlover@aol.com or 518-399-9327 for more information. Together with the YMCA, we hold exercise classes at the Community Center.

Contact Wendy Shisler, President, at: shislew@gmail.com or 518-399-2303 if you have any questions.

Town of Charlton Storm Water Management Program Plan

Illicit Discharge Detection and Elimination

Activity Checklist

- The goal of Charlton's Illicit Discharge Detection and Elimination minimum control measure is to find, identify and eliminate non-stormwater discharges to the drainage system.
- Continue to maintain the MS4 outfall map – monitor land use changes to track stormwater hotspots, update dry weather observations.
- Conduct bi-annual observations of storm sewer system outfalls. Track consistency of discharges and perform site specific water testing where repeated flows occur.
- Continue laboratory testing of surface water at two watershed collection sites. Track changes in nine parameter pollutant profile to ensure that water quality does not degrade.
- Continue to inform public and town officials of the prohibition of discharges to storm system related to Local Law # 3 of 2007.

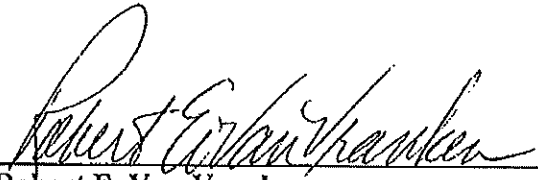
ROBERT E. VAN VRANKEN

**Town Attorney
Town of Charlton
227-229 Kingsley Road
Burnt Hills, New York 12027
(518) 399-2588
Facsimile (518) 399-2607**

CERTIFICATION

I hereby certify that I have reviewed Town of Charlton Local Law No. 2 enacted November 12, 2007 regarding storm water management, erosion, sediment control and post-construction storm water management. I have also reviewed Town of Charlton Local Law No. 3 enacted November 12, 2007 regarding Prohibiting Illicit Discharges, Activities and Connections to the Town of Charlton Separate Storm Sewer Systems. These Local Laws have been compared to the New York State Department of Environmental Conservation Model Local Laws for each of the subject matters and the Town of Charlton Local Laws are substantively and functionally equivalent, meeting the intent and letter of the NYSDEC SPDES Permit GP-02-02.

This certification is dated June 1, 2009.


Robert E. Van Vranken
Attorney for the Town of Charlton

LOCAL LAW NO. 3 OF THE YEAR 2007

TOWN OF CHARLTON LOCAL LAW TO PROHIBIT ILLICIT DISCHARGES, ACTIVITIES AND CONNECTIONS TO MUNICIPAL SEPARATE STORM SEWER SYSTEM(S)

SECTION 1. PURPOSE/INTENT.

The purpose of this law is to provide for the health, safety, and general welfare of the citizens of the Town of Charlton through the regulation of non-stormwater discharges to the municipal separate storm sewer system (MS4) to the maximum extent practicable as required by federal and state law. This law establishes methods for controlling the introduction of pollutants into the MS4 in order to comply with requirements of the SPDES General Permit for Municipal Separate Storm Sewer Systems. The objectives of this law are:

- 1.1 To meet the requirements of the SPDES General Permit for Stormwater Discharges from MS4s, Permit no. GP-02-02 or as amended or revised;
- 1.2 To regulate the contribution of pollutants to the MS4 since such systems are not designed to accept, process or discharge non-stormwater wastes;
- 1.3 To prohibit Illicit Connections, Activities and Discharges to the MS4;
- 1.4 To establish legal authority to carry out all inspection, surveillance and monitoring procedures necessary to ensure compliance with this law; and
- 1.5 To promote public awareness of the hazards involved in the improper discharge of trash, yard waste, lawn chemicals, pet waste, wastewater, grease, oil, petroleum products, cleaning products, paint products, hazardous waste, sediment and other pollutants into the MS4.

1.6

SECTION 2. DEFINITIONS.

Whenever used in this law, unless a different meaning is stated in a definition applicable to only a portion of this law, the following terms will have meanings set forth below:

- 2.1 Best Management Practices (BMPs). Schedules of activities, prohibitions of practices, general good house keeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to stormwater, receiving waters, or stormwater conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.
- 2.2 Clean Water Act. The Federal Water Pollution Control Act (33 U.S.C. §1251 et seq.), and any subsequent amendments thereto.

- 2.3 Construction Activity. Activities requiring authorization under the SPDES permit for stormwater discharges from construction activity, GP-02-01, as amended or revised. These activities include construction projects resulting in land disturbance of one or more acres. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.
- 2.4 Department. The New York State Department of Environmental Conservation.
- 2.5 Design professional. New York State licensed professional engineer or licensed architect.
- 2.6 Hazardous Materials. Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.
- 2.7 Illicit Connections. Any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the MS4, including but not limited to:
1. Any conveyances which allow any non-stormwater discharge including treated or untreated sewage, process wastewater, and wash water to enter the MS4 and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized enforcement agency; or
 2. Any drain or conveyance connected from a commercial or industrial land use to the MS4 which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.
- 2.8 Illicit Discharge. Any direct or indirect non-stormwater discharge to the MS4, except as exempted in Section 6 of this law.
- 2.9 Individual Sewage Treatment System. A facility serving one or more parcels of land or residential households, or a private, commercial or institutional facility, that treats sewage or other liquid wastes for discharge into the groundwaters of New York State, except where a permit for such a facility is required under the applicable provisions of Article 17 of the Environmental Conservation Law.
- 2.10 Industrial Activity. Activities requiring the SPDES permit for discharges from industrial activities except construction, GP-98-03, as amended or revised.
- 2.11 MS4. Municipal Separate Storm Sewer System.
- 2.12 Municipal Separate Storm Sewer System. A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):
1. Owned or operated by the Town of Charlton
 2. Designed or used for collecting or conveying stormwater;
 3. Which is not a combined sewer; and
 4. Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40CFR 122.2
- 2.13 Municipality. The Town of Charlton.
- 2.14 Non-Stormwater Discharge. Any discharge to the MS4 that is not composed entirely of stormwater.

- 2.15 Person. Any individual, association, organization, partnership, firm, corporation or other entity recognized by law and acting as either the owner or as the owner's agent.
- 2.16 Pollutant. Dredged spoil, filter backwash, solid waste, incinerator residue, treated or untreated sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards. This list is not exhaustive, and may be updated from time to time.
- 2.17 Premises. Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.
- 2.18 Special Conditions.
1. Discharge Compliance with Water Quality Standards. The condition that applies where a municipality has been notified that the discharge of stormwater authorized under their MS4 permit may have caused or has the reasonable potential to cause or contribute to the violation of an applicable water quality standard. Under this condition the municipality must take all necessary actions to ensure future discharges do not cause or contribute to a violation of water quality standards.
 2. 303(d) Listed Waters. The condition in the municipality's MS4 permit that applies where the MS4 discharges to a 303(d) listed water. Under this condition the stormwater management program must ensure no increase of the listed pollutant of concern to the 303(d) listed water.
 3. Total Maximum Daily Load (TMDL) Strategy. The condition in the municipality's MS4 permit where a TMDL including requirements for control of stormwater discharges has been approved by EPA for a waterbody or watershed into which the MS4 discharges. If the discharge from the MS4 did not meet the TMDL stormwater allocations prior to September 10, 2003, the municipality was required to modify its stormwater management program to ensure that reduction of the pollutant of concern specified in the TMDL is achieved.
 4. The condition in the municipality's MS4 permit that applies if a TMDL is approved in the future by EPA for any waterbody or watershed into which an MS4 discharges. Under this condition the municipality must review the applicable TMDL to see if it includes requirements for control of stormwater discharges. If an MS4 is not meeting the TMDL stormwater allocations, the municipality must, within six (6) months of the TMDL's approval, modify its stormwater management program to ensure that reduction of the pollutant of concern specified in the TMDL is achieved.
- 2.19 State Pollutant Discharge Elimination System (SPDES) Stormwater Discharge Permit. A permit issued by the Department that authorizes the discharge of pollutants to waters of the state.
- 2.20 Stormwater. Rainwater, surface runoff, snowmelt and drainage.
- 2.21 Stormwater Management Officer (SMO). An employee, the municipal engineer or other public official(s) designated by the Town of Charlton to enforce this local law. The SMO may also be designated by the municipality to accept and review stormwater pollution prevention plans, forward the plans to the applicable municipal board and inspect

- stormwater management practices.
- 2.22 303(d) List. A list of all surface waters in the state for which beneficial uses of the water (drinking, recreation, aquatic habitat, and industrial use) are impaired by pollutants, prepared periodically by the Department as required by Section 303(d) of the Clean Water Act. 303(d) listed waters are estuaries, lakes and streams that fall short of state surface water quality standards and are not expected to improve within the next two years.
- 2.23 TMDL. Total Maximum Daily Load.
- 2.24 Total Maximum Daily Load. The maximum amount of a pollutant to be allowed to be released into a waterbody so as not to impair uses of the water, allocated among the sources of that pollutant.
- 2.25 Wastewater. Water that is not stormwater, is or may be contaminated with pollutants and is or will be discarded.

SECTION 3. APPLICABILITY.

This law shall apply to all water entering the MS4 generated on any developed and undeveloped lands unless explicitly exempted by an authorized enforcement agency.

SECTION 4. RESPONSIBILITY FOR ADMINISTRATION.

The Stormwater Management Officer(s) (SMO(s)) shall administer, implement, and enforce the provisions of this law. Such powers granted or duties imposed upon the authorized enforcement official may be delegated in writing by the SMO as may be authorized by the municipality.

SECTION 5. SEVERABILITY.

The provisions of this law are hereby declared to be severable. If any provision, clause, sentence, or paragraph of this law or the application thereof to any person, establishment, or circumstances shall be held invalid, such invalidity shall not affect the other provisions or application of this law.

SECTION 6. DISCHARGE PROHIBITIONS.

6.1 Prohibition of Illegal Discharges.

No person shall discharge or cause to be discharged into the MS4 any materials other than stormwater except as provided in Section 6.1.1. The commencement, conduct or continuance of any illegal discharge to the MS4 is prohibited except as described as follows:

- 6.1.1 The following discharges are exempt from discharge prohibitions established by this local law, unless the Department or the municipality has determined them to be substantial contributors of pollutants: water line flushing or other potable water sources, landscape irrigation or lawn watering, existing diverted stream flows, rising ground water, uncontaminated ground water infiltration to stormdrains,

uncontaminated pumped ground water, foundation or footing drains, crawl space or basement sump pumps, air conditioning condensate, irrigation water, springs, water from individual residential car washing, natural riparian habitat or wetland flows, dechlorinated swimming pool discharges, residential street wash water, water from fire fighting activities, and any other water source not containing pollutants. Such exempt discharges shall be made in accordance with an appropriate plan for reducing pollutants.

- 6.1.2 Discharges approved in writing by the SMO to protect life or property from imminent harm or damage, provided that, such approval shall not be construed to constitute compliance with other applicable laws and requirements, and further provided that such discharges may be permitted for a specified time period and under such conditions as the SMO may deem appropriate to protect such life and property while reasonably maintaining the purpose and intent of this local law.
- 6.1.3 Dye testing in compliance with applicable state and local laws is an allowable discharge, but requires a verbal notification to the SMO prior to the time of the test.
- 6.1.4 The prohibition shall not apply to any discharge permitted under a SPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Department, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the MS4.

6.2 Prohibition of Illicit Connections.

- 6.2.1 The construction, use, maintenance or continued existence of illicit connections to the MS4 is prohibited.
- 6.2.2 This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.
- 6.2.3 A person is considered to be in violation of this local law if the person connects a line conveying sewage or any other pollutant to the municipality's MS4, or allows such a connection to continue.

SECTION 7. PROHIBITION AGAINST FAILING INDIVIDUAL SEWAGE TREATMENT SYSTEMS

No persons shall operate a failing individual sewage treatment system in areas tributary to the municipality's MS4. A failing individual sewage treatment system is one which has one or more of the following conditions:

- 7.1 The backup of sewage into a structure.
- 7.2 Discharges of treated or untreated sewage onto the ground surface.
- 7.3 A connection or connections to a separate stormwater sewer system.
- 7.4 Liquid level in the septic tank above the outlet invert.
- 7.5 Structural failure of any component of the individual sewage treatment system that could

- lead to any of the other failure conditions as noted in this section.
- 7.6 Contamination of off-site groundwater.

SECTION 8. PROHIBITION AGAINST ACTIVITIES CONTAMINATING STORMWATER

- 8.1 Activities that are subject to the requirements of this section are those types of activities that:
- 8.1.1 Cause or contribute to a violation of the municipality's MS4 SPDES permit.
 - 8.1.2 Cause or contribute to the municipality being subject to the Special Conditions as defined in Section 2 (Definitions) of this local law.
- 8.2 Such activities include failing individual sewage treatment systems as defined in Section 7, improper management of pet or farm animal waste or any other activity that causes or contributes to violations of the municipality's MS4 SPDES permit authorization.
- 8.3 Upon notification to a person that he or she is engaged in activities that cause or contribute to violations of the municipality's MS4 SPDES permit authorization, that person shall take all reasonable actions to correct such activities such that he or she no longer causes or contributes to violations of the municipality's MS4 SPDES permit authorization.

SECTION 9. REQUIREMENT TO PREVENT, CONTROL, AND REDUCE STORMWATER POLLUTANTS BY THE USE OF BEST MANAGEMENT PRACTICES.

- 9.1 Best Management Practices
Where the SMO has identified illicit discharges as defined in Section 2 or activities contaminating stormwater as defined in Section 8, the municipality may require implementation of Best Management Practices (BMPs) to control those illicit discharges and activities.
- 9.1.1 The owner or operator of a commercial or industrial establishment shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the MS4 through the use of structural and non-structural BMPs.
 - 9.1.2 Any person responsible for a property or premise, which is, or may be, the source of an illicit discharge as defined in Section 2 or an activity contaminating stormwater as defined in Section 8, may be required to implement, at said person's expense, additional structural and non-structural BMPs to reduce or eliminate the source of pollutant(s) to the MS4.
 - 9.1.3 Compliance with all terms and conditions of a valid SPDES permit authorizing the discharge of stormwater associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this section.
- 9.2 Individual Sewage Treatment Systems - Response to Special Conditions Requiring No Increase of Pollutants or Requiring a Reduction of Pollutants.

Where individual sewage treatment systems are contributing to the municipality's being subject to the Special Conditions as defined in Section 2 of this local law, the owner or operator of such individual sewage treatment systems shall be required to:

9.2.1 Maintain and operate individual sewage treatment systems as follows:

1. Inspect the septic tank annually to determine scum and sludge accumulation. Septic tanks must be pumped out whenever the bottom of the scum layer is within three inches of the bottom of the outlet baffle or sanitary tee or the top of the sludge is within ten inches of the bottom of the outlet baffle or sanitary tee.
2. Avoid the use of septic tank additives.
3. Avoid the disposal of excessive quantities of detergents, kitchen wastes, laundry wastes, and household chemicals; and
4. Avoid the disposal of cigarette butts, disposable diapers, sanitary napkins, trash and other such items.

9.2.2 Repair or replace individual sewage treatment systems as follows:

1. In accordance with 10NYCRR Appendix 75A to the maximum extent practicable.
2. A design professional licensed to practice in New York State shall prepare design plans for any type of absorption field that involves:
 1. Relocating or extending an absorption area to a location not previously approved for such.
 2. Installation of a new subsurface treatment system at the same location.
 3. Use of alternate system or innovative system design or technology.
3. A written certificate of compliance shall be submitted by the design professional to the municipality at the completion of construction of the repair or replacement system.

SECTION 10. SUSPENSION OF ACCESS TO MS4.

Illicit Discharges in Emergency Situations.

- 10.1 The SMO may, without prior notice, suspend MS4 discharge access to a person when such suspension is necessary to stop an actual or threatened discharge which presents or may present imminent and substantial danger to the environment, to the health or welfare of persons, or to the MS4. The SMO shall notify the person of such suspension within a reasonable time thereafter in writing of the reasons for the suspension. If the violator fails to comply with a suspension order issued in an emergency, the SMO may take such steps as deemed necessary to prevent or minimize damage to the MS4 or to minimize danger to persons.

- 10.2 Suspension due to the detection of illicit discharge. Any person discharging to the municipality's MS4 in violation of this law may have their MS4 access terminated if such termination would abate or reduce an illicit discharge. The SMO will notify a violator in writing of the proposed termination of its MS4 access and the reasons therefor. The violator may petition the SMO for a reconsideration and hearing. Access may be granted by the SMO if he/she finds that the illicit discharge has ceased and the discharger has taken steps to prevent its recurrence. Access may be denied if the SMO determines in writing that the illicit discharge has not ceased or is likely to recur. A person commits an offense if the person reinstates MS4 access to premises terminated pursuant to this Section, without the prior approval of the SMO.

SECTION 11. INDUSTRIAL OR CONSTRUCTION ACTIVITY DISCHARGES.

Any person subject to an industrial or construction activity SPDES stormwater discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to the municipality prior to the allowing of discharges to the MS4.

SECTION 12. ACCESS AND MONITORING OF DISCHARGES.

- 12.1 Applicability. This section applies to all facilities that the SMO must inspect to enforce any provision of this Law, or whenever the authorized enforcement agency has cause to believe that there exists, or potentially exists, in or upon any premises any condition which constitutes a violation of this Law.
- 12.2 Access to Facilities.
- 12.2.1 The SMO shall be permitted to enter and inspect facilities subject to regulation under this law as often as may be necessary to determine compliance with this Law. If a discharger has security measures in force which require proper identification and clearance before entry into its premises, the discharger shall make the necessary arrangements to allow access to the SMO.
- 12.2.2 Facility operators shall allow the SMO ready access to all parts of the premises for the purposes of inspection, sampling, examination and copying of records as may be required to implement this law.
- 12.2.3 The municipality shall have the right to set up on any facility subject to this law such devices as are necessary in the opinion of the SMO to conduct monitoring and/or sampling of the facility's stormwater discharge.
- 12.2.4 The municipality has the right to require the facilities subject to this law to install monitoring equipment, at the facility's cost and expense, as is reasonably necessary to determine compliance with this law. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the discharger at its own expense. All devices used to measure stormwater flow and quality shall be calibrated to ensure their accuracy.
- 12.2.5 Unreasonable delays in allowing the municipality access to a facility subject to

this law is a violation of this law. A person who is the operator of a facility subject to this law commits an offense if the person denies the municipality reasonable access to the facility for the purpose of conducting any activity authorized or required by law.

- 12.2.6 If the SMO has been refused access to any part of the premises from which stormwater is discharged, and he/she is able to demonstrate probable cause to believe that there may be a violation of this law, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this law or any order issued hereunder, then the SMO may seek issuance of a search warrant from any court of competent jurisdiction.

SECTION 13. NOTIFICATION OF SPILLS.

Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into the MS4, said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the municipality in person or by telephone or facsimile no later than the next business day. Notifications in person or by telephone shall be confirmed by written notice addressed and mailed to the municipality within three (3) business days of the telephone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

SECTION 14. ENFORCEMENT.

14.1 Notice of Violation.

When the municipality's SMO finds that a person has violated a prohibition or failed to meet a requirement of this law, he/she may order compliance by written notice of violation to the responsible person. Such notice may require without limitation:

- 14.1.1 The elimination of illicit connections or discharges,
- 14.1.2 That violating discharges, practices, or operations shall cease and desist;
- 14.1.3 The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property;
- 14.1.4 The performance of monitoring, analyses, and reporting;
- 14.1.5 Payment of a fine; and
- 14.1.6 The implementation of source control or treatment BMPs.

If abatement of a violation and/or restoration of affected property is required, the notice

shall set forth a deadline within which such remediation or restoration must be completed. Said notice shall further advise that, should the violator fail to remediate or restore within the established deadline, the work will be done by a designated governmental agency or a contractor and the expense thereof shall be charged to the violator.

14.2 Penalties

In addition to or as an alternative to any penalty provided herein or by law, any person who violates the provisions of this local law shall be guilty of a violation punishable by a fine not exceeding three hundred fifty dollars (\$350.00) or imprisonment for a period not to exceed six (6) months, or both for conviction of a first offense; for conviction of a second offense both of which were committed within a period of five (5) years, punishable by a fine not less than three hundred fifty dollars nor more than seven hundred dollars (\$700.00) or imprisonment for a period not to exceed six months, or both; and upon conviction for a third or subsequent offense all of which were committed within a period of five years, punishable by a fine not less than seven hundred dollars nor more than one thousand dollars (\$1000.00) or imprisonment for a period not to exceed six months, or both. However, for the purposes of conferring jurisdiction upon courts and judicial officers generally, violations of this local law shall be deemed misdemeanors and for such purpose only all provisions of law relating to misdemeanors shall apply to such violations. Each week's continued violation shall constitute a separate additional violation.

SECTION 15. APPEAL OF NOTICE OF VIOLATION.

Any person receiving a Notice of Violation may appeal the determination of the SMO to the Town Board within 15 days of its issuance, which shall hear the appeal within 30 days after the filing of the appeal, and within five days of making its decision, file its decision in the office of the municipal clerk and mail a copy of its decision by certified mail to the discharger.

SECTION 16. CORRECTIVE MEASURES AFTER APPEAL.

- 16.1 If the violation has not been corrected pursuant to the requirements set forth in the Notice of Violation, or, in the event of an appeal, within 5 business days of the decision of the municipal authority upholding the decision of the SMO, then the SMO shall request the owner's permission for access to the subject private property to take any and all measures reasonably necessary to abate the violation and/or restore the property.
- 16.2 If refused access to the subject private property, the SMO may seek a warrant in a court of competent jurisdiction to be authorized to enter upon the property to determine whether a violation has occurred. Upon determination that a violation has occurred, the SMO may seek a court order to take any and all measures reasonably necessary to abate the violation and/or restore the property. The cost of implementing and maintaining such measures shall be the sole responsibility of the discharger.

SECTION 17. INJUNCTIVE RELIEF.

It shall be unlawful for any person to violate any provision or fail to comply with any of the

requirements of this law. If a person has violated or continues to violate the provisions of this law, the SMO may petition for a preliminary or permanent injunction restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation.

SECTION 18. ALTERNATIVE REMEDIES.

18.1 Where a person has violated a provision of this Law, he/she may be eligible for alternative remedies in lieu of a civil penalty, upon recommendation of the Municipal Attorney and concurrence of the Municipal Code Enforcement Office, where:

- 18.1.1 The violation was unintentional,
- 18.1.2 The violator has no history of previous violations of this Law,
- 18.1.3 Environmental damage was minimal,
- 18.1.4 Violator acted quickly to remedy violation, and
- 18.1.5 Violator cooperated in investigation and resolution.

18.2 Alternative remedies may consist of one or more of the following:

- 18.2.1 Attendance at compliance workshops.
- 18.2.2 Storm drain stenciling or storm drain marking.
- 18.2.3 River, stream or creek cleanup activities.

SECTION 19. VIOLATIONS DEEMED A PUBLIC NUISANCE.

In addition to the enforcement processes and penalties provided, any condition caused or permitted to exist in violation of any of the provisions of this law is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense, and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken.

SECTION 20. REMEDIES NOT EXCLUSIVE.

The remedies listed in this law are not exclusive of any other remedies available under any applicable federal, state or local law and it is within the discretion of the authorized enforcement agency to seek cumulative remedies.

SECTION 21. ADOPTION OF LAW.

This law shall take effect immediately upon filing with the State. All prior laws and parts of law in conflict with this law are hereby superceded.

I certify that this is a true and exact copy of this original as passed by the Town Board of the Town of Charlton on March 12, 2007.

Heather Scribner, Charlton Town Clerk

TOWN OF CHARLTON

**New York State Department of Environmental Conservation
SPDES General Permit Coverage
For
Municipal Separate Storm Sewer Systems**

Permit # NYR20A032

STORM WATER MANAGEMENT PROGRAM

PROCEDURES FOR DRY WEATHER STORM OUTFALL OBSERVATIONS

AS PART OF THE ILLICIT DISCHARGE DETECTION & ELIMINATION PROGRAM

Date: October 2023



Town of Charlton
784 Charlton Road
Charlton, New York 12019
Telephone: (518) 384-0152
Fax (518) 384-0385

**STORM OUTFALL
DRY WEATHER OBSERVATION
AND FOLLOW UP PROCEDURES**

October 2023

- Dry weather observations will be made twice per year during the spring (April or May) and during autumn (September or October).
- Observations will be made by the Town Highway Superintendent or an appointed representative.
- Observations will be made within Town rights of way.
- Observations are to be made during the afternoon and on days when there has been no measurable rainfall in the previous 48 hours according to a local weather reporting station.
- Visual observations are to be made at each of 20 outfall locations as identified on the Town of Charlton MS4 map.
- Observations are to be recorded on the dry weather reporting form and will be added to the MS4 map annually.
- Any observed discharges will be noted as to the approximate depth, velocity and water quality characteristics such as turbidity, odor, color and general appearance of the downstream drainage corridor.
- Observed discharges will prompt further immediate observation upstream from the discharge point. To the extent possible, the source of flow will be determined and noted.
- Any discharge where the flow source can't be determined and where there is not an immediate concern based on its observable characteristics, will be flagged for additional monitoring. If the same outfall exhibits unknown discharges for four consecutive dry weather observations, water quality testing at that location will be conducted to determine if an illicit discharge is present.
- If water quality testing performed on an outfall confirms purity, the volume of discharge noted at that location will be deemed to be a base flow and further testing of that outfall will not be conducted unless a notable increase in that base flow is recorded for two more consecutive observations.

**TOWN OF CHARLTON
DRY WEATHER OUTFALL OBSERVATION
REPORTING FORM**

Date of Observation: _____ Weather Station ID: _____
Last Reported Rainfall: _____ Rain Amount: _____
Observed By: _____ Page # of #: _____
Last Observation: _____ Previous Discharges Locations: _____

=====

Outfall Number per MS4 Map: _____ Discharge Noted (yes/no) _____

Comments: _____

Outfall Number per MS4 Map: _____ Discharge Noted (yes/no) _____

Comments: _____

Outfall Number per MS4 Map: _____ Discharge Noted (yes/no) _____

Comments: _____

Outfall Number per MS4 Map: _____ Discharge Noted (yes/no) _____

Comments: _____

Outfall Number per MS4 Map: _____ Discharge Noted (yes/no) _____

Comments: _____

Town of Charlton Storm Water Management Program Plan

Construction Site Runoff Post-Construction Runoff Control

Activity Checklist

- The goal of Charlton's Construction Site Runoff and Post-Construction Runoff Control minimum control measure is to ensure that provisions for sediment and erosion control from construction sites are followed, ensure that permanent stormwater management facilities are constructed when required and to ensure that those facilities are maintained and operated as designed.
- Continue review of development projects by Planning Board and town engineering consultants – evaluate specific environmental constraints at each proposed action and adjust plans accordingly.
- Continue to ensure the use of permanent storm water management treatment facilities for applicable development projects – institute perpetual care agreements or require public dedication to promote long term health of treatment facilities.
- Continue municipal review of temporary mitigation efforts used during construction to combat erosion – review written storm water pollution prevention plans and erosion and sediment control plan drawings.
- Issue approvals of developer SWPPP and erosion control plans in accordance with New York State requirements.
- Supervise field conditions of construction projects – ensure project developers are conducting self inspection and are maintaining required records.
- Continue implementation of small construction program – provide continued training to Zoning Administrator on use of check list and fact sheet to determine any necessary permits. Continue distribution of sample erosion control methods to small project contractors and field critique of site conditions.
- Continue to inform the public and town officials of the provisions of Local Law #2 of 2007 requiring compliance with New York State guidelines for erosion and sediment control and storm water management treatment and attenuation.

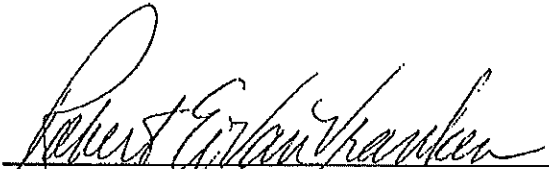
ROBERT E. VAN VRANKEN

Town Attorney
Town of Charlton
227-229 Kingsley Road
Burnt Hills, New York 12027
(518) 399-2588
Facsimile (518) 399-2607

CERTIFICATION

I hereby certify that I have reviewed Town of Charlton Local Law No. 2 enacted November 12, 2007 regarding storm water management, erosion, sediment control and post-construction storm water management. I have also reviewed Town of Charlton Local Law No. 3 enacted November 12, 2007 regarding Prohibiting Illicit Discharges, Activities and Connections to the Town of Charlton Separate Storm Sewer Systems. These Local Laws have been compared to the New York State Department of Environmental Conservation Model Local Laws for each of the subject matters and the Town of Charlton Local Laws are substantively and functionally equivalent, meeting the intent and letter of the NYSDEC SPDES Permit GP-02-02.

This certification is dated June 1, 2009.


Robert E. Van Vranken
Attorney for the Town of Charlton

LOCAL LAW NO. 2 OF THE YEAR 2007

**TOWN OF CHARLTON
LOCAL LAW
FOR
STORMWATER MANAGEMENT AND EROSION & SEDIMENT CONTROL**

**A LOCAL LAW TO AMEND THE SITE PLAN, ZONING, SUBDIVISION, AND
EROSION AND SEDIMENT CONTROL LAWS OF THE TOWN OF CHARLTON.**

Be it enacted by the Town Board of the Town of Charlton as follows:

ARTICLE 1. GENERAL PROVISIONS

Section 1. Findings of Fact

It is hereby determined that:

- 1.1 Land development activities and associated increases in site impervious cover often alter the hydrologic response of local watersheds and increase stormwater runoff rates and volumes, flooding, stream channel erosion, or sediment transport and deposition;
- 1.2 This stormwater runoff contributes to increased quantities of water-borne pollutants, including siltation of aquatic habitat for fish and other desirable species;
- 1.3 Clearing and grading during construction tends to increase soil erosion and add to the loss of native vegetation necessary for terrestrial and aquatic habitat;
- 1.4 Improper design and construction of stormwater management practices can increase the velocity of stormwater runoff thereby increasing stream bank erosion and sedimentation;
- 1.5 Impervious surfaces allow less water to percolate into the soil, thereby decreasing groundwater recharge and stream baseflow;
- 1.6 Substantial economic losses can result from these adverse impacts on the waters of the municipality;
- 1.7 Stormwater runoff, soil erosion and nonpoint source pollution can be controlled and minimized through the regulation of stormwater runoff from land development activities;

- 1.8 The regulation of stormwater runoff discharges from land development activities in order to control and minimize increases in stormwater runoff rates and volumes, soil erosion, stream channel erosion, and nonpoint source pollution associated with stormwater runoff is in the public interest and will minimize threats to public health and safety.
- 1.9 Regulation of land development activities by means of performance standards governing stormwater management and site design will produce development compatible with the natural functions of a particular site or an entire watershed and thereby mitigate the adverse effects of erosion and sedimentation from development.

Section 2. Purpose

The purpose of this local law is to establish minimum stormwater management requirements and controls to protect and safeguard the general health, safety, and welfare of the public residing within this jurisdiction and to address the findings of fact in Section 1 hereof. This local law seeks to meet those purposes by achieving the following objectives:

- 2.1 Meet the requirements of minimum measures 4 and 5 of the SPDES General Permit for Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s), Permit no. GP-02-02 currently in effect or as amended or revised from time to time;
- 2.2 Require land development activities to conform to the substantive requirements of the NYS Department of Environmental Conservation State Pollutant Discharge Elimination System (SPDES) General Permit for Construction Activities GP-02-01 currently in effect or as amended or revised from time to time;
- 2.3 Minimize increases in stormwater runoff from land development activities in order to reduce flooding, siltation, increase in stream temperature, and streambank erosion and maintain the integrity of stream channels;
- 2.4 Minimize increases in pollution caused by stormwater runoff from land development activities which would otherwise degrade local water quality;
- 2.5 Minimize the total annual volume of stormwater runoff which flows from any specific site during and following development to the maximum extent practicable; and
- 2.6 Reduce stormwater runoff rates and volumes, soil erosion and nonpoint source pollution, wherever possible, through stormwater management practices and to ensure that these management practices are properly maintained and eliminate threats to public safety.

Section 3. Statutory Authority

In accordance with Article 10 of the Municipal Home Rule Law of the State of New York, the

Town Board of Charlton has the authority to enact local laws and amend local laws and for the purpose of promoting the health, safety or general welfare of the Town of Charlton and for the protection and enhancement of its physical environment. The Town Board of Charlton may include in any such local law provisions for the appointment of any municipal officer, employees, or independent contractor to effectuate, administer and enforce such local law.

Section 4. Applicability

- 4.1** This local law shall be applicable to all land development activities as defined in this local law, Article 2, Section 1.
- 4.2** The municipality shall designate a Stormwater Management Officer who shall accept and review all stormwater pollution prevention plans and forward such plans to the applicable municipal board. The Stormwater Management Office may (1) review the plans, (2) upon approval by the Town Board of the Town of Charlton, engage the services of a registered professional engineer to review the plans, specifications and related documents at a cost not to exceed a fee schedule established by said governing board, or (3) accept the certification of a licensed professional that the plans conform to the requirements of this law.
- 4.3** All land development activities subject to review and approval by the Town Board of Charlton, Town of Charlton Planning Board, and/or Town of Charlton Building Inspector under Town (subdivision, site plan, erosion control and/or special permit) regulations shall be reviewed subject to the standards contained in this local law.
- 4.4** All land development activities not subject to review as stated in section 4.3 shall be required to submit a Stormwater Pollution Prevention Plan (SWPPP) to the Stormwater Management Officer who shall approve the SWPPP if it complies with the requirements of this law.

Section 5. Exemptions

The following activities may be exempt from review under this law.

- 5.1** Agricultural activity as defined in this local law.
- 5.2** Silvicultural activity except that landing areas and log haul roads are subject to this law.
- 5.3** Routine maintenance activities that disturb less than five acres and are performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility.
- 5.4** Repairs to any stormwater management practice or facility deemed necessary by the Stormwater Management Officer.

- 5.5 Any part of a subdivision if a plat for the subdivision has been approved by the Town of Charlton on or before the effective date of this law.
- 5.6 Land development activities for which a building permit has been approved on or before the effective date of this law.
- 5.7 Cemetery graves.
- 5.8 Installation of fence, sign, telephone, and electric poles and other kinds of posts or poles.
- 5.9 Emergency activity immediately necessary to protect life, property or natural resources.
- 5.10 Activities of an individual engaging in home gardening by growing flowers, vegetable and other plants primarily for use by that person and his or her family.
- 5.11 Landscaping and horticultural activities in connection with an existing structure.

ARTICLE 2. ZONING LAW AMENDMENT: STORMWATER CONTROL

The Zoning Laws of the Town of Charlton, are hereby amended to include Appendix B-13, a new supplemental regulation titled "Stormwater Control", to include, or reference, this law.

Section 1. Definitions

The terms used in this local law or in documents prepared or reviewed under this local law shall have the meaning as set forth in this section.

Agricultural Activity - the activity of an active farm including grazing and watering livestock, irrigating crops, harvesting crops, using land for growing agricultural products, and cutting timber for sale, but shall not include the operation of a dude ranch or similar operation, or the construction of new structures associated with agricultural activities.

Applicant - a property owner or agent of a property owner who has filed an application for a land development activity.

Building - any structure, either temporary or permanent, having walls and a roof, designed for the shelter of any person, animal, or property, and occupying more than 100 square feet of area.

Channel - a natural or artificial watercourse with a definite bed and banks that conducts continuously or periodically flowing water.

Clearing - any activity that removes the vegetative surface cover.

Contractor - any person or entity actually doing and/or completing the work on behalf of a developer, property owner, or other third-party.

Dedication - the deliberate appropriation of property by its owner for general public use.

Department - the New York State Department of Environmental Conservation

Design Manual - the *New York State Stormwater Management Design Manual*, most recent version including applicable updates, that serves as the official guide for stormwater management principles, methods and practices.

Developer - a person or entity which undertakes land development activities.

Erosion Control Manual - the most recent version of the "New York Standards and Specifications for Erosion and Sediment Control" manual, commonly known as the "Blue Book".

Grading - excavation or fill of material, including the resulting conditions thereof.

Impervious Cover - those surfaces, improvements and structures that cannot effectively infiltrate rainfall, snow melt and water (e.g., building rooftops, pavement, sidewalks, driveways, etc).

Industrial Stormwater Permit - a State Pollutant Discharge Elimination System permit issued to a commercial industry or group of industries which regulates the pollutant levels associated with industrial stormwater discharges or specifies on-site pollution control strategies.

Infiltration - the process of percolating stormwater into the subsoil.

Jurisdictional Wetland - an area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation. Jurisdictional wetlands, shall also include those designated by State and Federal regulations and guidelines.

Land Development Activity - construction activity including clearing, grading, excavating, soil disturbance or placement of fill that results in land disturbance of equal to or greater than one acre, or activities disturbing less than one acre of total land area that is part of a larger common plan of development or sale, even though multiple separate and distinct land development activities may take place at different times on different schedules.

Landowner - the legal or beneficial owner of land, including those holding the right to purchase or lease the land, or any other person holding proprietary rights in the land.

Maintenance Agreement - a legally recorded document that acts as a property deed restriction,

and which provides for long-term maintenance of stormwater management practices.

Nonpoint Source Pollution - pollution from any source other than from any discernible, confined, and discrete conveyances, and shall include, but not be limited to, pollutants from agricultural, silvicultural, mining, construction, subsurface disposal and urban runoff sources.

Phasing - clearing a parcel of land in distinct pieces or parts, with the stabilization of each piece completed before the clearing of the next.

Pollutant of Concern - sediment or a water quality measurement that addresses sediment (such as total suspended solids, turbidity or siltation) and any other pollutant that has been identified as a cause of impairment of any water body that will receive a discharge from the land development activity.

Project - any land development activity.

Recharge - the replenishment of underground water reserves.

Sediment Control - measures that prevent eroded sediment from leaving the site.

Sensitive Areas - cold water fisheries, shellfish beds, swimming beaches, groundwater recharge areas, water supply reservoirs, habitats for threatened, endangered or special concern species.

SPDES General Permit for Stormwater Discharges from Municipal Separate Stormwater

Sewer Systems GP-02-02 - A permit under the New York State Pollutant Discharge Elimination System (SPDES) issued to municipalities to regulate discharges from municipal separate storm sewers for compliance with EPA established water quality standards and/or to specify stormwater control standards.

Stabilization - the use of practices that prevent exposed soil from eroding.

Stop Work Order - an order issued which requires that all construction activity on a site be stopped, either temporarily, or permanently.

Stormwater - rainwater, surface runoff, snowmelt and drainage.

Stormwater Hotspot - a land use or activity that generates higher concentrations of hydrocarbons, trace metals or toxicants than are found in typical stormwater runoff, based on monitoring studies.

Stormwater Management - the use of structural or non-structural practices that are designed to reduce stormwater runoff and mitigate its adverse impacts on property, natural resources and the environment.

Stormwater Management Facility - one or a series of stormwater management practices installed, stabilized and operating for the purpose of controlling stormwater runoff.

Stormwater Management Officer - an employee or officer designated by the municipality to accept and review stormwater pollution prevention plans, forward the plans to the applicable municipal board, and inspect stormwater management practices.

Stormwater Management Practices (SMPs) - measures, either structural or nonstructural, that are determined to be the most effective, practical means of preventing flood damage and preventing or reducing point source or nonpoint source pollution inputs to stormwater runoff and water bodies.

Stormwater Pollution Prevention Plan (SWPPP) - a plan for controlling stormwater runoff and pollutants from a site during and after construction activities.

Stormwater Runoff - flow on the surface of the ground, resulting from precipitation.

Surface Waters of the State of New York - lakes, bays, sounds, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface or underground waters), which are wholly or partially within or bordering the State or within its jurisdiction.

Storm sewers and waste treatment systems, including treatment ponds or lagoons which also meet the criteria of this definition are not waters of the state. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the State (such as a disposal area in wetlands) nor resulted from impoundment of waters of the State.

Watercourse - a permanent or intermittent stream or other body of water, either natural or man-made, which gathers or carries surface water.

Waterway - a channel that directs surface runoff to a watercourse or to the public storm drain.

Section 2. Stormwater Pollution Prevention Plans

2.1. Stormwater Pollution Prevention Plan Requirement

No application for approval of a land development activity shall be reviewed or approved until the appropriate board or designated officer in the Town has received a satisfactory, complete, and acceptable Stormwater Pollution Prevention Plan (SWPPP) prepared in accordance with the specifications in this local law.

2.2 Contents of Stormwater Pollution Prevention Plans

2.2.1 All SWPPP's shall provide the following background information and erosion and sediment controls:

1. Background information about the scope of the project, including location, type and size of project.
2. Site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map should show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); wetlands and drainage patterns that could be affected by the construction activity; existing and final slopes; locations of off-site material, waste, borrow or equipment storage areas; and location(s) of the stormwater discharge(s);
3. Description of the soil(s) present at the site;
4. Construction phasing plan describing the intended sequence of construction activities, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance. Consistent with the New York Standards and Specifications for Erosion and Sediment Control (Erosion Control Manual), not more than five (5) acres shall be disturbed at any one time unless pursuant to an approved SWPPP.
5. Description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a pollutant source in stormwater runoff;
6. Description of construction and waste materials expected to be stored on-site with updates as appropriate, and a description of controls to reduce pollutants from these materials including storage practices to minimize exposure of the materials to stormwater, and spill prevention and response;
7. Temporary and permanent structural and vegetative measures to be used for soil stabilization, runoff control and sediment control for each stage of the project from initial land clearing and grubbing to project close-out;
8. A site map/construction drawing(s) specifying location(s), size(s), and length(s) of each erosion and sediment control practice;

9. Dimensions, material specifications and installation details for all erosion and sediment control practices, including the siting and sizing of any temporary sediment basins;
10. Temporary practices that will be converted to permanent control measures;
11. Implementation schedule for staging temporary erosion and sediment control practices, including the timing of initial placement and duration that each practice should remain in place;
12. Maintenance schedule to ensure continuous and effective operation of the erosion and sediment control practice;
13. Name(s) of the receiving water(s);
14. Delineation of SWPPP implementation responsibilities for each part of the site;
15. Description of structural practices designed 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; and
16. Any existing data that describes the stormwater runoff at the site.

- 2.2.2 Land development activities as defined in Section 1 of this Article and meeting Condition "A", "B" or "C" below shall also include water quantity and water quality controls (post-construction stormwater runoff controls) as set forth in Section 2.2.3 below as applicable.

Condition A - Stormwater runoff from land development activities discharging a pollutant of concern to either an impaired water identified on the Department's 303(d) list of impaired waters or a Total Maximum Daily Load (TMDL) designated watershed for which pollutants in stormwater have been identified as a source of the impairment.

Condition B - Stormwater runoff from land development activities disturbing five (5) or more acres.

Condition C - Stormwater runoff from land development activity disturbing between one (1) and five (5) acres of land during the course of the project, exclusive of the construction of single family residences and construction activities at agricultural properties.

- 2.2.3 SWPP Requirements for Condition A, B and C:

1. All information in Section 2.2.1 of this local law;
2. Description of each post-construction stormwater management practice;

3. Site map/construction drawing(s) showing the specific location(s) and size(s) of each post-construction stormwater management practice;
4. Hydrologic and hydraulic analysis for all structural components of the stormwater management system for the applicable design storms;
5. Comparison of post-development stormwater runoff conditions with pre-development conditions;
6. Dimensions, material specifications and installation details for each post-construction stormwater management practice;
7. Maintenance schedule to ensure continuous and effective operation of each post-construction stormwater management practice;
8. Maintenance easements to ensure access to all stormwater management practices at the site for the purpose of inspection and repair. Easements shall be recorded on the plan and shall remain in effect with transfer of title to the property;
9. Inspection and maintenance agreement binding on all subsequent landowners served by the on-site stormwater management measures in accordance with Article 2, Section 4, of this local law.

2.3 Plan Certification

The SWPP shall be prepared by a landscape architect or professional engineer, acceptable to the Town, and must be signed by the professional preparing the plan, who shall certify that the design of all stormwater management practices meet the requirements of this local law.

2.4 Other Environmental Permits

The applicant shall assure that all other applicable environmental permits have been or will be acquired for the land development activity prior to approval of the final stormwater design plan.

2.5 Contractor Certification

- 2.5.1 Each contractor and subcontractor identified in the SWPPP who will be involved in soil disturbance and/or stormwater management practice installation shall sign and date a copy of the following certification statement before undertaking any land development activity: "I certify under penalty of law that I understand and agree to comply with the terms and conditions of the Stormwater Pollution Prevention Plan. I also understand that it is unlawful for any person to cause or

contribute to a violation of water quality standards.”

2.5.2 The certification must include the name and title of the person providing the signature, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification is made.

2.5.3 The certification statement(s) shall become part of the SWPPP for the land development activity.

2.6 A copy of the SWPPP shall be retained at the site of the land development activity during construction from the date of initiation of construction activities to the date of final stabilization.

Section 3. Performance and Design Criteria for Stormwater Management and Erosion and Sediment Control

All land development activities shall be subject to the following performance and design criteria:

3.1 Technical Standards

For the purpose of this local law, the following documents shall serve as the official guides and specifications for stormwater management. Stormwater management practices that are designed and constructed in accordance with these technical documents shall be presumed to meet the standards imposed by this law:

3.1.1 The New York State Stormwater Management Design Manual (New York State Department of Environmental Conservation, most current version or its successor, hereafter referred to as the Design Manual)

3.1.2 New York Standards and Specifications for Erosion and Sediment Control, (Empire State Chapter of the Soil and Water Conservation Society, 2004, most current version or its successor, hereafter referred to as the Erosion Control Manual).

3.2 Water Quality Standards

3.2.1 Any land development activity shall not cause an increase in turbidity that will result in substantial visible contrast to natural conditions in surface waters of the state of New York.

Section 4. Maintenance and Repair of Stormwater Facilities

4.1 Maintenance During Construction

- 4.1.1 The applicant or developer of the land development activity shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the applicant or developer to achieve compliance with the conditions of this local law. Sediment shall be removed from sediment traps or sediment ponds whenever their design capacity has been reduced fifty (50) percent.
- 4.1.2 The applicant or developer or their representative shall be on site at all times when construction or grading activity takes place and shall inspect and document the effectiveness of all erosion and sediment control practices. Inspection reports shall be completed every 7 days and within 24 hours of any storm event producing 0.5 inches of precipitation or more. The reports shall be delivered to the Stormwater Management Officer and also copied to the site log book.

4.2 Maintenance Easement(s)

Prior to the issuance of any approval that has a stormwater management facility as one of the requirements, the applicant or developer must execute a maintenance easement agreement that shall be binding on all subsequent landowners served by the stormwater management facility. The easement shall provide for access to the facility at reasonable times for periodic inspection by the Town of Charlton to ensure that the facility is maintained in proper working condition to meet design standards and any other provisions established by this local law. The easement shall be recorded by the grantor in the office of the County Clerk after approval by Town Engineer and by the legal counsel for the Town.

4.3 Maintenance after Construction

The owner or operator of permanent stormwater management practices installed in accordance with this law shall be operated and maintained to achieve the goals of this law. Proper operation and maintenance also includes as a minimum, the following:

- 4.3.1 A preventive/corrective maintenance program for all critical facilities and systems of treatment and control (or related appurtenances) which are installed or used by the owner or operator to achieve the goals of this law.
- 4.3.2 Written procedures for operation and maintenance and training new maintenance personnel.
- 4.3.3 Discharges from the SMPs shall not exceed design criteria or cause or contribute to water quality standard violations in accordance with Article 2, section 3.2.

4.4 Maintenance Agreements

The Town of Charlton shall approve a formal maintenance agreement for stormwater management facilities binding on all subsequent landowners and recorded in the office of the County Clerk as a deed restriction on the property prior to final plan approval. The maintenance agreement shall be consistent with the terms and conditions of Schedule B of this local law entitled Sample Stormwater Control Facility Maintenance Agreement. The Town of Charlton, in lieu of a maintenance agreement, at its sole discretion may accept dedication of any existing or future stormwater management facility, provided such facility meets all the requirements of this local law and includes adequate and perpetual access and sufficient area, by easement or otherwise, for inspection and regular maintenance.

Section 5. Severability and Effective Date

5.1 Severability

If the provisions of any article, section, subsection, paragraph, subdivision or clause of this local law shall be judged invalid by a court or competent jurisdiction, such order of judgment shall not affect or invalidate the remainder of any article, section, subsection, paragraph, subdivision, or clause of this local law.

5.2 Effective Date

This Local Law shall be effective upon filing with the office of the Secretary of State.

ARTICLE 3. SUBDIVISION REGULATION AMENDMENT

The Subdivision Regulations of the Town of Charlton are hereby amended by adding the following to the information requirements:

A. For All Major and certain Minor (only for minor subdivisions in which the Town Planning Board deems necessary) Preliminary Subdivision Plats add: Stormwater Pollution Prevention Plan: A Stormwater Pollution Prevention Plan (SWPPP) consistent with the requirements of Article 1 and 2 of this local law shall be required for Preliminary Subdivision Plat approval. The SWPPP shall meet the performance and design criteria and standards in Article 2 of this local law. The approved Preliminary Subdivision Plat shall be consistent with the provisions of this local law.

B. For All Major and certain Minor (only for minor subdivisions in which the Town Planning Board deems necessary) Final Subdivision Plat approvals add: Stormwater Pollution Prevention

Plan: A Stormwater Pollution Prevention Plan consistent with the requirements of Article 1 and 2 of this local law and with the terms of preliminary plan approval shall be required for Final Subdivision Plat approval. The SWPPP shall meet the performance and design criteria and standards in Article 2 of this local law. The approved Final Subdivision Plat shall be consistent with the provisions of this local law.

However, in cases where property is being subdivided only and not developed, and where there is not immediate plan to develop such, a Stormwater Pollution Prevention Plan shall not be required, unless the Planning Board deems it necessary. The right is further reserved to require a Plan when the lots are actually developed.

ARTICLE 4. SITE PLAN REVIEW REGULATION AMENDMENT

The Site Plan Review regulations of the Town of Charlton are hereby amended by adding the following to the information requirements:

For Site Plan Approval add: Stormwater Pollution Prevention Plan: A Stormwater Pollution Prevention Plan consistent with the requirements of Article 1 and 2 of this local law shall be required for Site Plan Approval. The SWPPP shall meet the performance and design criteria and standards in Article 2 of this local law. The approved Site Plan shall be consistent with the provisions of this local law.

ARTICLE 5. INTENTIONALLY OMITTED

ARTICLE 6. ADMINISTRATION AND ENFORCEMENT

Section 1. Construction Inspection

1.1 Erosion and Sediment Control inspection

The Town of Charlton Stormwater Management Officer may require such inspections as necessary to determine compliance with this law and may either approve that portion of the work completed or notify the applicant wherein the work fails to comply with the requirements of this law and the stormwater pollution prevention plan (SWPPP) as approved. To obtain inspections, the applicant shall notify the Town of Charlton enforcement official at least 48 hours before any of the following as required by the Stormwater Management Officer.

1.1.1 Start of construction

- 1.1.2 Installation of sediment and erosion control measures
- 1.1.3 Completion of site clearing
- 1.1.4 Completion of rough grading
- 1.1.5 Completion of final grading
- 1.1.6 Close of the construction season
- 1.1.7 Completion of final landscaping
- 1.1.8 Successful establishment of landscaping in public areas

If any violations are found, the applicant and developer shall be notified in writing of the nature of the violation and shall then provide suggested corrective actions to be taken to remedy the violations, which actions must be approved by the Stormwater Management Office prior to their commencement. No further work shall be conducted except for site stabilization until any violations are corrected and all work previously completed has received approval by the Stormwater Management Officer.

1.2 Stormwater Management Practice Inspections

The Town of Charlton Stormwater Management Officer, is responsible for conducting inspections of stormwater management practices (SMPs). All applicants are required to submit "as built" plans for any stormwater management practices located on-site after final construction is completed. The plan must show the final design specifications for all stormwater management facilities and must be certified by a professional or engineer acceptable to the Town.

1.3 Inspection of Stormwater Facilities After Project Completion

Inspection programs shall be established on any reasonable basis, including but not limited to: routine inspections; random inspections; inspections based upon complaints or other notice of possible violations; inspection of drainage basins or areas identified as higher than typical sources of sediment or other contaminants or pollutants; inspections of businesses or industries of a type associated with higher than usual discharges of contaminants or pollutants or with discharges of a type which are more likely than the typical discharge to cause violations of state or federal water or sediment quality standards or the SPDES stormwater permit; and joint inspections with other agencies inspecting under environmental or safety laws. Inspections may include, but are not limited to: reviewing maintenance and repair records; sampling discharges, surface water, groundwater, and material or water in drainage control facilities; and evaluating the

condition of drainage control facilities and other stormwater management practices.

1.4 Submission of Reports

The Town of Charlton Stormwater Management Officer may require additional monitoring and reporting from entities subject to this law as are necessary to determine compliance with this law.

1.5 Right-of-Entry for Inspection

When any new stormwater management facility is installed on private property or when any new connection is made between private property and the public storm water system, the landowner shall grant to the Town of Charlton or its agent the right to enter the property at reasonable times and in a reasonable manner for the purpose of inspection as specified in paragraph 1.3.

Section 2. Performance Guarantee

2.1 Construction Completion Guarantee

In order to ensure the full and faithful completion of all land development activities related to compliance with all conditions set forth by the Town of Charlton in its approval of the Stormwater Pollution Prevention Plan, the Town of Charlton shall require the applicant or developer to provide, prior to construction, a performance bond, cash escrow, or irrevocable letter of credit from an appropriate financial or surety institution which guarantees satisfactory completion of the project and names the Town of Charlton as the beneficiary. The security shall be in an amount to be determined by the Town of Charlton based on submission of final design plans, with reference to actual construction and landscaping costs. The performance guarantee shall remain in force until the surety is released from liability by the Town of Charlton, provided that such period shall not be less than one (1) year from the date of final acceptance or such other certification that the facility(ies) have been constructed in accordance with the approved plans and specifications and that a one year inspection has been conducted and the facilities have been found to be acceptable to the Town of Charlton. Per annum interest on cash escrow deposits shall be reinvested in the account until the surety is released from liability.

2.2 Maintenance Guarantee

Where stormwater management and erosion and sediment control facilities are to be operated and maintained by the developer or property owner, or by a corporation that owns or manages a residential, commercial or industrial facility, the developer or property owner, prior to construction, may be required to provide the Town of Charlton with an

irrevocable letter of credit from an approved financial institution or surety, or other security acceptable to the Town, to ensure proper operation and maintenance of all stormwater management and erosion control facilities both during and after construction, and until the facilities are removed from operation. If the developer or property owner fails to properly operate and maintain stormwater management and erosion and sediment control facilities, the Town of Charlton may draw upon the account to cover the costs of proper operation and maintenance, including engineering and inspection costs. In the event the funds held are not enough to cover such costs, or no longer in place, the Town may do the work, or have a third-party do the work, and charge the costs back to the developer or property owner. The developer and/or property owner shall allow Town workers or third parties hired by the Town to enter on to the premises to perform such work. Failure to allow access to the premises shall entitle the Town to a Court order or injunction requiring access with all costs and expenses incurred in order to obtain such to be paid by the developer and/or property owner.

2.3 Record keeping

The Town of Charlton shall require entities subject to this law to maintain weekly, monthly, and/or yearly records demonstrating compliance with this law.

Section 3. Enforcement and Penalties

3.1 Notice of Violation

When the Town of Charlton determines that a land development activity is not being carried out in accordance with the requirements of this local law, it may issue a written notice of violation to the landowner. The notice of violation shall contain:

- 3.1.1 the name and address of the landowner, developer or applicant;
- 3.1.2 the address when available or a description of the building, structure or land upon which the violation is occurring;
- 3.1.3 a statement specifying the nature of the violation;
- 3.1.4 a description of the remedial measures necessary to bring the land development activity into compliance with this local law and a time schedule for the completion of such remedial action;
- 3.1.5 a statement of the penalty or penalties that shall or may be assessed against the person to whom the notice of violation is directed;
- 3.1.6 a statement that the determination of violation may be appealed to the municipality

by filing a written notice of appeal within fifteen (15) days of service of notice of violation.

3.2 Stop Work Orders

The Town of Charlton may issue a stop work order for violations of this law. Persons receiving a stop work order shall be required to halt all land development activities, except those activities that address the violations leading to the stop work order. The stop work order shall be in effect until the Town of Charlton confirms that the land development activity is in compliance and the violation has been satisfactorily addressed. Failure to address a stop work order in a timely manner may result in civil, criminal, or monetary penalties in accordance with the enforcement measures authorized in this local law.

3.3 Violations

Any land development activity that is commenced or is conducted contrary to this local law, may be restrained by injunction or otherwise abated in a manner provided by law.

3.4 Penalties

In addition to or as an alternative to any penalty provided herein or by law, any person who violates the provisions of this local law shall be guilty of a violation punishable by a fine not exceeding three hundred fifty dollars (\$350) or imprisonment for a period not to exceed six months, or both for conviction of a first offense; for conviction of a second offense both of which were committed within a period of five years, punishable by a fine not less than three hundred fifty dollars nor more than seven hundred dollars (\$700) or imprisonment for a period not to exceed six months, or both; and upon conviction for a third or subsequent offense all of which were committed within a period of five years, punishable by a fine not less than seven hundred dollars nor more than one thousand dollars (\$1000) or imprisonment for a period not to exceed six months, or both. However, for the purposes of conferring jurisdiction upon courts and judicial officers generally, violations of this local law shall be deemed misdemeanors and for such purpose only all provisions of law relating to misdemeanors shall apply to such violations. Each week's continued violation shall constitute a separate additional violation.

3.5 Withholding of Certificate of Occupancy

If any building or land development activity is installed or conducted in violation of this local law the Stormwater Management Officer working with the Building Inspector may cause to prevent the issuance of a Certificate of Occupancy, or if already issued, may prevent the occupancy or use of said building or land.

3.6 Restoration of lands

Any violator may be required to restore land to its undisturbed condition. In the event that restoration is not undertaken within a reasonable time after notice, the Town of Charlton may take necessary corrective action, the cost of which shall become a lien upon the property until paid.

Section 4. Fees for Services

The Town of Charlton may require any person undertaking land development activities regulated by this law to pay reasonable costs at prevailing rates for review of SWPPPs, inspections, or SMP maintenance performed by the Town of Charlton or performed by a third party for the Town of Charlton.

Schedule B
SAMPLE STORMWATER CONTROL FACILITY
MAINTENANCE AGREEMENT

Whereas, the Municipality of the Town of Charlton ("Municipality") and the _____ ("facility owner") want to enter into an agreement to provide for the long term maintenance and continuation of stormwater control measures approved by the Municipality for the below named project, and

Whereas, the Municipality and the facility owner desire that the stormwater control measures be built in accordance with the approved project plans and thereafter be maintained, cleaned, repaired, replaced and continued in perpetuity in order to ensure optimum performance of the components. Therefore, the Municipality and the facility owner agree as follows:

1. This agreement binds the Municipality and the facility owner, its successors and assigns, to the maintenance provisions depicted in the approved project plans which are attached as Schedule A of this agreement.
2. The facility owner shall maintain, clean, repair, replace and continue the stormwater control measures depicted in Schedule A as necessary to ensure optimum performance of the measures to design specifications. The stormwater control measures shall include, but shall not be limited to, the following: drainage ditches, swales, dry wells, infiltrators, drop inlets, pipes, culverts, soil absorption devices and retention ponds.
3. The facility owner shall be responsible for all expenses related to the maintenance of the stormwater control measures, and shall establish a means for the collection and distribution of expenses among parties for any commonly owned facilities.
4. The facility owner shall provide for the periodic inspection of the stormwater control measures, not less than once in every five (5) year period, to determine the condition and integrity of the measures, unless the Stormwater Management Officer requires inspections more frequently, which shall be at his or her discretion. Such inspection shall be performed by a Professional Engineer licensed by the State of New York. The inspecting engineer shall prepare and submit to the Municipality within 30 days of the inspection, a written report of the findings including recommendations for those actions necessary for the continuation of the stormwater control measures.
5. The facility owner shall not authorize, undertake or permit alteration, abandonment, modification or discontinuation of the stormwater control measures except in accordance with written approval of the Municipality.
6. The facility owner shall undertake necessary repairs and replacement of the stormwater control measures at the direction of the Municipality or in accordance with the recommendations of the

inspecting engineer.

7. The facility owner shall provide to the Municipality within 30 days of the date of this agreement, a security for the maintenance and continuation of the stormwater control measures in the form of a Bond, letter of credit or escrow account, as the Municipality may require.

8. This agreement shall be recorded in the Office of the County Clerk, County of _____ together with the deed for the common property and shall be included in the offering plan and/or prospects approved pursuant to _____.

9. If ever the Municipality determines that the facility owner has failed to construct or maintain the stormwater control measures in accordance with the project plan or has failed to undertake corrective action specified by the Municipality or by the inspecting engineer, the Municipality is authorized to undertake such steps as reasonably necessary for the preservation, continuation or maintenance of the stormwater control measures and to affix the expenses thereof as a lien against the property.

10. This agreement shall be effective as of _____.

I certify that this is a true and exact copy of this original as passed by the Town Board of the Town of Charlton on November 12, 2007.

Heather Scribner, Charlton Town Clerk

TOWN OF CHARLTON

**New York State Department of Environmental Conservation
SPDES General Permit Coverage
For
Municipal Separate Storm Sewer Systems**

Permit # NYR20A032

**STORM WATER MANAGEMENT PROGRAM
SAMPLE EROSION & SEDIMENT CONTROL PLAN
FOR
SMALL HOMESITE CONSTRUCTION**

Date: October, 2023



Town of Charlton
784 Charlton Road
Charlton, New York 12019
Telephone: 518 384-0152
Fax 518 384-0385

FACT SHEET

SPDES PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

- The town of Charlton was mandated to apply for a permit from NYS DEC for participation in the Municipal Separate Storm Sewer System (MS4) program upon its activation on March 10, 2003.
- In conjunction with the municipal MS4 program, there is an equivalent permit for private construction activity. Any applicant proposing to conduct construction that will result in greater than one acre of disturbance through the term of the activity must file a Notice of Intent (NOI) with NYS DEC and obtain permit coverage.
- In addition to the permit, private developers must develop an Erosion and Sediment Control Plan. This plan is a graphical illustration of preventative measures to be used at the construction site to prevent erosion. Measures may include silt fences, hay bales, seeding or mulching of disturbed areas, stabilized construction entrances and a multitude of other provisions.
- ALL construction projects should employ basic erosion and sediment prevention even if less than one acre will be disturbed. Consideration should be given to the specifics of each site. Are there wetlands, is there a stream, potential impact on neighbors, potential impact on storm sewers or road ditch lines etc...
- If the construction activity will disturb more than five acres, a Storm Water Pollution Prevention Plan (SWPPP) must be developed in addition to the E & S Control Plan. A SWPPP is a more detailed, written document that supplements the graphic plan. It also includes inspections of the site (by an inspector retained by the developer) on a weekly basis and after every ½ inch rainfall.
- Projects with greater than one acre but less than five acres need a SWPPP if they involve activity other than residential construction or work associated with agricultural property.
- As part of its MS4 program, Charlton must pass legislation related to erosion and sediment control. Charlton must ensure that private developers are obtaining their permit coverage.
- Although not obligated, it is encouraged that Charlton field review the erosion and sediment control practices employed by the smaller projects that are not subject to a SWPPP. This review can be a simple "walk around" performed at the same time as the structural inspections conducted by the Building Inspector.
- The use of erosion and sediment control measures involves some discretion. Sensitive areas above a stream bank, adjacent to a pond, built on steep slopes or next to wetland areas may require greater attention than a flat site well protected by a perimeter of trees.
- Charlton's Building Inspectors and Zoning Administrative Officer should become familiar with erosion and sediment prevention measures and should refer potential problem areas or any uncertainties to the Town Engineer for further review.

TOWN OF CHARLTON
ZONING ADMINISTRATIVE OFFICE
CHECK LIST FOR DETERMINATION OF COMPLIANCE WITH
NYS DEC SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES
From
CONSTRUCTION ACTIVITIES

Date: _____ Applicant: _____ Tax Map No.: _____
Address: _____ Phone Number: _____

☐ This Application was, or is part of, a project reviewed by the Town of Charlton Planning Board and Town Engineer after March 10, 2003.

Application Includes Erosion & Sediment Control Plan ☐

Application Includes Storm Water Pollution Prevention Plan ☐

SWPPP referred to Town Engineer ☐ Town Engineer has approved SWPPP ☐

☐ Computed total likely ground disturbance from applicant's plan.

☐ Provided applicant with Model E&S plan for small home construction

☐ Reviewed Erosion & Sediment Control basics with applicant such as limiting disturbance, stabilizing areas as soon as possible, special needs of sensitive areas such as streams, drainage ditches, storm sewers, wetlands etc... Reviewed proper installation of prevention measures – i.e. burial of silt fence bottom.

☐ Disturbance is less than one acre and applicant has confirmed that they have not been informed by DEC of another need to obtain a SPDES permit.

NO FURTHER ACTION NECESSARY – Permit granted on: _____ by: _____

☐ Disturbance is greater than one acre – inform applicant of their need to complete a Notice of Intent Form and receive permit coverage prior to construction.

☐ Disturbance is greater than one acre - applicant must submit an Erosion and Sediment Control Plan depicting proposed use of preventative measures. E & S measures must be employed prior to ground disturbance.

Applicant supplied E&S plan and permit granted on: _____ by: _____

☐ Disturbance is greater than one acre but less than five acres and construction activity is something other than single family residence and is not on agricultural property – Applicant must submit a full Storm Water Pollution Prevention Plan (SWPPP).

Applicant supplied SWPPP, reviewed by Town Engineer and authorized on: _____

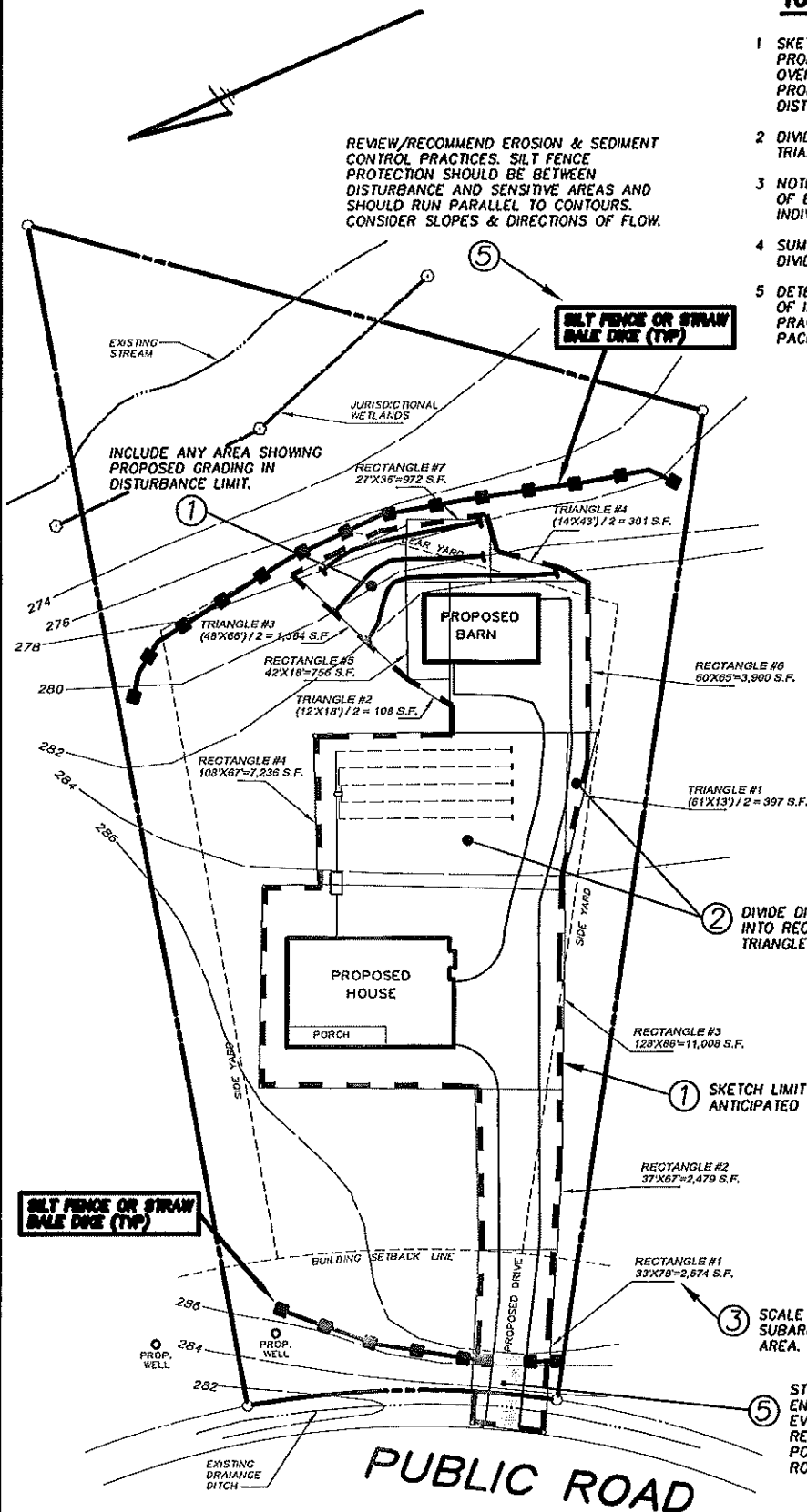
☐ Disturbance is greater than five acres. Applicant must submit a full Storm Water Pollution Prevention Plan (SWPPP).

Applicant supplied SWPPP, reviewed by Town Engineer and authorized on: _____

☐ Copy of this form sent to Town Clerk, Town Engineer and E.C.C. Chair

TO COMPUTE DISTURBANCE:

- 1 SKETCH LIMITS OF DISTURBANCE. INCLUDE ALL PROPOSED FEATURES. ANTICIPATE SOME AMOUNT OF OVERCLEARING TO ALLOW CONSTRUCTION. IF PLAN SHOWS PROPOSED CONTOURS, ENSURE THAT THEY ARE WITHIN DISTURBED AREA.
- 2 DIVIDE THE DISTURBANCE LIMIT INTO RECTANGLES AND TRIANGLE AREAS.
- 3 NOTE THE SCALE OF THE MAP, SCALE THE DIMENSIONS OF EACH RECTANGLE AND TRIANGLE. COMPUTE EACH INDIVIDUAL AREA.
- 4 SUM ALL OF THE SUB-AREAS TO COMPUTE TOTAL AREA. DIVIDE RESULT BY 43,560 TO CONVERT TO ACRES.
- 5 DETERMINE NEED FOR APPLICANT TO SUBMIT A NOTICE OF INTENT. REVIEW SEDIMENT AND EROSION CONTROL PRACTICES WITH APPLICANT AND HANDOUT INFORMATION PACKAGE.



2,574 SQ. FT.
2,479 SQ. FT.
11,008 SQ. FT.
7,236 SQ. FT.
756 SQ. FT.
3,900 SQ. FT.
972 SQ. FT.
397 SQ. FT.
108 SQ. FT.
1,584 SQ. FT.
301 SQ. FT.
31,315 SQUARE FEET

- 4 SUM SUB-AREAS. DIVIDE BY 43,560 TO COMPUTE DISTURBANCE IN ACRES.

31,315 / 43,560 = 0.72 ACRES

PROJECT DISTURBANCE IS LESS THAN ONE ACRE. THEREFORE IT IS NOT SUBJECT TO SPDES PERMIT UNLESS DEC HAS NOTED OTHERWISE. NOTICE OF INTENT FORM NOT NECESSARY. REVIEW BASIC EROSION AND SEDIMENT CONTROL MEASURES TO EMPLOY.

- 2 DIVIDE DISTURBANCE AREA INTO RECTANGLES AND TRIANGLES.

- 1 SKETCH LIMIT OF ANTICIPATED DISTURBANCE.

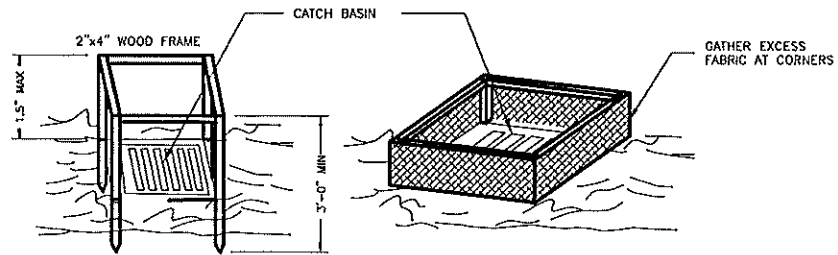
- 3 SCALE DIMENSION OF SUBAREAS AND COMPUTE AREA.

- 5 STABILIZED CONSTRUCTION ENTRANCES MAY BE NECESSARY EVEN FOR SMALL PROJECTS WHEN REPEATED VEHICLE TRAFFIC HAS THE POTENTIAL TO TRACK SEDIMENT ONTO ROADWAYS.

SAMPLE PLAT PLAN DISTURBANCE CALCULATION METHOD

TOWN OF CHARLTON
SCALE: 1" = 50'

SARATOGA COUNTY, NEW YORK
OCTOBER 29, 2006



SEDIMENT CONTROL PRACTICE:

USED AROUND EXISTING CATCH BASIN DRAINS TO PREVENT INFLOW OF SEDIMENT AND POLLUTANTS INTO STORM SEWER SYSTEM AND EVENTUAL DISCHARGE TO SURFACE WATERS.

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2" X 4" WOOD OR EQUIVALENT METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2" X 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

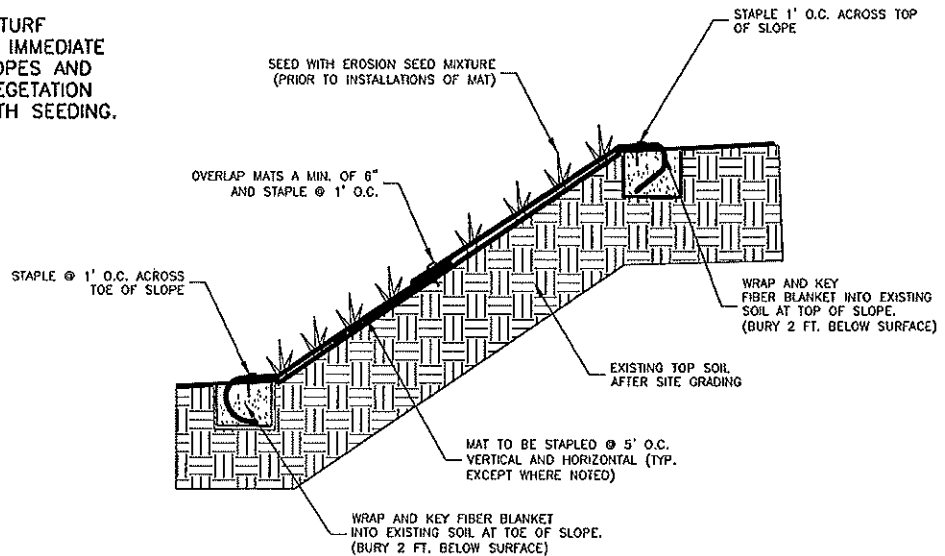
MAXIMUM DRAINAGE AREA 1 ACRE

CATCH BASIN SEDIMENT BARRIER

NOT TO SCALE

EROSION CONTROL PRACTICE:

EROSION CONTROL BLANKET OR TURF REINFORCEMENT MATS. PROVIDES IMMEDIATE STABILIZATION OF DISTURBED SLOPES AND PROMOTES ESTABLISHMENT OF VEGETATION WHEN USED IN CONJUNCTION WITH SEEDING.



EROSION CONTROL BLANKET

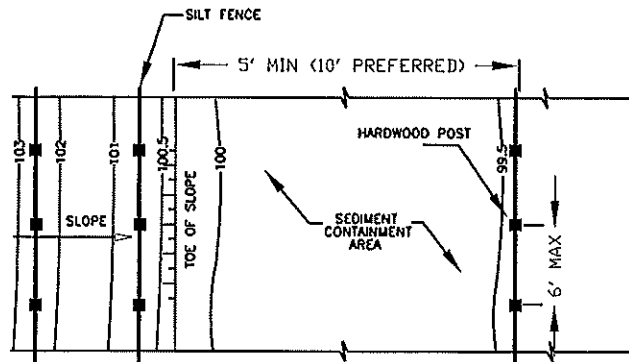
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SAMPLE EROSION & SEDIMENT CONTROL PRACTICES PAGE 1 OF 2

TOWN OF CHARLTON
NO SCALE

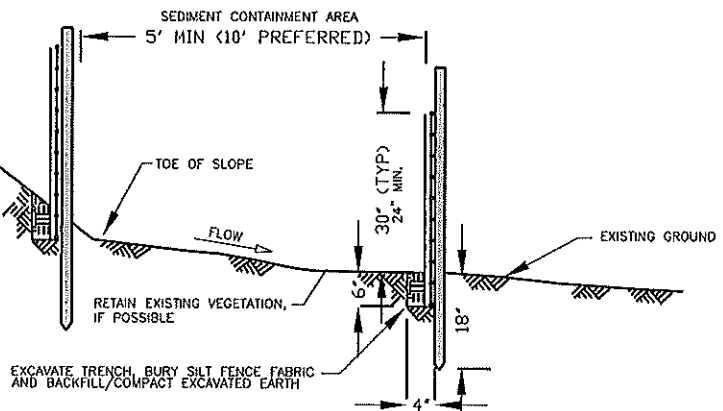
SARATOGA COUNTY, NEW YORK
OCTOBER 29, 2006

1. SILT FENCE OR HAYBALE/STRAWBALE DIKE SHALL BE PLACED A MINIMUM OF 5 FT. FROM TOE OF SLOPE, 10 FT. PREFERRED, TO PROVIDE ADEQUATE AREA FOR SEDIMENT STORAGE AND FACILITATE MAINTENANCE OF SEDIMENT CONTAINMENT AREA.
2. POSTS MAY BE 1"x1" (MINIMUM) HARDWOOD, 2"x2" (MINIMUM) SOFTWOOD, OR STEEL. SILT FENCE SHALL BE WOVEN GEOTEXTILE FABRIC (AMCO 2122 OR EQUAL).
3. BALES FOR DIKE SHALL BE INSTALLED WITH CUT ENDS VERTICAL, AND BALES BURIED A MINIMUM OF 4".
4. SILT FENCE ASSEMBLIES MAY HAVE 4 FT. OR 6 FT. POST SPACING, AND MAY OR MAY NOT HAVE MESH REINFORCEMENT.
5. THE BOTTOM EDGE OF SILT FENCE SHALL BE BURIED A MINIMUM OF 6" BELOW GROUND. THE FENCE SHALL BE INSTALLED WITH THE POSTS ON THE DOWNSTREAM SIDE OF THE FABRIC.
6. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS, AFTER EACH RAINFALL OF .5" OR MORE WITHIN A 12 HOUR PERIOD, OR DAILY DURING PROLONGED RAINFALL. MEASURES SHALL BE CLEANED AND REPAIRED AS REQUIRED.
7. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.



PLAN

INSTALL SILT FENCE (OR HAY BALE DIKE)
PARALLEL TO CONTOURS TO CONTROL
MIGRATION OF SEDIMENTS DOWN GRADIENT
WITH STORM RUNOFF.

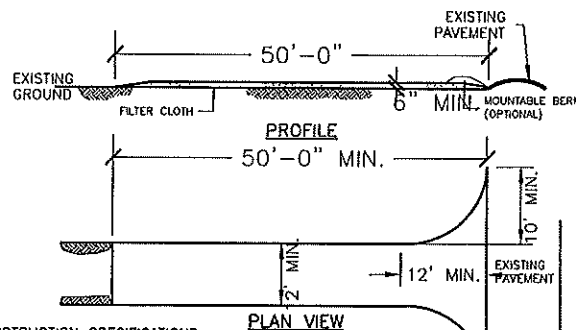


SECTION
SILT FENCE - TEMPORARY

1. GEOTEXTILE FABRIC AND WOVEN WIREMESH TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACES EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

SILT FENCE BARRIER

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - ASHIO DESIGNATION M 43, SIZE NO. 2(2-1/2" TO 1-1/2"). USE CRUSHED STONE.
2. LENGTH -- AS EFFECTIVE BUT NOT LESS THAN 50 FEET.
3. THICKNESS - NOT LESS THAN SIX(6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS, TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BARRIER WITH 5:1 SLOPE WILL BE PERMITTED.
7. WASHING - WHEN SEDIMENTATION BASINS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE THROUGH USE OF SAND BAGS, GRAVEL BOARDS OR OTHER APPROVED METHODS.
8. MAINTENANCE -- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. SEDIMENT SPILLED, DISPOSED, DEPOSED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

SAMPLE EROSION & SEDIMENT CONTROL PRACTICES
PAGE 2 OF 2

TOWN OF CHARLTON
NO SCALE

SARATOGA COUNTY, NEW YORK
OCTOBER 29, 2006

Appendix prepared by:

Paula Smith, CPESC, CPSWQ
Executive Director
Monroe County Soil & Water Conservation District

APPENDIX E

EROSION & SEDIMENT CONTROL PLAN FOR SMALL HOMESITE CONSTRUCTION

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EROSION AND SEDIMENT CONTROL PLAN FOR SMALL HOMESITE CONSTRUCTION

Definition

Small homesite erosion and sediment control plans are a group of minimum erosion and sediment control practices and management techniques that apply to small homesite construction activity on a single residential lot, in order to prevent polluted discharge.

Purpose

This appendix lays out a series of minimum requirements for erosion and sediment control, and management practices that may be used to meet these requirements. Use of these templates will help show compliance with the general requirements for construction activities that require basic stormwater pollution prevention plans (SWPPP). This applies to the construction of small homesites. The owner/developer must complete the relevant conditions (1-4), or small parcel erosion and sediment control plan included in this section, and submit the NOI in order to meet compliance with the SPDES General Permit for Stormwater Discharges From Construction Activities.

Criteria

Generally, several types of practices are required on any one site for effective erosion and sediment control. There are three broad categories of construction-related practices for controlling erosion and sediment on small homesite developments:

1. **Cover practices** prevent erosion by protecting the soil surface from rainfall and runoff. Prevention of erosion is the most preferable and cost-effective approach. These practices include: protection of existing vegetation; temporary covering of exposed soil by mulching, matting, or covering; and permanent site stabilization by topsoiling, seeding, and/or sodding.

2. **Structural Practices** are structural controls that either reduce erosion, control runoff, or keep sediment on the construction site. Examples of these practices include stabilized construction entrances, filter fences, sediment traps, berms, and check dams.

3. **Management Measures** are construction management methods that prevent or reduce erosion potential and ensure the proper functioning of erosion and sediment control practices. Careful construction management can dramatically reduce the costs associated with erosion and sediment problems. Examples of these management measures include:

- Preserving existing trees and grass where possible to prevent erosion;

- Re-vegetating the site as soon as possible;
- Locating soil piles away from roads or waterways;
- Limiting tracking of mud onto streets by requiring all vehicles to use designated access drives;
- Removing sediment carried off-site by vehicles or storms;
- Installing downspout extenders to prevent erosion from roof runoff; and
- Maintaining erosion and sediment practices through sediment removal, structure replacement, etc.

Specifications

Each construction site is different. The owner/developer of a small construction site may choose and follow one of the four variations of ESC plans included in this section to develop a SWPPP in compliance with the SPDES Construction Permit For Stormwater Discharges From Construction Activities. However, because of the general nature of the following conditions, the plans included in this section may not cover all of the resource protection needs on a particular site, and this form does not exempt an owner from the responsibility of filing an NOI.

Small Homesite Minimum Requirements:

1. Stabilized Construction Entrance:

To prevent vehicles and equipment from tracking sediment and mud off-site, apply gravel or crushed rock to the driveway area and restrict traffic to this one route. This practice will help keep soil from sticking to tires and stop soil from washing off into the street. Carry out periodic inspections and maintenance including washing, top-dressing with additional stone, reworking, and compaction. Plan for periodic street cleaning to remove any sediment that may have been tracked off-site. Remove sediment by shoveling or sweeping and transport to a suitable disposal area where it can be stabilized.

2. Stabilization of Denuded Areas:

Stabilization measures must be initiated as soon as practicable, but in no case more than 14 days after the construction activity has ceased. In frozen ground conditions, stabilization measures must be initiated as soon as practicable. Where construction activity on a portion of the site is temporarily ceased, and earth-disturbing activities will be resumed within twenty-one (21) days, temporary stabilization measures need not be initiated on that portion of the site.

Stabilize denuded areas by implementing soil covering practices (e.g. mulching, matting, sodding). Exposed soils are the most prone to erosion from rainfall and runoff. Vegetation helps protect the soil from these forces and provides natural erosion control. Plan construction to limit

the amount of exposed area, and avoid grading activities during the rainy season (November through March) as much as possible. Clearing limits should be clearly marked and kept as small as possible. Once construction is completed, the site must be permanently stabilized with topsoiling, seeding and plantings, or sodding if needed.

3. Protection of Adjacent Properties:

Keep sediment on-site by using structural and source control practices (e.g. vegetative buffer strips, sediment barriers, soil berms or dikes, etc). See Sections 3, 4, or 5 as appropriate. Wherever possible, preserve a buffer of existing vegetation around the site boundary. This will help to decrease runoff velocities and trap sediment suspended in the runoff. Other structural controls such as filter fence or straw bale barriers should also be used to filter runoff and trap sediment on-site.

When excavating basement soils, move the soil to a location that is, or will be, vegetated, such as in the backyard or side yard area. This will increase the distance eroded soil must travel, through vegetation, to reach the storm sewer system. Piles should be situated so that sediment does not run into the street or adjoining yards. Soil piles should be temporarily seeded and circled with silt fence until the soil is either replaced or removed. Backfill basement walls as soon as possible and rough grade the lot. This will eliminate the large soil mounds, which are highly erodible, and prepare the lot for temporary cover. After backfilling, grade or remove excess soil from the site quickly, to eliminate any sediment loss from surplus fill.

4. Concentrated Flow:

For constructed drainage ways, or other areas of concentrated flow, install check dams according to the specifications on page B.12 to reduce erosion in the channel. As with other erosion controls, check dams must be inspected regularly. Remove sediment accumulated behind the dam as needed to allow channel to drain through the stone check dam and prevent large flows from carrying

sediment over the dam. Replace stones as needed to maintain the design cross section of the structures. Sediment removal is crucial to the effectiveness of the dam—if not maintained, high flows could cause erosion around the sides of the structures, adding significant sediment loads downstream.

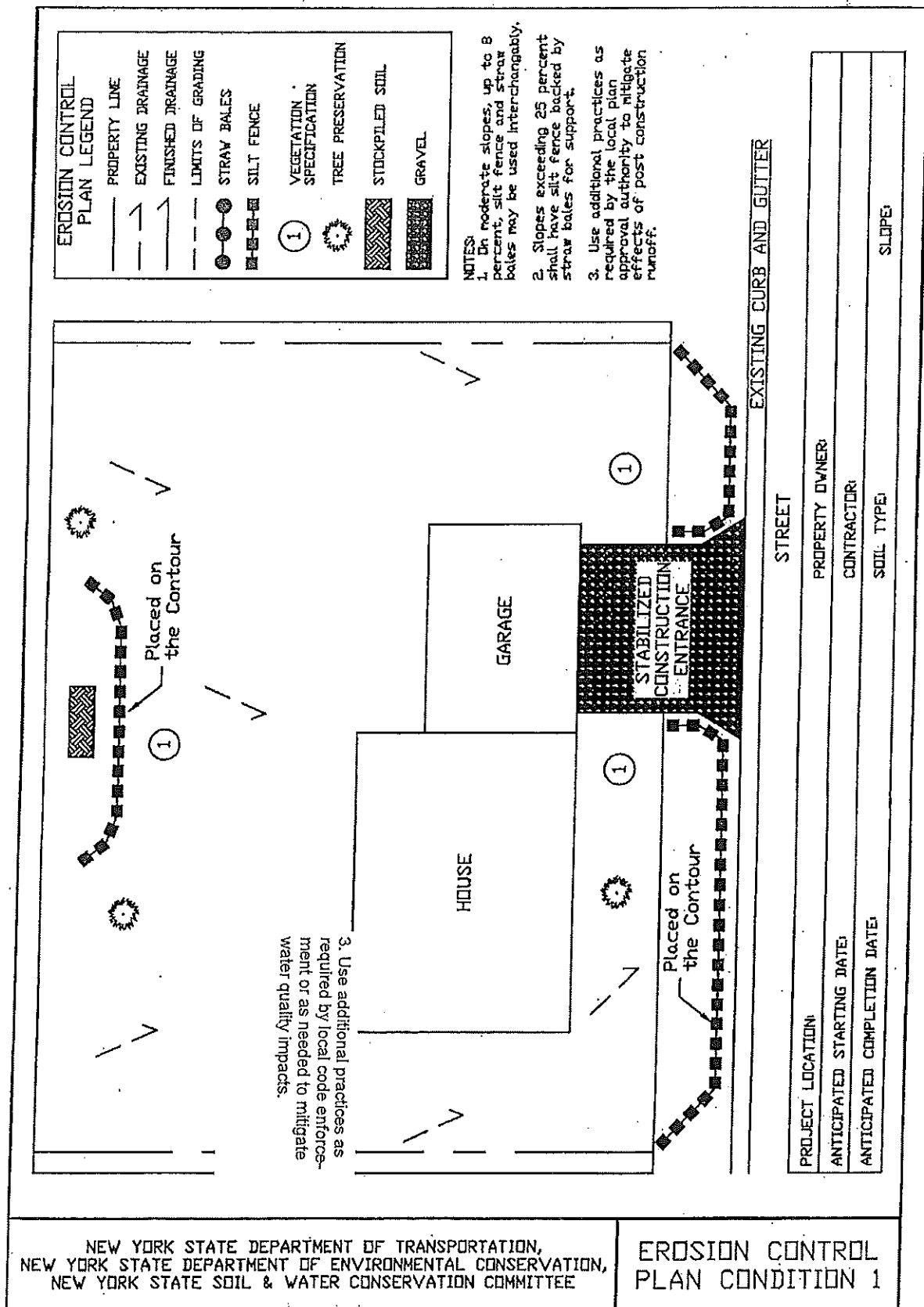
5. Maintenance:

Maintain erosion and sediment control practices through regular inspection. Regular maintenance is extremely important for the proper operation of structural practices. After initial groundbreaking, the builder shall conduct site inspections at least once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater.

6. Other Practices:

Use additional practices as required by the local plan approval authority to mitigate effects of increased runoff. This may include providing additional controls to a locally protected stream or resource area, protecting riparian corridors (vegetative stream buffers), etc. Individual homeowners and/or developers are responsible for researching additional requirements related to erosion and sediment runoff control established by their local jurisdictions.

Figure E.1
Erosion Control Plan Condition 1



Condition 1—Vegetative Requirements & Compliance Form

Vegetation Requirements:

1.) Site Preparation

- A. Install needed water and erosion control measures and bring area to be seeded to desired grades using a minimum of 4 in. topsoil.
- B. Prepare seedbed by loosening soil to a depth of 4-6 inches.
- C. Lime to a pH of 6.5
- E. Fertilize as per soil test or, if fertilizer must be applied before soil test results are received, apply 850 pounds of 5-10-10 or equivalent per acre (20 lbs/1,000 sq. ft.)
- F. Incorporate lime and fertilizer in top 2-4 inches of topsoil.
- G. Smooth. Remove all stones over 1 inch in diameter, sticks, and foreign matter from the surface. Firm the seedbed.

2.) Planting—Sunny Location.

Use a cultipacker type seeder if possible. Seed to a depth of 1/8 to 1/4 inch. If seed is to be broadcast, cultipack or roll after seeding. If hydroseeded, lime and fertilizer may be applied through the seeder and rolling is not practical. Seed using the following mix and rates:

Species (% by weight)	lbs/1,000sq. ft	lbs./acre
65% Kentucky bluegrass blend.....	2.0-2.6.....	85-114
20% perennial ryegrass.....	0.6-0.8.....	26-35
15% fine fescue.....	0.4-0.6.....	19-26
Total.....	3.0-4.0.....	130-175
or,		
100% Tall fescue, Turf-type, fine leaf.....	3.4-4.6.....	150-200

- 3.) When using the cultipacker or broadcast seed method, mulch using small grain straw, applied at a rate of 2 tons per acre; and anchor with a netting or tackifier. Hydroseed applications should include mulch, fertilizer and seed.

Common white clover can be added to mixtures at the rate of 1-2 lbs/acre to help maintain green color during the dry summer period, however, they will not withstand heavy traffic. Fertilizing—First year, (spring seedlings) three to four weeks after germination apply 1 pound nitrogen/1,000 square feet using a complete fertilizer with a 2-1-1 or 4-1-3 ratio or as recommended by soil test results. For summer and early fall seedings, apply as above unless air temperatures are above 85°F for extended period. Wait until heat wave is over to fertilize. For late fall/ winter seedings, fertilize in spring. Restrict use—new seedlings should be protected from use for one full year to allow development of a dense sod with good root structure.

Certification Statement

Please complete and sign this 2-sided document (with Typical Erosion Control Plan) and attach to BLUEPRINTS and SITE PLAN prior to any earth disturbance. These documents must be kept on site and be available for review as requested by any agent of the NYSDEC. This 2-sided form can be used as a basic stormwater pollution prevention plan, but will not exempt a landowner from filing a Notice of Intent.

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the ESC plan for the construction site identified in such ESC plan as a condition of authorization to discharge stormwater. I also understand that the operator must comply with the terms and conditions of the New York State Pollutant 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 violation of water quality standards."

Builder/Contractor (print)

Signature

Address

Telephone

Fax

E-mail

Figure E.2
Erosion Control Plan Condition 2

EROSION CONTROL PLAN LEGEND <div style="display: flex; justify-content: space-between; font-size: 0.8em;"> <div> <p>PROPERTY LINE</p> <p>EXISTING DRAINAGE</p> <p>FINISHED DRAINAGE</p> <p>LIMITS OF GRADING</p> <p>STRAW BALES</p> <p>SILT FENCE</p> </div> <div> <p>VEGETATION SPECIFICATION</p> <p>TREE PRESERVATION</p> <p>STOCKPILED SOIL</p> <p>GRAVEL</p> </div> </div>		NOTES: 1. On moderate slopes, up to 8 percent, silt fence and straw bales may be used interchangeably. 2. Slopes exceeding 25 percent shall have silt fence backed by straw bales for support. 3. Use additional practices as required by the local plan approval authority to mitigate effects of post construction runoff.								
<p>The diagram shows a property layout with a 'HOUSE' and a 'GARAGE'. A 'STABILIZED CONSTRUCTION ENTRANCE' is located between them. Erosion control measures include a silt fence along the left boundary, straw bales along the top boundary, and various vegetation and tree preservation symbols. A note 'Placed on the Contour' points to a silt fence section. Circled numbers 1 and 2 are placed near specific features.</p>	<div style="border-bottom: 1px solid black; padding-bottom: 5px;">STREET</div> <div style="border-bottom: 1px solid black; padding-bottom: 5px;">EXISTING CURB AND GUTTER</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; padding: 2px;">PROJECT LOCATION:</td> <td style="width: 33%; padding: 2px;">PROPERTY OWNER:</td> <td style="width: 33%; padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">ANTICIPATED STARTING DATE:</td> <td style="padding: 2px;">CONTRACTOR:</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">ANTICIPATED COMPLETION DATE:</td> <td style="padding: 2px;">SOIL TYPE:</td> <td style="padding: 2px;">SLOPE:</td> </tr> </table>	PROJECT LOCATION:	PROPERTY OWNER:		ANTICIPATED STARTING DATE:	CONTRACTOR:		ANTICIPATED COMPLETION DATE:	SOIL TYPE:	SLOPE:
PROJECT LOCATION:	PROPERTY OWNER:									
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ANTICIPATED COMPLETION DATE:	SOIL TYPE:	SLOPE:								

NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
 NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
 NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

EROSION CONTROL PLAN CONDITION 2

Condition 2—Vegetative Requirements & Compliance Form

Vegetation Requirements:

1.) Site Preparation

- A. Install needed water and erosion control measures and bring area to be seeded to desired grades using a minimum of 4 in. topsoil.
- B. Prepare seedbed by loosening soil to a depth of 4-6 inches.
- C. Lime to a pH of 6.5
- E. Fertilize as per soil test or, if fertilizer must be applied before soil test results are received, apply 850 pounds of 5-10-10 or equivalent per acre (20 lbs/1,000 sq. ft.)
- F. Incorporate lime and fertilizer in top 2-4 inches of topsoil.
- G. Smooth. Remove all stones over 1 inch in diameter, sticks, and foreign matter from the surface. Firm the seedbed.

2.) Planting—Sunny Location.

Use a cultipacker type seeder if possible. Seed to a depth of 1/8 to 1/4 inch. If seed is to be broadcast, cultipack or roll after seeding. If hydroseeded, lime and fertilizer may be applied through the seeder and rolling is not practical. Seed using the following mix and rates:

Species (% by weight)	lbs/1,000sq. ft	lbs/acre
65% Kentucky bluegrass blend.....	2.0-2.6.....	85-114
20% perennial ryegrass.....	0.6-0.8.....	26-35
15% fine fescue.....	0.4-0.6.....	19-26
Total.....	3.0-4.0.....	130-175
or,		
100% Tall fescue, Turf-type, fine leaf.....	3.4-4.6.....	150-200

- 3.) When using the cultipacker or broadcast seed method, mulch using small grain straw, applied at a rate of 2 tons per acre; and anchor with a netting or tackifier. Hydroseed applications should include mulch, fertilizer and seed.

Common white clover can be added to mixtures at the rate of 1-2 lbs/acre to help maintain green color during the dry summer period, however, they will not withstand heavy traffic. Fertilizing—First year, (spring seedlings) three to four weeks after germination apply 1 pound nitrogen/1,000 square feet using a complete fertilizer with a 2-1-1 or 4-1-3 ratio or as recommended by soil test results. For summer and early fall seedlings, apply as above unless air temperatures are above 85°F for extended period. Wait until heat wave is over to fertilize. For late fall/ winter seedlings, fertilize in spring. Restrict use—new seedlings should be protected from use for one full year to allow development of a dense sod with good root structure.

Certification Statement

Please complete and sign this 2-sided document (with Typical Erosion Control Plan) and attach to BLUEPRINTS and SITE PLAN prior to any earth disturbance. These documents must be kept on site and be available for review as requested by any agent of the NYSDEC. This 2-sided form can be used as a basic stormwater pollution prevention plan, but will not exempt a landowner from filing a Notice of Intent.

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the ESC plan for the construction site identified in such ESC plan as a condition of authorization to discharge stormwater. I also understand that the operator must comply with the terms and conditions of the New York State Pollutant 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 violation of water quality standards."

Builder/Contractor (print)

Signature

Address

Telephone

Fax

E-mail

Figure E.3
Erosion Control Plan Condition 3

<p>EROSION CONTROL PLAN LEGEND</p> <p>— PROPERTY LINE</p> <p>--- EXISTING DRAINAGE</p> <p>--- FINISHED DRAINAGE</p> <p>--- LIMITS OF GRADING</p> <p>● STRAW BALES</p> <p>■ SILT FENCE</p> <p>① VEGETATION SPECIFICATION</p> <p>⊗ TREE PRESERVATION</p> <p>▨ STOCKPILED SOIL</p> <p>▩ GRAVEL</p>	<p>NOTES:</p> <p>1. In moderate slopes, up to 8 percent, silt fence and straw bales may be used interchangeably.</p> <p>2. Slopes exceeding 25 percent shall have silt fence backed by straw bales for support.</p> <p>3. Use additional practices as required by the local plan approval authority to mitigate effects of post construction runoff.</p>
<p style="text-align: center;">Placed on the Contour</p> <p style="text-align: center;">GARAGE</p> <p style="text-align: center;">HOUSE</p> <p style="text-align: center;">STABILIZED CONSTRUCTION ENTRANCE</p> <p style="text-align: center;">100' CRITICAL AREA BUFFER</p> <p style="text-align: center;">MEAN HIGH WATER LINE</p> <p style="text-align: center;">WATER</p>	
<p>STREET</p> <p>EXISTING CURB AND GUTTER</p>	
<p>PROJECT LOCATION:</p> <p>ANTICIPATED STARTING DATE:</p> <p>ANTICIPATED COMPLETION DATE:</p>	<p>PROPERTY OWNER:</p> <p>CONTRACTOR:</p> <p>SOIL TYPE:</p> <p>SLOPE:</p>
<p>NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE</p>	
<p>EROSION CONTROL PLAN CONDITION 3</p>	

Condition 3—Vegetative Requirements & Compliance Form

Vegetation Requirements:

1.) Site Preparation

- A. Install needed water and erosion control measures and bring area to be seeded to desired grades using a minimum of 4 in. topsoil.
- B. Prepare seedbed by loosening soil to a depth of 4-6 inches.
- C. Lime to a pH of 6.5
- E. Fertilize as per soil test or, if fertilizer must be applied before soil test results are received, apply 850 pounds of 5-10-10 or equivalent per acre (20 lbs/1,000 sq. ft.)
- F. Incorporate lime and fertilizer in top 2-4 inches of topsoil.
- G. Smooth. Remove all stones over 1 inch in diameter, sticks, and foreign matter from the surface. Firm the seedbed.

2.) Planting—Sunny Location.

Use a cultipacker type seeder if possible. Seed to a depth of 1/8 to 1/4 inch. If seed is to be broadcast, cultipack or roll after seeding. If hydroseeded, lime and fertilizer may be applied through the seeder and rolling is not practical. Seed using the following mix and rates:

Species (% by weight)	lbs/1,000sq. ft	lbs./acre
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20% perennial ryegrass.....	0.6-0.8.....	26-35
15% fine fescue.....	0.4-0.6.....	19-26
Total.....	3.0-4.0.....	130-175
or,		
100% Tall fescue, Turf-type, fine leaf.....	3.4-4.6.....	150-200

- 3.) When using the cultipacker or broadcast seed method, mulch using small grain straw, applied at a rate of 2 tons per acre; and anchor with a netting or tackifier. Hydroseed applications should include mulch, fertilizer and seed.

Common white clover can be added to mixtures at the rate of 1-2 lbs/acre to help maintain green color during the dry summer period, however, they will not withstand heavy traffic. Fertilizing—First year, (spring seedlings) three to four weeks after germination apply 1 pound nitrogen/1,000 square feet using a complete fertilizer with a 2-1-1 or 4-1-3 ratio or as recommended by soil test results. For summer and early fall seedings, apply as above unless air temperatures are above 85°F for extended period. Wait until heat wave is over to fertilize. For late fall/ winter seedings, fertilize in spring. Restrict use—new seedlings should be protected from use for one full year to allow development of a dense sod with good root structure.

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Builder/Contractor (print)

Signature

Address

Telephone

Fax

E-mail

Figure E.4
Erosion Control Plan Condition 4

<p>EROSION CONTROL PLAN LEGEND</p> <p>— PROPERTY LINE</p> <p>- - - EXISTING DRAINAGE</p> <p>- - - FINISHED DRAINAGE</p> <p>- - - LIMITS OF GRADING</p> <p>● STRAW BALES</p> <p>■ SILT FENCE</p> <p>① VEGETATION SPECIFICATION</p> <p>⊙ TREE PRESERVATION</p> <p>▨ STOCKPILED SOIL</p> <p>▩ GRAVEL</p>	<p>NOTES:</p> <p>1. On moderate slopes, up to 8 percent, silt fence and straw bales may be used interchangeably.</p> <p>2. Slopes exceeding 25 percent shall have silt fence backed by straw bales for support.</p> <p>3. Use additional practices as required by the local plan approval authority to mitigate effects of post construction runoff.</p>	<p>STREET</p> <p>EXISTING CURB AND GUTTER</p>
<p>PROJECT LOCATION:</p>		
<p>ANTICIPATED STARTING DATE:</p>		
<p>ANTICIPATED COMPLETION DATE:</p>		
<p>PROPERTY OWNER:</p>		
<p>CONTRACTOR:</p>		
<p>SOIL TYPE:</p>		
<p>SLOPE:</p>		

NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

**EROSION CONTROL
PLAN CONDITION 4**

Condition 4—Vegetative Requirements & Compliance Form

Vegetation Requirements:

1.) Site Preparation

- A. Install needed water and erosion control measures and bring area to be seeded to desired grades using a minimum of 4 in. topsoil.
- B. Prepare seedbed by loosening soil to a depth of 4-6 inches.
- C. Lime to a pH of 6.5
- E. Fertilize as per soil test or, if fertilizer must be applied before soil test results are received, apply 850 pounds of 5-10-10 or equivalent per acre (20 lbs/1,000 sq. ft.)
- F. Incorporate lime and fertilizer in top 2-4 inches of topsoil.
- G. Smooth. Remove all stones over 1 inch in diameter, sticks, and foreign matter from the surface. Firm the seedbed.

2.) Planting—Sunny Location.

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15% fine fescue.....	0.4-0.6.....	19-26
Total.....	3.0-4.0.....	130-175
or,		
100% Tall fescue, Turf-type, fine leaf.....	3.4-4.6.....	150-200

- 3.) When using the cultipacker or broadcast seed method, mulch using small grain straw, applied at a rate of 2 tons per acre; and anchor with a netting or tackifier. Hydroseed applications should include mulch, fertilizer and seed.

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Builder/Contractor (print)

Signature

Address

Telephone

Fax

E-mail

Figure E.5
Construction Details for Stabilized Construction Entrance and Silt Fence

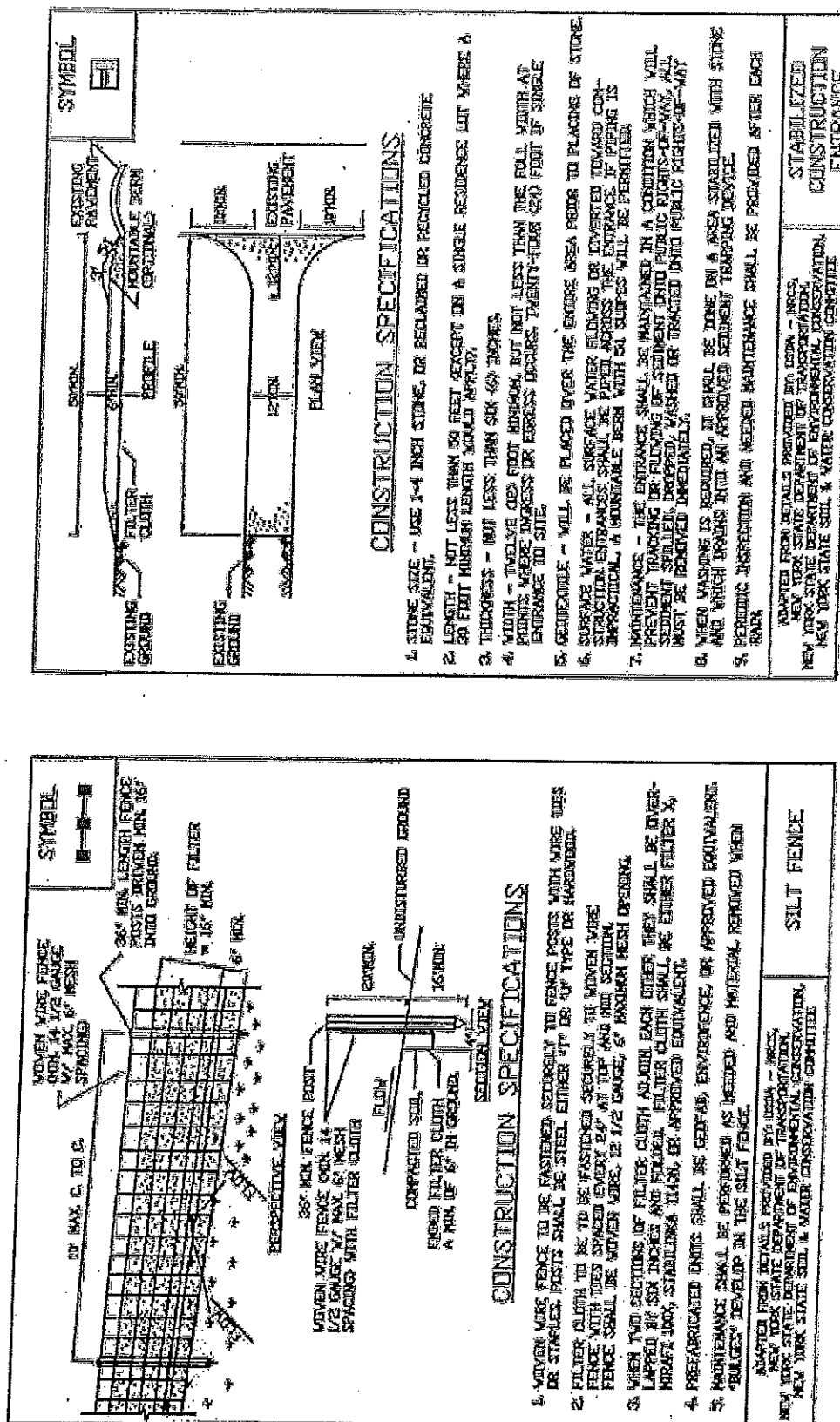
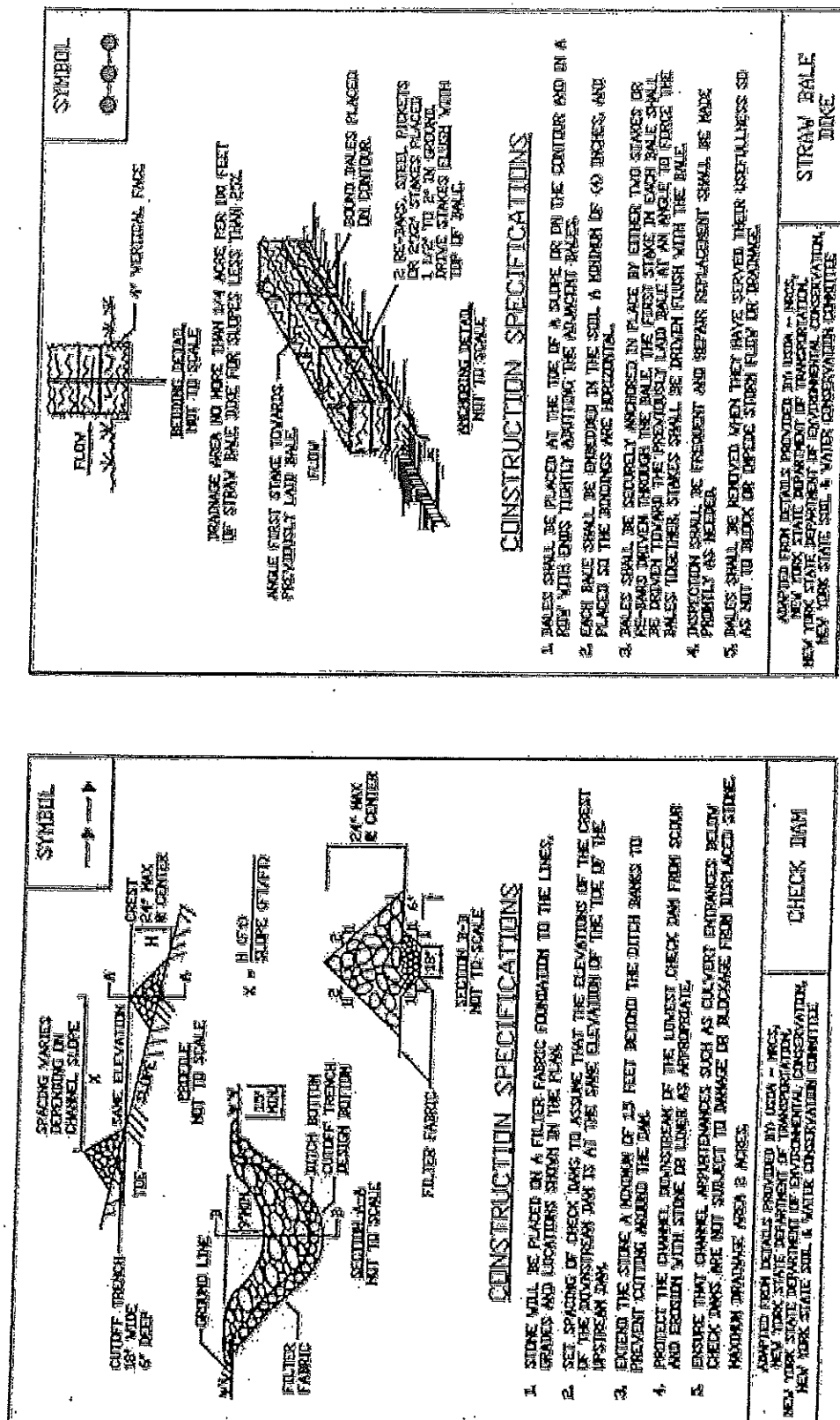
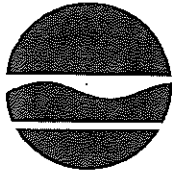


Figure E.6
Construction Details for Straw Bale Dike and Check Dam





**NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION**

Construction Stormwater Inspection Manual
Primarily for Government Inspectors Evaluating Compliance with Construction
Stormwater Control Requirements

**New York State
Department of Environmental Conservation**

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Version 1.05 (8/27/07)

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1.0 INTRODUCTION AND PURPOSE

The New York State Department of Environmental Conservation Division of Water (DOW) considers there to be two types of inspections germane to construction stormwater; compliance inspections and self-inspections.

This manual is for use by DOW and other regulatory oversight construction stormwater inspectors in performing compliance inspections, as well as for site operators in performing self inspections. The manual should be used in conjunction with the *New York State Standards and Specifications for Erosion and Sediment Control*, August 2005.

1.1 Compliance Inspections

Regulatory compliance inspections are performed by regulatory oversight authorities such as DOW staff, or representatives of DOW and local municipal construction stormwater inspectors. These inspections are intended to determine compliance with the state or local requirements for control of construction stormwater through erosion and sediment control and post construction practices. Compliance inspections focus on determinations of compliance with legal and water quality standards. Typically, compliance inspections can be further sub-categorized to include comprehensive inspections, and follow-up or reconnaissance inspections.

Compliance inspectors will focus on determining whether:

- the project is causing water quality standard violations;
- the required Stormwater Pollution Prevention Plan (SWPPP) includes appropriate erosion and sediment controls and, to some extent, post construction controls;
- the owner/operator is complying with the SWPPP;
- where required, self-inspections are being properly performed; and
- where self-inspections are required, the owner/operator responds appropriately to the self-inspector's reports.

1.1.1 Comprehensive Inspection

Comprehensive inspections are designed to verify permittee compliance with all applicable regulatory requirements, effluent controls, and compliance schedules. This inspection involves records reviews, visual observations, and evaluations of management practices, effluents, and receiving waters.

Comprehensive inspections should be conducted according to a neutral or random inspection scheme, or in accordance with established priorities. A neutral monitoring scheme provides some objective basis for scheduling inspections and sampling visits by establishing a system (whether complex factor-based, alphabetic, or geographic) for setting priorities to ensure that a particular facility is not unfairly selected for inspection or sampling. The selection of which

facility to inspect must be made without bias to ensure that the regulatory oversight authority, if challenged for being arbitrary and capricious manner, can reasonably defend itself.

A neutral inspection scheme should set the criteria the inspector uses to choose which facilities to inspect, but the schedule for the actual inspection should remain confidential, and may be kept separate from the neutral plan.

A routine comprehensive compliance inspection is most effective when it is unannounced or conducted with very little advance warning.

1.1.2 Reconnaissance Inspection

A reconnaissance inspection is performed in lieu of, or following a comprehensive inspection to obtain a preliminary overview of an owner/operator's compliance program, to respond to a citizen complaint, or to assess a non-permitted site. The inspector performs a brief (generally about an hour) visual inspection of the site, discharges and receiving waters. A reconnaissance inspection uses the inspector's experience and judgement to summarize potential compliance problems, without conducting a full comprehensive inspection. The objective of a reconnaissance inspection is to expand inspection coverage without increasing inspection resource expenditures. The reconnaissance inspection is the shortest and least resource intensive of all inspections.

Reconnaissance inspections may be initiated in response to known or suspected violations, a public complaint, a violation of regulatory requirements, or as follow-up to verify that necessary actions were taken in response to a previous inspection.

1.2 Self-inspections

For some projects, the site owner/operator is required by their State Pollutant Discharge Elimination System (SPDES) Permit and/or local requirements to have a qualified professional¹ perform a "self-inspection" at the site. In self-inspections, the qualified professional determines whether the site is being managed in accordance with the SWPPP, and whether the SWPPP's recommended erosion and sediment controls are effective. If activities are not in accordance with the SWPPP, or if the SWPPP erosion and sediment controls are not effective, the qualified professional inspecting the site recommends corrections to the owner/operator.

¹ A "Qualified professional" is a person knowledgeable in the principles and practice of erosion and sediment controls, such as a licensed professional engineer, Certified Professional in Erosion and Sediment Control (CPESC), licensed landscape architect or soil scientist.

2.0 PRE-INSPECTION ACTIVITIES

2.1 Regulatory Oversight Authorities

This section is intended for inspectors with regulatory oversight authority such as agents of the DOW or a local municipality, or others acting on their behalf, such as county Soil and Water Conservation District staff. Examples of other regulatory oversight authorities include: the United States Environmental Protection Agency (EPA); New York City Department of Environmental Protection (DEP), Adirondack Park Agency (APA); the Lake George Park Commission (LGPC), and the Skaneateles Lake Watershed Authority (SLWA). Before arriving on-site to conduct the inspection, considerations concerning communication, documentation and equipment must be made.

Regulatory oversight authority is granted by state or local law to government agencies or, depending upon the particular law, an authorized representative of state or local government. SPDES rules 6 NYCRR 750-2.3 and Environmental Conservation Law 17-0303(6) and 17-0829(a) all allow for authorized representatives of the (NYSDEC) commissioner to perform all the duties of an inspector.

2.1.1 Communication

Coordination with Other Entities

Where appropriate, prior to selecting sites for inspection, compliance inspectors should communicate with other regulatory oversight authorities to avoid unnecessary duplication or to coordinate follow-up to inspections performed by other regulatory oversight authorities.

Announced vs. Unannounced Inspection

Inspections may be announced or unannounced. Each method has its own advantages and disadvantages. Unannounced inspections are preferred, however many job sites are not continuously manned, or not always staffed by someone who is familiar with the SWPPP, thus necessitating an announced inspection. As an alternative, when an announced inspection is necessary, inspectors should try to give as little advanced warning as possible (24 hours is suggested).

Itinerary

For obvious safety reasons, inspectors should be sure to inform someone in their office which site or sites they will be visiting prior to leaving the to perform inspections.

2.1.2 Documentation

Data Review

The inspector should review any available information such as:

- Notice of Intent
- Stormwater Pollution Prevention Plan
- Past inspection records
- Phasing plan

- Construction sequence
- Inspection and Maintenance schedules
- Site specific issues
- Consent Orders
- Access agreements

Inspection Form

The inspector should have copies of, and be familiar with, the inspection form used by their regulatory oversight authority (example in Attachment 1) before leaving the office. Static information such as name, location and permit number can be entered onto the inspection form prior to arriving at the inspection site.

Credentials

Inspectors should always carry proper identification to prove that they are employed by an entity with jurisdictional authority. Failure to display proper credentials may be legal grounds for denial of entry to a site.

2.1.3 Equipment

Personal Protective Equipment

DOW employees must conform to the DOW Health and Safety policy as it relates to personal protective equipment. Other regulatory oversight authorities should have their own safety policies or, if not, may wish to consult the OSHA health and safety tool at: www.osha.gov/dep/etools/ehasp/ to develop a health and safety plan.

The following is a list of some of the most common health and safety gear that may be needed:

- Hard hat (Class G, Type I or better)
- Safety toe shoes
- Reflective vest
- Hearing protection (to achieve 85 dBA - 8 hr TWA)
- Safety glasses with side shields

If the construction is on an industrial site or a hazardous waste site, special training may be required prior to entering the site. The inspector should consult with OSHA or NYSDEC prior to entering such a site.

Monitoring Equipment

The following is a list of some equipment that may be helpful to document facts and verify compliance:

- Digital Camera
- Measuring tape or wheel
- Hand level or clinometer
- Turbidity meter (in limited circumstances)

2.2 Permittee's Self-inspection

This section is intended for qualified professionals who conduct site self-inspections on behalf of owner/operators. Self-inspectors are responsible for performing inspections in accordance with permit requirements and reporting to site owners and operators the results and any recommendations resulting from the inspection.

Prior to conducting inspections, qualified professionals should ensure familiarity with the Stormwater Pollution Prevention Plan and previous inspection reports.

3.0 ON-SITE INSPECTION PROCESS

3.1 Compliance Inspections

3.1.1 Professionalism

Don't Pretend to Possess Knowledge

Unless the inspector has experience with a particular management practice, do not pretend to possess knowledge. Inspectors cannot be expert in all areas; their job is to collect information, not to demonstrate superior wisdom. Site operators are often willing to talk to someone who is inquisitive and interested. Within reason, asking questions to obtain new information about a management practice, construction technique or piece of equipment is one of the inspector's main roles in an inspection.

Don't Recommend Solutions

The inspector should not recommend solutions or endorse products. The solution to a compliance problem may appear obvious based on the inspector's experience. However, the responsibility should be placed on the site owner to implement a workable solution to a compliance problem that meets NYSDEC standards. The inspector should refer the site operator to the New York Standards and Specifications for Erosion and Sediment Control (the Blue Book) or the New York State Stormwater Management Design Manual (the Design Manual).

Key advice must be offered carefully. One experienced stormwater inspector suggests saying: "I can't direct you or make recommendations, but what we've seen work in other situations is ..."

The way inspectors present themselves is important to the effectiveness of the inspection. An inspector cannot be overly familiar, but will be more effective if able to establish a minimum level of communication.

3.1.2 Safety

DOW employees must conform to Division health and safety policies when on a construction site. Other regulatory oversight authorities should have their own safety policies or, if not, may

wish to consult the OSHA health and safety tool at:

www.osha.gov/dep/etools/ehasp to develop a health and safety plan.

Some general protections for construction sites are:

- Beware of heavy equipment, avoid operator blind spots and make sure of operator eye contact around heavy equipment.
- Avoid walking on rock rip-rap if possible. Loose rock presents a slip hazard.
- Stay out of confined spaces like tanks, trenches and foundation holes.
- Avoid lightning danger. Monitor weather conditions, get out of water, avoid open areas and high points, do not huddle in groups or near trees.
- Protect yourself from sun and heat exposure. Use sun screen or shading clothing. Remain hydrated by drinking water, watching for signs of heat cramps, exhaustion (fatigue, nausea, dizziness, headache, cool or moist skin), or stroke (high body temperature; red, hot and dry skin)
- Protect yourself from cold weather. Wear multiple layers of thin clothing. Wear a warm hat. Drink warm fluids or eat hot foods, and keep dry.
- Avoid scaffolding in excess of 4 feet above grade.
- Beware of ticks, stinging insects, snakes and poison ivy or sumac.

3.1.3 Legal access

DOW has general powers, set forth under ECL 17-0303, subparagraph 6, to enter premises for inspections. In addition, ECL 3-0301.2 conveys general statutory authority granting the DOW the power to access private property to fulfill DOW obligations under the law.

ECL 15-0305 gives the DOW the authority to enter at all times in or upon any property, public or private, for the purpose of inspecting or investigating conditions affecting the construction of improvements to or developments of water resources for the public health, safety or welfare.

ECL 17-0829 allows an authorized DOW representative, upon presentation of their credentials, to enter upon any premises where any effluent source is located, or in which records are required to be maintained. The representative may at reasonable times have access to, and sample discharges/pollutants to the waters or to publicly owned treatment plants where the effluent source is located. This subparagraph provides DOW representatives performing their duties authority to enter a site to pursue administrative violations. Pursuing criminal violations may require a warrant or the owner's permission to enter the site.

For sites that are permitted, DOW has authority under the permit to enter the site.

If the owner/operator's representatives onsite deny access, the inspector *should not* physically force entry. Under these circumstances the attorney representing the inspector should be immediately notified and consideration should be given to soliciting the aid of a law officer to obtain entry.

DOW staff have the right to enter at any reasonable time. If no one is available, and the site is fenced or posted, DOW staff should make all reasonable efforts to identify, contact and notify the owner that the DOW is entering the site. If the inspector has made all reasonable efforts to contact site owners, but was unable to do so, the site can then be accessed. All efforts should be taken not to cause any damage to the facility.

Other regulatory oversight authorities should seek advice on their legal authorities to enter a job site. Municipalities that have adopted Article 6 of the New York State Sample Local Law for Stormwater Management and Erosion and Sediment Control (NYSDEC, 2004, updated 2006) will have legal authority to enter sites in accordance with that chapter and any other existing municipal authority.

Agents of DOW have authority similar DOW staff authority to enter sites. However, DOW staff enjoy significant personal liability protections as state employees. That liability protection may not be the same for authorized representatives of DOW. For authorized representatives of DOW (or other regulatory oversight authorities), it is prudent to obtain permission to enter the site. If such permission is denied, the authorized representatives should inform the appropriate DOW contact, usually the regional water manager.

3.1.4 Find the Legally Responsible Party (Construction Manager, Self-inspector)

The first action a compliance inspector should take upon entering a construction site is to find the construction trailer or the construction or project manager if they are available. The inspector should present appropriate identification to the site's responsible party and state the reason for the inspection; construction stormwater complaint response or neutral construction stormwater inspection. If the inspection is initiated as a response to a complaint, frequently the responsible party will ask who made the complaint. DOW keeps private individual complainants confidential. If the complainant is another regulatory oversight authority, DOW tends to make that known to the site's responsible party.

3.1.5 On-site records review (NOI, SWPPP, Self-inspection Reports, Permit)

Generally, the compliance inspector should next review the on-site records. Verify that a copy of the construction stormwater permit and NOI are on-site. Verify that the acreage, site conditions, and receiving water listed on the NOI are accurate. Compare the on-site documentation with documentation already submitted to, or obtained by the compliance inspector.

If the SWPPP has not been reviewed in the office, verify that it exists and contains the minimum required components (16 for a basic plan and 22 for a full plan). On-site review of the SWPPP should determine if: there is an appropriate phasing plan; the acreage disturbed in each phase, construction sequence for each phase; proposed implementation of erosion and sediment control measures; and, where required, post construction controls. For each of the erosion and sediment control practices, the SWPPP must show design details in accordance with the NYS Standards for Erosion and Sediment Controls. The SWPPP must also include provisions for maintenance of practices during construction. On-site review of post construction controls is generally limited to verification that the proposed stormwater management practices are shown on the site plan.

Where self-inspections are required, self-inspection reports are a significant tool for the compliance inspector to determine the performance history of the site. The self-inspection reports should be done with the required frequency. Self-inspection reports must include all the details required by the permit. Generally, it is desirable for permit information to be shown on a site plan. The compliance inspector should become familiar with the report and use that familiarity to judge whether the self-inspections are being performed correctly and that the site operator is correcting deficiencies noted in the report.

3.1.6 Walk the Site

During wet weather conditions, it may be advantageous to observe the receiving waters prior to walking the rest of the site. At some point during the inspection, the receiving water conditions must be observed and noted. It is critical to note if there is a substantial visible contrast to natural conditions, or evidence of deposition, streambank erosion, construction debris or waste materials (e.g. concrete washdown) in the receiving stream.

Each inspector should evaluate actual implementation and maintenance of practices on-site compared to how implementation and maintenance is detailed in the SWPPP. At a minimum, the compliance inspector should observe all areas of active construction. Observing equipment or materials storage, recently stabilized areas, or stockpile areas is also appropriate to evaluate the effectiveness of management practices.

3.1.7 Taking Photographs

Evidence of poor receiving water conditions and poor or ineffective practices should be documented with digital photographs. Those photographs should be logged date stamped and stored on media that cannot be edited (e.g. write only CDs). Photos should also be appended to the site inspector's report.

It is also beneficial to take photographs of good practices for educational and technology transfer reasons.

3.1.8 Exit Interview

Clearly communicate expectations and consequences. If it is clear from the inspection that the owner/operator must modify the SWPPP, or modify management practices within an assigned period (e.g. 24 hours, 48 hours, one week, two weeks), then that finding should be communicated at the time of the exit interview. The inspector should assign the period based on factors such as how long it would reasonably take to complete such modifications and the level of risk to water quality associated with failure to make such modifications.

The inspector should make clear that NYSDEC reserves rights to future enforcement actions. If the inspector's supervisor or enforcement coordinator determines additional enforcement actions are necessary, the inspector *should not* reassure the owner/operator that the current situation is acceptable.

3.2 Non-permitted Site Inspections

For sites not authorized in accordance with state or local laws, the process will be abbreviated. First verify the need for authorization and observe receiving waters to detect water quality standard violations. If there is a violation, notify the owner of the violation or other compliance actions in response to their illicit activity. For DOW staff, Attachment 2 or a similar notice can be used to notify the site owner/operator that stormwater authorization is required.

3.3 Self-inspections

The role of the self-inspector is to verify that the site is complying with stormwater requirements. In particular, the self-inspector verifies that the SWPPP is being properly implemented. The self-inspector also documents SWPPP implementation so regulatory agencies can review implementation activities.

It is not the role of the self-inspector to report directly to regulatory authorities.

Appendix H of *The New York Standards and Specifications for Erosion and Sediment Control* - August 2005 (the Blue Book) includes a Construction Duration Inspection checklist that can be used by the owner/operators qualified professional for self-inspections. The Blue Book is available on the NYSDEC website.

3.3.1 Purpose

The self inspector should ensure that the project's SWPPP is being properly implemented. This includes ensuring that the erosion and sediment control practices are properly installed and being maintained in accordance with the SWPPP/Blue Book.

The project must be properly phased to limit the disturbance to less than five acres, and the construction sequence for each phase must be followed. The SWPPP must also be modified to address evolving circumstances. Finally, and most importantly, receiving waters must be protected.

If a soil disturbance will be greater than five acres at any given time, the site operator must obtain written permission from the DOW regional office.

3.3.2 Pre-construction Conference

The parties responsible for various aspects of stormwater compliance should be identified at the pre-construction conference. Responsible parties may include, but are not limited to, owner's engineer, owner/operator/permittee, contractors, and subcontractors.

Typical responsibilities include: installation of erosion and sediment control (E & SC) practices; maintenance of E & SC practices, inspection of E&SC practices, installation of post construction stormwater management practices (SMPs), inspection of post construction SMPs, SWPPP revisions, and contractor direction.

All parties should clearly know what is expected of them. Responsible parties should complete the Pre-construction Site Assessment Checklist provided in Appendix H of the Blue Book.

3.3.3 Inspection Preparation

The inspector should review the project's SWPPP (including the phasing plan, construction sequence and site specific issues) and the last few inspection reports (if the inspector has them available).

3.3.4 Self-inspection Components

Inspect installation, performance and maintenance of all E&SC practices

The self inspector should inspect all areas that are under active construction or disturbance and areas that are vulnerable to erosion. The self-inspector should also inspect areas that will be disturbed prior to the next inspection for measures required prior to construction (e.g. silt barriers, stabilized construction entrance, diversions). Finally, self-inspectors should inspect post-construction controls during and after installation.

Identify site deficiencies and corrective measures

The self-inspector's reports must be maintained in a log book on site and the log book must be made available to the regulatory authorities. Although the legal responsibility for filing a Notice of Termination lies with the owner/operator, the self-inspector may also be called upon to perform a final site inspection, including post construction SMPs, prior to filing the Notice of Termination.

4.0 POST-INSPECTION ACTIVITIES

4.1 Regulatory Oversight Authorities

This section is intended for inspectors with regulatory oversight authority such as agents of the DOW or a local municipality, or others acting on their behalf (such as County Soil and Water Conservation District staff.) Upon completion of an inspection, inspection results should be documented for the record.

4.1.1 Written Notification

The inspector should inform the permittee or the on-site representative of their inspection results in writing by sending the permittee a complete, signed copy of the inspection report. The inspection report should be transmitted under a cover letter which elaborates on any deficiencies noted in the inspection report. It is not a good idea to commend exceptional efforts by the owner/operator in a letter, because such letters tend to undermine enforcement efforts when compliance status at a site degrades.

The inspector should consider providing a copy of the cover letter and inspection report to other parties with including:

- Permittee
- Contractor(s)
- Other regulatory oversight authorities
- Other parties present during the inspection (e.g. SWPPP preparer, permittee's self-inspector, etc.)

For DOW staff, an example of the inspection cover letter is included as Attachment 3.

4.1.2 Inspection Tracking

DOW staff must enter their inspection results into the electronic *Water Compliance System*.

Local municipalities and other regulatory oversight authorities are encouraged to develop an electronic tracking system in which to record their inspections.

4.2 Permittee's Self-inspections

This section is intended for qualified professionals who conduct site inspections for permittees in accordance with a SPDES permit or local requirements.

4.2.1 Written Records

Inspection Reports

The inspector shall prepare a written report summarizing inspection results. The inspection report is then provided to the permittee, or the permittee's duly authorized representative, and to the contractor responsible for implementing stormwater controls on-site in order to correct deficiencies noted in the inspection report. Finally, the inspection report must be added to the site log book that is required to be maintained on-site, and be available to regulatory oversight authorities for review.

4.2.2 Stormwater Pollution Prevention Plan Revisions

The inspector must inform the permittee of his/her duty to amend the Stormwater Pollution Prevention Plan (SWPPP) whenever an inspection proves the SWPPP to be ineffective in:

- Eliminating or significantly minimizing pollutants from on-site sources
- Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity
- Eliminating discharges that cause a substantial visible contrast to natural conditions

ATTACHMENT 1

Construction Stormwater Compliance Inspection Report

Project Name and Location:		Date:	Page 1 of 2
		Permit # (if any): NYR	
Municipality:	County:	Entry Time:	Exit Time:
On-site Representative(s) and contact information:		Weather Conditions:	
Name and Address of SPDES Permittee/Title/Phone/Fax Numbers: Contacted: Yes <input type="checkbox"/> No <input type="checkbox"/>			

INSPECTION CHECKLIST

SPDES Authority

Yes No N/A

1. ☐ ☐ ☐ Is a copy of the NOI posted at the construction site for public viewing?
2. ☐ ☐ ☐ Is an up-to-date copy of the signed SWPPP retained at the construction site?
3. ☐ ☐ ☐ Is a copy of the SPDES General Permit retained at the construction site?

Law, rule or permit citation

SWPPP Content

Yes No N/A

4. ☐ ☐ ☐ Does the SWPPP describe and identify the erosion & sediment control measures to be employed?
5. ☐ ☐ ☐ Does the SWPPP provide a maintenance schedule for the erosion & sediment control measures?
6. ☐ ☐ ☐ Does the SWPPP describe and identify the post-construction SW control measures to be employed?
7. ☐ ☐ ☐ Does the SWPPP identify the contractor(s) and subcontractor(s) responsible for each measure?
8. ☐ ☐ ☐ Does the SWPPP include all the necessary 'CONTRACTOR CERTIFICATION' statements?
9. ☐ ☐ ☐ Is the SWPPP signed/certified by the permittee?

Law, rule or permit citation

Recordkeeping

Yes No N/A

10. ☐ ☐ ☐ Are inspections performed as required by the permit (every 7 days and after 1/2" rain event)?
11. ☐ ☐ ☐ Are the site inspections performed by a qualified professional?
12. ☐ ☐ ☐ Are all required reports properly signed/certified?
13. ☐ ☐ ☐ Does the SWPPP include copies of the monthly/quarterly written summaries of compliance status?

Law, rule or permit citation

Visual Observations

Yes No N/A

14. ☐ ☐ ☐ Are all erosion and sediment control measures installed/constructed?
15. ☐ ☐ ☐ Are all erosion and sediment control measures maintained properly?
16. ☐ ☐ ☐ Have all disturbances of 5 acres or more been approved prior to the disturbance?
17. ☐ ☐ ☐ Are stabilization measures initiated in inactive areas?
18. ☐ ☐ ☐ Are permanent stormwater control measures implemented?
19. ☐ ☐ ☐ Was there a discharge into the receiving water on the day of inspection?
20. ☐ ☐ ☐ Are receiving waters free of there evidence of turbidity, sedimentation, or oil ? (If no , complete Page 2)

Law, rule or permit citation

Overall Inspection Rating: <input type="checkbox"/> Satisfactory <input type="checkbox"/> Marginal <input type="checkbox"/> Unsatisfactory	
Name/Agency of Lead Inspector:	Signature of Lead Inspector:
Names/Agencies of Other Inspectors:	

Describe the quality of the receiving water(s) both upstream and downstream of the discharge _____

Describe any other water quality standards or permit violations _____

Additional Comments:

13

ATTACHMENT 2

**** NOTICE ****

On March 10, 2003, provisions of the Federal Clean Water Act went into effect that apply to many construction operations.

If your construction operations result in the disturbance of one acre or greater and stormwater runoff from your site reaches surface waters (i.e., lake, stream, road side ditch, swale, storm sewer system, etc.), the stormwater runoff from your site must be covered by a State Pollutant Discharge Elimination System (SPDES) Permit issued by the New York State Department of Environmental Conservation (NYSDEC).

To facilitate your compliance with the law, NYSDEC has issued a General Permit which may be applicable to your project. To obtain coverage under this General Permit, you need to prepare a Stormwater Pollution Prevention Plan (SWPPP) and then file a Notice of Intent (NOI) to the NYSDEC headquarters in Albany. The NOI form is available on the DEC website. You may also obtain a copy of the NOI form at the nearest NYSDEC regional offices.

When you file your NOI you are certifying that you have developed a SWPPP and that it will be implemented prior to commencing construction. When you submit the NOI you need to indicate if your SWPPP is in conformance with published NYSDEC technical standards; if it is, your SPDES permit coverage will be effective in as few as five business days. If your SWPPP does not conform to the DEC technical standards, coverage will not be available for at least 60 business days.

Failure to have the required permit can result in legal actions which include Stop Work Orders and/or monetary penalties of up to \$37,500/day

If your construction operations are already in progress and you are not covered by an appropriate NYSDEC permit contact the NYSDEC Regional Water Engineer as soon as possible. If your construction field operations have not yet commenced, review the NOI and the General Permit on the DEC's website or at the DEC regional office for your area. When you are comfortable that you understand and comply with the requirements, file your NOI.

The requirement to file an NOI does not replace any local requirements. Developers/Contractors are directed to contact the Local Code Enforcement Officer or Stormwater Management Officer for local requirements.

ATTACHMENT 3

<< Date >>

Mr. John Smith
123 Main Street
Ferracane, NY 12345

Re: Stormwater Inspection
SPDES Permit Identification No. NYR10Z000 (through SPDES No. GP-02-01)
Blowing Leaves Subdivision
Gaspar (T), Eaton (Co.)

Dear Mr. Smith:

On the afternoon of << date >> I conducted an inspection of the construction activities associated with the Blowing Leaves Subdivision located on County Route 1 in the town of Gaspar, Eaton County. The inspection was conducted in the presence of you and Mr. Samuel Siltfence of Acme Excavating Co., Inc. The purpose of the inspection was to verify compliance with the *State Pollutant Discharge Elimination System (SPDES) General Permit for Storm Water Discharges from Construction Activity* ("the general permit").

The overall rating for the project at the time of the inspection was *unsatisfactory*. A copy of my inspection report is attached for your information. In addition to the report, I would like to elaborate on the following:

SPDES Authority

- In accordance with subdivision 750-2.1 (a) of Title 6 of the Official Compilation of Codes, Rules, and Regulations of the State of New York (6 NYCRR), a copy of your permit must be retained at the construction site. You did not have a copy of the general permit at the site. **Your failure to retain a copy of the general permit at the construction site is a violation of 6 NYCRR Part 750-2.1 (a).** Please retain a copy of the general permit at the site from this point forward.

SWPPP Content

- In accordance with Part III.E.2. of the general permit, contractors and subcontractors must certify that they understand the terms and conditions of the general permit and the SWPPP before undertaking any construction activity at the site. Your SWPPP does not include a certification statement from Acme Excavating Co., Inc. **The failure of your contractor to sign this certification before undertaking construction activity at the site is a violation of Part III.E.2. of the general permit.** Please obtain copies of all necessary certifications and provide copies of them to each party who holds a copy of your SWPPP.
- In accordance with Part V.H.2. of the general permit, SWPPP's must be certified by the permittee. Your SWPPP was not certified by you. **Your failure to certify your SWPPP is a**

Mr. John Smith
Re: SPDES Inspection
Blowing Leaves Subdivision
Gasper (T), Eaton (Co.)

<< Date >>

violation of Part V.H.2. of the general permit. Please certify your SWPPP.

Recordkeeping

- In accordance with Parts III.D.3.a. and III.D.3.b. of the general permit, permittees must have a qualified professional conduct site inspections within 24 hours of the end of 0.5" or greater rain events and at least once per week. A review of your records revealed that your "self-inspections" are only being conducted about two or three times per month. **Your failure to have a qualified professional conduct inspections at the required frequency is a violation of Part III.D.3.b. of the general permit.** Please immediately direct your qualified professional to conduct your site inspections at the required frequency.
- Although the frequency of self-inspections does not meet requirements, the quality of them is very good. Your qualified professional has accurately noted the same SWPPP deficiencies and necessary maintenance activities that I also observed, and prepared thorough sketches on the self-inspection site maps.
- In accordance with Part V.H.2. of the general permit, the permittee must certify all reports required by the permit. A review of your records showed that your self-inspection reports were not certified. **Your failure to certify your self-inspection reports is a violation of Part V.H.2. of the general permit.** Please sign and certify any and all existing and future self-inspection reports.

Visual Observations

- In accordance with Parts III.A.2. and III.A.3. of the general permit, all erosion and sediment controls (E&SC) measures must be installed (as detailed in the SWPPP) prior to the initiation of construction. During the inspection, I noted all of your E&SC measures have been correctly installed at the right times and locations.
- In accordance with Part V.L. of the general permit, all of the E&SC measures at your site must be maintained properly. While on site I observed that, among other things, the section of silt fence in place parallel to County Route 1 is in various stages of disrepair. **The failure of your contractor to adequately maintain the E&SC measures currently in place at your site is a violation of Part V.L of the general permit.** Please direct your contractor to repair this silt fence immediately and to diligently maintain all of the other required E&SC measures as they are brought to his attention by your qualified professional.
- This inspection was conducted during a rain event which resulted in a stormwater discharge to the municipal separate storm sewer system (MS4) being operated by the Eaton County Department of Public Works. Your discharge was visibly turbid whereas upstream water MS4 was clear. As a result, the discharge from the MS4 outfall into Karimipour Creek was causing

Mr. John Smith

<< Date >>

Re: SPDES Inspection
Blowing Leaves Subdivision
Gasper (T), Eaton (Co.)

slight turbidity. Please be advised that the narrative water quality standard for turbidity in Karimipour Creek is "no increase that will cause a substantial visible contrast to natural conditions." I attribute the lack of maintenance of your E&SC measures to be the primary cause of the turbid discharge. Please be reminded that the general permit does not authorize you cause or contribute to a condition in contravention of any water quality standards.

If you have any questions or comments, please feel free to contact me at (999) 456-5432.

Sincerely,

Hector D. Inspector, CPESC
Environmental Program Specialist 2

HDI:ms
Attachment

cc w/att.: Chester Checkdam, (T) Gasper Code Enforcement Officer
Samuel Siltfence, Acme Excavating Co., Inc.

Town of Charlton Storm Water Management Program Plan

Good Housekeeping and Pollution Prevention

Activity Checklist

- The goal of Charlton's Good Housekeeping and Pollution Prevention minimum control measure is to maintain municipally owned facilities in an exemplary manner, to perform highway maintenance activities with as little environmental impact as possible and to manage fuel, oil and highway products safely to prevent contamination.
- increase public awareness of the connection between the individual and the water quality of the community's streams and lakes. Activities within the town and Charlton's participation in the county program will focus on informing residents to use caution with their application of lawn products, their disposal of wastes and the importance of maintaining private sanitary facilities.
- Continue maintenance of town owned sanitary facilities – systems should be pumped out and inspected at intervals of between two and three years.
- Maintain and periodically inspect Town Hall storm water management system – clean out catch basins, inspect interior or pretreatment chamber, inspect observation ports on infiltrator array system.
- Town Highway Garage – continue posting of policies related to salt and fuel and oil storage. Maintain absorbent cleanup products for small spills. Inform highway department employees of emergency contact procedures.
- Maintain emergency telephone contact list.
- Maintain and periodically review DEC good housekeeping and pollution prevention manual, review Cornell Local Roads Program and NYS DOT manuals on highway maintenance techniques.
- Continue to provide training opportunities for highway department personnel.
- Continue to use reduced salt mix for winter maintenance.
- Complete activity log to track roadway maintenance and cleaning activities.

Town of Marlton Highway/Public Works Department Stormwater Management 16 Daily Activities Report

Employee Name:

Weather Conditions:

DATE:

Street & Bridge Maintenance ~ 1

Winter Road Maintenance ~ 2

MS4 Maintenance ~ 3

Vehicle/Fleet Maintenance ~ 4

Park & Open Space Maintenance ~ 5

Municipal Bldg Maintenance ~ 6

Solid Waste Management ~ 7

Streambank Stabilization & Hydrologic Habitat Modification ~ 8

SW CODE	ACTIVITY	LOCATION	START	END	HOURS	NOTES
1	Paving					linear distance (mi.): miles
1	Shoulders					linear distance (mi.): miles
1	Gravel					Tonnage: tons
1	Shimming					# of repairs:
1	Patching					# of repairs:
1	Road Repair					repair detail:
1	Street Sweeping					linear distance (mi.): miles
	Plowing					linear distance (mi.): miles
2	Salt/Sand					Tonnage applied: salt (tons):
3	Ditching					linear distance (mi.): miles
3	Culvert Pipe					linear distance (ft): feet
3	Catch Basins					vol removed (cb yds): cubic yards
3	Fill Dirt					vol of fill (cb yds): cubic yards
4	Trucks & Equipment					# serviced: # repaired:
5	Brush					volume: cubic yards
5	Mowing					area mowed (ac): acres
5	Trees					treatment detail: # total
7	Rubble/Debris					Volume (cubic yards): cubic yards
	Signs					# placed or repaired:
	Paperwork					
	Other					

MS4 ACTIVITIES LOG (SUPPLEMENT)						
SW code	ACTIVITY	LOCATION	START	END	HOURS	NOTES
3	MS4/Drainage Inspection					# of STPs inspected: <div></div>
3	MS4/Drainage Maintenance					maintenance details: <div></div>
	<div>inlet</div>					
	<div>outlet</div>					
	<div>pipe/conveyance</div>					Length (ft.):
	<div>outfall/other</div>					
3	Illicit Connection Inspection					# inspected: <div></div> detail: <div></div>
3	Illicit Connection Mitigation					detail: <div></div>
3	Installation of Sediment Control BMPs					# installed: <div></div> install detail: <div></div>
3	Inspection of Sediment Control BMPs					# inspected: <div></div> inspect detail: <div></div>
3	Maintenance of Sediment Control BMPs					# maintained: <div></div> maintenance detail: <div></div>
3	Installation of Erosion or Pollution Prevention BMPs					# installed: <div></div>
3	Inspection of Erosion or Pollution Prevention BMPs					# inspected: <div></div> inspection detail: <div></div>
3	Maintenance of Erosion or Pollution Prevention BMPs					# maintained: <div></div> maintenance detail: <div></div>
4	Materials Reclamation (oil/coolant/other)					gallons recovered (US): <div></div> oil: <div></div> coolant: <div></div> other: <div></div>
5	Road Side Clean Up					linear distance (mi.): <div></div> miles <div></div> debris collected (# bags): <div></div>
7	Solid Waste/Debris Disposal					cubic yardage: <div></div> tonnage: <div></div>
7	Illegal Dumping Remediation					detail: <div></div>
9	Pollution Prevention/MS4 Training					volume (#bags/cu yds): <div></div>
9	Emergency Spill Response Training					detail: <div></div>
	Emergency Spill Response					detail: <div></div> volume (gal./cu yds): <div></div>

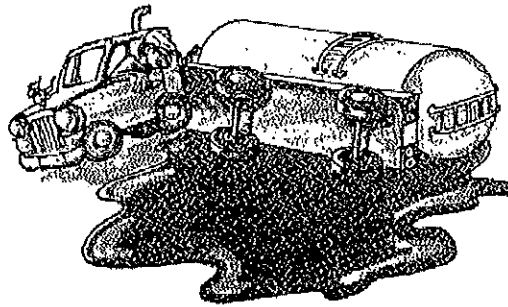
MS4/STORMWATER MANAGEMENT PROGRAM ACTIVITIES DATABASE FOR ANNUAL REPORTING

PROGRAM AREA/ACTIVITIES		TOTAL HOURS		SUMMARY				
1 ~ Street & Bridge Maintenance			0.0		Linear Dist. (mi.) Maintained	Total Number of Repairs		
					0.0	0		
2 ~ Winter Road Maintenance			0.0		Total Salt Applied (tons)	Total Sand Applied (tons)		
					0.00	0.00		
3 ~ MS4 Maintenance			0.0		Ditchline (miles)	Culvert (ft)	catch basins	#
					0.0	0.0		cu yds
					MS4 Insp. #:	# maintained	# repaired	BMPs # instld/mntnd:
								0
4 ~ Vehicle/Fleet Maintenance			0.0		Trucks/Equipment:	0	0	fluid recovery (U.S. gal.)
								0
5 ~ Park & Open Space Maintenance			0.0		Total Acres Maintained:			
						0.00		
6 ~ Municipal Bldg Maintenance								
7 ~ Solid Waste Management			0.0					
8 ~ Streambank Stabilization & Hydrologic Habitat Modification								
9 ~ Stormwater Management & Pollution Prevention Training			0.0					

New York State
Department of
Environmental Conservation



New York State's Spill Response Program for Petroleum and Hazardous Materials



George E. Pataki, *Governor*
Erin M. Crotty, *Commissioner*

The "Spill" Problem

Accidental releases of toxic gases, petroleum, and hazardous materials occur frequently throughout New York State. Every year there are approximately 16,000 suspected and/or confirmed releases reported. Even a small release can endanger public health and contaminate groundwater, surface water and soil. Vapors may make the air unsafe to breathe or create explosion hazards. Dissolved chemicals in the groundwater may make the water unsafe to drink and create other health hazards. Spilled materials may kill or injure plants, fish and wildlife, and can also damage their habitats.

Spill Response Program Organization

The New York State Department of Environmental Conservation (DEC) maintains a Spill Response Program which has its headquarters in Albany, with trained response personnel assigned to regional offices throughout New York State. The program operates a Spill Hotline for receiving notification of incidents. The program staff promptly respond to known and suspected releases, and ensure that containment, cleanup and disposal are completed to minimize environmental damage.

Regional spill response staff will respond to releases of petroleum and other hazardous materials 7 days-a-week, 24 hours-a-day. Spill responders carry pagers and cellular phones so they can be reached when they are away from the office. Their vehicles are equipped with radios, reference materials, and safety and protective equipment. Emergency communications are maintained through a radio system operated by DEC.

Spill Response Activities

After receiving notification of actual or suspected releases, DEC spill responders will evaluate the situation to determine what actions are required to protect public health and the environment, and to identify the spiller, or responsible party (RP). When DEC spill responders arrive at the site of an incident, they have the authority to:

- Enter property to investigate actual and suspected releases.
- Give RPs direction on actions to be taken and the type of environmental cleanup contractors they will need.
- Tell RPs what type of information they will have to provide.
- Answer questions concerning notification requirements.
- Provide information on technical questions.
- Advise RPs when cleanup goals are being properly met.
- Secure cleanup and laboratory contractors.
- Direct contractors hired by DEC.

DEC spill responders will not:

- Recommend specific cleanup or laboratory contractors to RPs.
- Direct contractors hired by the RP.

DEC spill responders respond to both petroleum and hazardous material releases. However, after an emergency containment and cleanup is completed, spill response personnel remain responsible for oversight of long-term cleanup on only petroleum releases. Information about hazardous material releases is given to hazardous waste remediation personnel to ensure that long-term cleanup of the site is completed.

DEC spill responders may require the RP to determine the extent of contamination, select a cleanup technology, and complete containment and cleanup activities. Cleanups, particularly those in which spills have contaminated groundwater, take time. Extensive drilling and laboratory sampling may be required, and remediating the groundwater may take several years. RP requirements will vary with type of release, site characteristics, disposal requirements, and cleanup goals for soil and water. The Navigation Law and the Environmental Conservation Law and associated regulations require at least the following actions at a site:

- Removal of all free product from the surface and underground.
- Remediation of the affected surface environment.
- Treatment of drinking water or provision of alternative water supplies during groundwater remediation.
- Remediation of contaminated soil.
- Treatment of contaminated groundwater.
- Rescue and rehabilitation of affected wildlife.
- Restoration/replacement of affected natural resources.

DEC is not responsible for cleaning up releases. DEC spill responders will arrange for containment and cleanup by a contractor only when the RP is unknown, unable, unwilling or doing inadequate clean up, or if local public safety agencies need emergency assistance.

Agencies Associated with DEC's Spill Program

For petroleum releases, Article 12 of the Navigation Law establishes the New York State Environmental Protection and Spill Compensation Fund (Fund) as a non-lapsing, revolving fund administered by the Office of the State Comptroller. The Comptroller: disburses Fund money for administrative, cleanup and removal expenses incurred by DEC; arranges for settlement of damage claims from releases; collects reimbursement and penalties from dischargers, and establishes the license fees. The State Attorney General's Office also supports the program through legal actions to obtain reimbursement from responsible parties.

Agencies that Participate in Spill Response

Other public agencies may respond if a release creates immediate hazards to life and health. The first trained personnel to arrive at a release site are usually from local emergency service agencies such as the police or fire department. Local agencies will lead the response to protect the public from fires, explosions, or toxic gases, and sometimes to divert traffic or evacuate residents. Other state and federal agencies, such as the New York State Department of Health, the U.S. Environmental Protection Agency and the U.S. Coast Guard, may also respond.

Responsible Parties

Under New York State's Navigation and Environmental Conservation Laws, the RP (usually the owner or operator of equipment or a facility that has a release) is responsible for notification of appropriate agencies, and for containment, cleanup and removal of spilled and contaminated materials. The RP is liable for all costs associated with a release, including relocation costs and third party damages. If DEC conducts a cleanup, the RP must pay not only for the direct cleanup costs, but also for DEC's administrative costs and for any interest and penalty charges. Reimbursement is sought either by DEC, the Spill Fund Administrator or the Attorney General's Office.

Notification Requirements

Federal and state laws require RPs to notify government agencies of certain releases of pollutants, petroleum and other hazardous materials. The DEC Spill Response Program operates the New York State Spill Hotline for this purpose.

Most releases should be reported immediately to DEC. No release should be reported later than two hours after it occurs. If you store or handle significant quantities of petroleum or other hazardous materials, or work for someone who does, you should be familiar with the specific legal release notification requirements associated with the materials.

If you are involved in a release and you are not sure what the notification requirements are, telephone DEC's Spill Hotline. This protects you from a non-notification violation and ensures a quick response by responsible public agencies. It may also be necessary to notify the federal government, if required by federal law, at the National Response Center. Some releases also require written confirmation within a specific time period. (The telephones are answered 24 hours-a-day.)

Act safely. Begin containment as soon as possible if it is safe to do so. If you cannot identify the contaminant or do not know the dangers involved, stay upwind and upgrade of the release.

NYSDEC Spill Hotline:

1-800-457-7362 (within NYS)
(518) 457-7362 (outside NYS)

National Response Center:

1-800-424-8802

For further information, contact:

New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Spill Prevention & Response
625 Broadway – 11th Floor
Albany, NY 12233-7020
(518) 402-9546

Regional Spill Offices and Counties Served

Region 1 - (631) 444-0320

SUNY Campus

Building 40

Stony Brook, NY 11790-2356

(Nassau, Suffolk)

Region 2 - (718) 482-4900

1 Hunters Point Plaza

47-40 21st Street

Long Island City, NY 11101-5407

(Bronx, Kings, Queens, Richmond, New York [New York City])

Region 3 - (845) 256-3121

21 South Putt Corners Road

New Paltz, NY 12561-1696

(Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester)

Region 4 - (518) 357-2045

1150 N. Westcott Road

Schenectady, NY 12306

(Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schoharie, Schenectady)

Region 5 - (518) 897-1243

Route 86 - PO Box 296

Ray Brook, NY 12977-0296

(Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren, Washington)

Region 6 - (315) 785-2513

State Office Building

317 Washington Street

Watertown, NY 13601-3787

(Herkimer, Jefferson, Lewis, Oneida, St. Lawrence)

Region 7 - (315) 426-7519

615 Erie Blvd. West

Syracuse, NY 13204-2400

(Broome, Cayuga, Chenango, Cortland, Madison, Onondaga, Oswego, Tioga, Tompkins)

Region 8 - (716) 226-2466

6274 E. Avon-Lima Road

Avon, NY 14414-8519

(Chemung, Genesee, Livingston, Monroe, Ontario, Orleans, Schuyler, Seneca, Steuben, Wayne, Yates)

Region 9 - (716) 851-7220

270 Michigan Avenue

Buffalo, NY 14203-2999

(Allegany, Cattaraugus, Chautauqua, Erie, Niagara, Wyoming)

Municipal Pollution Prevention And Good Housekeeping Program Assistance

May 2006



Denise M. Sheehan, Commissioner
NYS Department of Environmental
Conservation

George Pataki, Governor
State of New York

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Section 1

Introduction: The Importance of Pollution Prevention and Good Housekeeping in Stormwater Management

1.1 Assistance Document Purpose and Scope

This assistance document is intended to set a framework for pollution prevention and good housekeeping programs for municipal operations and facilities. Pollution prevention and good housekeeping for municipal operations is one of six minimum control measures required under New York State's Municipal Separate Storm Sewer System (MS4) Phase II Stormwater Permit Program.

The term MS4 does not solely refer to municipally owned storm sewer systems, but rather has broader application and includes, in addition to local jurisdictions: the NYS Department of Transportation, public universities, local sewer districts, public hospitals, military bases, and prisons. An MS4 is not limited to a system of underground pipes; it can include roads with drainage systems, gutters and ditches.

This assistance document is also intended to clarify New York State's expectations for reporting by MS4s on the progress and implementation of pollution prevention and good housekeeping programs (referred to as Minimum Control Measure 6). Recommendations are provided for self-assessment of existing programs (Section 2) and implementation of more comprehensive pollution prevention efforts (Section 3). Finally, sources of additional published information on specific best management practices (BMPs) are provided (Section 4).

This assistance document is considered to be a dynamic document that will evolve as experience is gained and shared among municipalities and other MS4s. In addition, as updated information becomes available, the discussion of practical aspects of program assessment and implementation and viable BMPs are expected to change and be incorporated into future assistance materials.

1.2 Program Requirements

The United States Environmental Protection Agency's (USEPA) Stormwater Phase II Final Rule and New York State's MS4 Phase II Stormwater Permit Program require an operator of a regulated small MS4 to:

- Design and implement an operation and maintenance program to reduce and prevent discharge of pollutants to the maximum extent practicable from municipal operations and facilities;

- Include a training component in the program on pollution prevention and good housekeeping techniques in municipal operations;
- Select and implement management practices for pollution prevention and good housekeeping in municipal operations; and
- Develop measurable goals to ensure the reduction of all pollutants of concern in stormwater discharges to the maximum extent practicable.

The New York State Department of Environmental Conservation (DEC), in partnership with other state agencies and institutions, has published since 1992 a series of documents that together comprise the NYS Management Practices Catalogue for Nonpoint Source Pollution Prevention. This catalogue preceded the final adoption of the Stormwater Phase II Rule and many of the included practices are relevant to the pollution prevention/good housekeeping goals.

However, other published management practice documents may also be suitable and address details not in the original NYS Management Practices Catalogue. Section 4 provides references to some of these. It is expected that improved descriptions of management practices suitable for municipal pollution prevention programs will be published in the future. These practices, often referred to as BMPs in literature, may be accepted in the New York State Phase II Stormwater Permit Program, and may be referenced in future updates of this assistance document.

Section 2

Assessing Existing Programs and Setting Priorities

2.1 Assessing Existing Programs

Pollution prevention and good housekeeping policies and procedures may already be in place in some municipalities. In many cases, municipalities are implementing activities that support pollution prevention and good housekeeping. These activities are being performed either under direct control of the municipality or are contracted or shared with other public entities.

New York State recommends that municipalities conduct a self-assessment of their existing policies, procedures and activities that relate to pollution prevention and good housekeeping. This assessment will serve to identify both strengths and potential gaps or revisions that need to be addressed for compliance with the Phase II Stormwater Permit requirements. The self-assessment should address contracted or shared operations, as well as those under direct municipal control.

The self-assessment should be conducted for each of the principal categories of municipal operations that comprise Minimum Control Measure 6, which are:

- Street and Bridge Maintenance
- Winter Road Maintenance
- Stormwater System Maintenance
- Vehicle and Fleet Maintenance
- Parks and Open Space Maintenance
- Municipal Building Maintenance
- Solid Waste Management
- Streambank and Hydrologic Habitat Maintenance

Within a given municipality, the self-assessment should consider the status of policies and procedures, resources (staff and equipment) and training for all operation categories within that municipality. Table 2.1 presents a suggested list of questions to ask when performing the assessment. Municipalities can add additional questions, as needed, to help improve the effectiveness of the assessment.

This self-assessment is only a guide. The results of the assessment are not required to be submitted to the DEC. However, municipalities will benefit from the assessment because it will help determine if the necessary steps are being taken and adequate staff and resources are available to achieve compliance with the Phase II Stormwater Permit requirements. Assistance for tracking the established policies and procedures and activities performed are presented in Section 3 and will be useful for assessing the effectiveness of the municipal pollution prevention and good housekeeping program.

Table 2.1

**Pollution Prevention and Good Housekeeping
Self-Assessment for Municipal Operations**

1. Status of Policies and Procedures
 - Established?
 - Format (document type, if any)?
 - Latest revision or review?
 - Content: For each municipal operation category in Tables 3.1 to 3.8, all relevant key items listed under policies and procedures currently addressed?
2. Staff
 - Number of staff (with significant roles in municipal operations for each category)?
 - Percent of staff receiving training in pollution prevention, good housekeeping and stormwater management?
 - Percent of staff trained in existing policies and procedures?
3. Equipment
 - Adequacy: are upgrades or new equipment needed?
 - Proper maintenance schedules implemented?
4. Coordination/Collaboration
 - Are policies consistent across municipal departments? (e.g. pesticide use in different operations, recycling, etc.)
 - Are county, regional or state agencies consulted or involved in municipal pollution prevention and good housekeeping efforts?
 - Are community groups and citizens involved either through volunteer assistance, advisory roles, or outreach and education?

2.2 Setting Local Priorities

Most pollution prevention and good housekeeping practices should be implemented across all geographic areas, at all municipal facilities and in all municipal operations. Practical considerations, though, may indicate the need for setting priorities. A municipality's capabilities, the nature of existing pollution and its sources, and waterbody and watershed characteristics are important factors that may warrant program adjustments and influence such decisions as:

- BMP priorities and selection
- Scheduling and frequency of BMP implementation
- Targeting of different operations or facilities for primary emphasis
- Need for more advanced technology or system component upgrades or repairs
- Need for fostering partnerships with businesses or other public entities within the municipality, or other areas within the watershed but outside of the municipality
- Worker training priorities

The watershed (including waterbodies) characteristics, existing pollution and sources of pollution are interrelated. Together, they should guide a municipality in determining which types of operations or facilities and which general locations are most important to address first. The likelihood that an operation or facility may store or release a high priority pollutant and the proximity of that operation or facility to a high priority waterbody are the most important considerations.

Municipal Capabilities and Existing Pollutants

This process for setting priorities may be used to set short-term implementation decisions (targeted operations, locations, schedules), but may also be applied to longer-term development of a comprehensive pollution prevention program. Uniform procedures across all operations and all areas are an ideal goal, but basing priorities on common sense interpretations of watershed and pollutant characteristics will lead to more cost-effective programs in the short term.

An assessment of the municipality's capabilities and potential to achieve results in the receiving waterbodies may suggest other needed adjustments. Beyond the constraints of a municipality's resources (staff, infrastructure, equipment), the significance of pollution sources in the watershed outside of the municipality or not under municipal control directly affects the potential to achieve results through the municipal pollution prevention/good housekeeping program. Longer-term partnerships and implementation of other stormwater management program measures may be important.

Another important factor in setting priorities is related to "clean water" exposure. The opportunity for relatively clean runoff to contact potential pollutant sources must be minimized. This may be controlling direct precipitation or meltwater, roof runoff, or other sheet or channel runoff. Such exposure, even in areas not close to priority waterbodies, may be assigned a high

priority for BMP implementation.

Local Sources of Resources and Assistance

For many municipalities across New York State, a very useful resource that can guide program priorities is the recent work of county-level (and sometimes regional) organizations to establish County Water Quality Strategies. These strategies have been developed in many counties through the cooperative work of local agencies and organizations that comprise the County Water Quality Coordinating Committee (CWQCC). The organizations included in the CWQCC, are excellent sources of assistance. In many cases, their expertise on local water resources, land use and pollution problems is invaluable for determining both geographic and pollutant priorities for municipalities.

Another resource in some areas of the state is the Regional Planning Council (sometimes referred to as the regional planning and development board or regional planning agency). Such agencies, depending on the region, have invested considerable talent in water resource management planning and priority setting.

To locate County Water Quality Coordinating Committee (CWQCC) contacts, go to <http://www.nys-soilandwater.org/> and scroll down and click on “CWQCC.” To identify the CWQCC contact, click on the menu item in the left column named “Contacts,” then select “County Offices”. Below the “NYS Map” you will see that the CWQCC contact for each county is in the far right column. To quickly refer to your county, click on the county on the “NYS Map” and the page will automatically scroll down to the county of interest. In the future, you will also be able to obtain the contact information directly from the “CWQCC” page. To locate Regional Planning Council contacts, go to <http://www.dos.state.ny.us/lists/rgcoplan.html> . Next, click on “Regional Planning Agencies” and scroll down to the planning body for the county/ies of interest (counties are listed after the name of each planning body).

Waterbody Assessment

The most useful geographic tool for identifying priorities is the DEC’s Waterbody Inventory/Priority Waterbodies List (WI/PWL). This inventory and list, which is a component of DEC Division of Water’s Comprehensive Assessment Strategy, has been published in fourteen documents for the basins of New York. Published information is available through:

Bureau of Watershed Assessment and Management
NYSDEC Division of Water
625 Broadway
Albany, NY 12233-3502

and information can be found on the worldwide web at:

<http://www.dec.state.ny.us/website/dow/bwam/wqap.html>

The Waterbody Inventory is a comprehensive inventory of all surface waters of the state, whereas the Priority Waterbodies List (PWL) is a subset of these waters with documented, potentially resolvable higher priority problems and issues.

The highest priority waters in New York State are a further subset of the PWL, known as the New York State 2004 Section 303(d) List of Impaired Waters Requiring a TMDL (Total Maximum Daily Load). This list, often referred to as the Section 303(d) List, identifies those waters that do not support appropriate uses and that require TMDL development or other strategy to attain water quality standards. The 2004 Section 303(d) List identifies 592 separate waterbodies, though multiple pollutants in some of these waterbodies result in 976 waterbody/pollutant listings. Information on the 2004 Section 303(d) List is available from the same DEC Division of Water Office and website listed above.

Both the PWL and Section 303(d) List indicate specific waterbodies along with general assessments of pollutant(s) causing the listing and the source(s) of pollutant(s). Municipal pollution prevention and good housekeeping programs should target municipal operations or facilities which are most likely to collect, store or release such pollutants or which are in closest proximity to the listed waters.

Another useful tool for setting priorities based on watershed characteristics that complements the PWL and Section 303(d) lists is the New York State Department's of Health's Source Water Assessment Program (SWAP). This program addresses public drinking water sources, including both surface water and groundwater, and is therefore narrower in scope than the PWL and Section 303(d) Lists. The SWAP assessments may be a useful tool because they attempt to address and set priorities based on land use characteristics in the watershed and on pollutant and pollutant source categories. Information on the Source Water Assessment Program and specific assessments may be obtained from the following New York State Department of Health webpage: <http://www.health.state.ny.us/nysdoh/water/swap.htm> .

2.3 Guiding Principles for Stormwater Pollution Prevention

Priorities for implementing municipal pollution prevention and good housekeeping programs should also be based on a series of guiding principles. The following listing of such principles may support decisions on BMP selection and targeting of more important operations and facilities. They may also serve to develop employee capabilities, improve coordination with other non-municipal efforts, and facilitate measurement of progress in reducing stormwater pollution. The "common sense" nature of these suggestions, while not required, can provide a useful perspective and all are considered to be worthy of attention.

1. Prevent Pollution at its Source

Controlling pollutants at their source and preventing their wider release is more efficient and cost-effective than removing them from stormwater runoff or other water treatment. Remove or capture contaminants before stormwater contact; prevent erosion; and provide multiple barriers to pollutant releases at storage and waste sites.

Examples:

- ▶ sweeping streets (abrasives removal, litter, organic debris removal)
- ▶ secondary containment at storage sites
- ▶ revegetating eroding slopes
- ▶ early capture of hydrocarbons by pretreatment vaults
- ▶ animal waste collection and management

2. Manage Clean Water Runoff and Minimize Pollutant Exposure to Clean Water

Prevent clean water runoff and precipitation from contacting potential pollutants and prevent mixing of clean runoff with polluted water flows.

Examples:

- ▶ structural cover of storage sites
- ▶ roof drainage management
- ▶ site drainage design/runoff diversion
- ▶ maximize infiltration of runoff

3. Minimize Use of Potential Pollutants

Examine municipal use of all chemicals and other potential pollutants and identify methods of eliminating, reducing or better targeting their use in municipal operations and facilities (including alternative products).

Examples:

- ▶ reduced or alternative pesticide use
- ▶ reduced fertilizer use
- ▶ reduced road salt and abrasives use
- ▶ reduced or alternative exterior cleaning product use

4. Plan for Spills and Accidents

Develop spill prevention and response policies and procedures for ALL facilities that use or store chemicals (not just petroleum).

Examples:

- ▶ provide secondary containment
- ▶ equip facility to handle any size of spill
- ▶ assign responsible person/team for response
- ▶ post procedures and emergency contacts

5. Practice Preventive Maintenance

Regularly inspect components of stormwater collection, conveyance and treatment system; regularly inspect machinery, pipes, storage tanks and other equipment for leaks or worn parts; regularly calibrate application equipment (salts, pesticides, fertilizers); plan for system upgrades and component replacements and repairs.

Examples:

- ▶ containment of minor leaks and spills with drip pans, absorbent pads
- ▶ use of dry cleanup methods rather than washing
- ▶ establish inspection calendar and incorporate into records/data system
- ▶ establish equipment maintenance and calibration calendar and incorporate into records/data system

6. Identify Potential Pollution Sources

Identify all municipal facilities and operations that could impact stormwater quality; identify potential pollution sources at each site or for each activity; identify, map and inspect the facility's stormwater drainage system.

Examples:

- ▶ all material storage sites, especially those with any outside loading or unloading operations
- ▶ all fueling sites
- ▶ all drainage structures and components
- ▶ all sites with animal waste concentrations
- ▶ pesticide/fertilizer application areas

7. Plan New Facilities to Include Stormwater Pollution Prevention

Include a stormwater pollution prevention component in all new municipal facilities and activities; site new facilities to minimize waterbody impacts.

Examples:

- ▶ minimize impervious surfaces
- ▶ maintain stream buffers
- ▶ infiltrate runoff
- ▶ eliminate pollutant exposure
- ▶ provide spill containment measures and structural stormwater management practices

8. Improve Data Collection, Mapping, and Records Maintenance

Emphasize improvement of data collection and records maintenance to address higher priority pollution sources and contaminants; improvement of geographic information; and unification of data management across all relevant municipal departments and operations.

Examples:

- ▶ incorporate geographic information systems (GIS) into pollution prevention planning
- ▶ maintain chemical usage data (pesticides, fertilizers, salts, solvents, etc.)
- ▶ maintain inspection, repair, maintenance records
- ▶ integrate records maintenance across departments, based on priorities (e.g., pesticide usage)

9. Train and Reward Employees

Train employees regarding stormwater pollution and prevention practices; identify emergency contacts and reporting procedures; seek employee ideas on pollution prevention methods and priorities; reward employees who participate in prevention program.

Examples:

- ▶ general education on importance of stormwater pollution control to all employees
- ▶ targeted training on policies, procedures and best management practices for maintenance staff
- ▶ retraining and continuing education on routine basis for maintenance staff
- ▶ bulletin boards, web postings or other options for BMP news and updates.
- ▶ establish and continue employee rewards or recognition program

10. Improve Communications and Coordination

Emphasize communication and coordination across key municipal departments and operations; coordinate stormwater and pollution prevention activities with county and state agencies, organizations and institutions; develop public outreach and citizen participation regarding municipal pollution prevention activities.

Examples:

- ▶ establish a municipal pollution prevention team (public works director, planner engineer, water/sewer operator, highway, etc.)
- ▶ participate in County Water Quality Coordinating Committee (county agencies, etc.)
- ▶ participate in statewide organizations (Association of Towns, Conference of Mayors, Cornell Local Roads Program, etc.)
- ▶ work with local educational institutions
- ▶ work with Regional Planning Agency for your area
- ▶ include stormwater pollution prevention column in municipal newsletter and bulletins
- ▶ post informational signs at special project sites
- ▶ encourage participation by citizens and businesses in special events such as hazardous waste collection events or community cleanup days.

Section 3

New York State Expectations for Municipal Pollution Prevention and Good Housekeeping Programs

3.1 Progressive Development of Pollution Prevention and Good Housekeeping Programs

Many municipalities across New York State have already established elements of pollution prevention and good housekeeping that address their routine operations. Proper storage of materials, spill prevention and response, street cleaning, and stormwater drainage system maintenance are just some of the practices that have been incorporated as standard procedures.

However, there is also wide variation in the degree of development and implementation of the diverse aspects of pollution prevention and good housekeeping, even within a single municipality. Consistency - or a unified, integrated approach - across the different municipal operations is an important concern. A coherent approach to setting priorities, policies and procedures, record keeping and worker training for all operations related to stormwater management is strongly recommended.

It is essential to recognize the relevance of many routine municipal operations to the stormwater management program. Any operations that collect, store or release sediments, wastes or other potential pollutants are important elements of stormwater management and should be addressed in the comprehensive pollution prevention and good housekeeping program.

The self-assessment approach recommended in Section 2.1 serves to identify both strengths and program development needs for a broad spectrum of municipal operations. The program development phase that is emphasized in the self-assessment focuses on the following:

- statement of policies and procedures
- selection of BMPs for implementation
- identification of priorities
- setting schedules for implementation
- worker training
- equipment review (adequacy, maintenance, upgrades, new technology)
- record keeping practices
- protocols for partnerships (cooperative work with other public agencies, contractors, citizen groups)

To the extent practicable, it is desired that these elements be addressed in a unified approach across different municipal operations and departments. Priority setting approaches, record-keeping practices, and worker training are examples where a unified approach is most beneficial.

Many of these elements are already developed to some degree for most of the key municipal operations. New York recognizes that future municipal program development will be phased, as each of these elements may be enhanced in stages. Early emphasis on setting geographic and pollutant priorities is important. Worker training should also be addressed at an early stage.

Continued re-evaluation of some of these elements will also be very important. As the nation-wide effort to reduce stormwater pollution progresses, improved BMP references and documentation will become available. New technology will also be field-tested and become available. The results of program implementation may indicate the need for revising priorities. The municipal pollution prevention and good housekeeping program should be considered dynamic.

The program implementation phase, though already underway in most communities, draws from the program development phase and entails the field implementation of BMP. It includes the actual cleanout of system components, the construction of materials storage facilities, the maintenance of facilities, the recycling of wastes and any other field operations that support pollution prevention.

3.2 Documenting Progress - Measurable Goals

New York State provides a framework for reporting by municipalities to the state on progress of the stormwater management program in the MS4 Annual Report form. The specific reporting requirements for Minimum Control Measure 6 are addressed in that form.

This section describes sample measurable goals that are recommended by DEC to provide the basis for municipalities to document their progress in pollution prevention and good housekeeping programs. These recommended goals may be more comprehensive than the specific requirements of the MS4 Annual Report. They may provide the information that a municipality reports in their annual report to DEC. They may also provide a more comprehensive summary of progress as a supplement to the Annual Report.

Municipalities may organize recordkeeping in different ways, depending on their municipal department organization. DEC recommends that recordkeeping reflect the organization of the municipal government and its operations. This should facilitate and simplify both collecting information and communicating best management practice information to field staff.

Some aspects of pollution prevention (e.g., hazardous material storage, pesticide management) will apply to more than one municipal department or operation. For this reason, DEC recommends that municipalities establish a coordination mechanism across departments or operations for pollution prevention. This can ensure reasonably consistent policies and help avoid conditions where the field practices in one operation might have negative impacts on another. The coordination mechanism may take different forms: committee, uniform policies,

notifications of actions or department policy changes, uniform recordkeeping data system, or other approaches.

The sample measurable goals for Minimum Control Measure 6 are summarized in Tables 3.1 through 3.8. These are organized based on types of municipal operation, as follows:

- Street and Bridge Maintenance
- Winter Road Maintenance
- Stormwater System Maintenance
- Vehicle and Fleet Maintenance
- Parks and Open Space Maintenance
- Municipal Building Maintenance
- Solid Waste Management
- Streambank and Hydrologic Habitat Maintenance

Municipalities may combine certain aspects of these operation categories, depending on their organization.

The scope of these municipal operations encompassed by Minimum Control Measure 6 is focused on: (1) activities at municipally owned or operated facilities (e.g., buildings, parks, public works facilities or infrastructure), and (2) operations throughout the community that are the ordinary responsibilities of municipal departments (e.g., street maintenance, stormwater drainage system maintenance).

Operations and maintenance activities undertaken by private contractors, but which serve municipal programs, facilities and responsibilities, are to be included in this scope. Operations that might serve the residential community but which are municipal program responsibilities, such as household hazardous waste collection events, are also included within this scope. However, this scope does NOT include pollution prevention and good housekeeping practices within commercial or industrial properties or within residential properties unless there is a direct connection to municipal program responsibilities.

Using Tables 3.1 to 3.8

There are two types of measurable goals that municipal pollution prevention programs **may** want to report on in their annual report or other reporting format: policy and procedure measurable goals and implementation measurable goals. Reporting on the measurable goals would identify components of the pollution prevention and good housekeeping program and indicate work done and progress made. Tables 3.1 to 3.8 provide examples of the two types of measurable goals.

The policy and procedure measurable goals are important topics or issues that are recommended for inclusion in policies, procedures and training. Policies and procedures

documents may take any form that communicates these topics or issues to municipal staff, including memos, posters, or comprehensive strategies. An indication of staff training regarding the policies and procedures is also a recommended measurable goal. Including information about new or existing policies, procedures and staff training would provide useful information to people interested about the pollution prevention and good housekeeping activities in a given municipality.

The sample implementation measurable goals are examples of some of the activities municipal operations may choose to measure and report on. The measurements and reporting would provide information about the work performed by the different municipal operations to document their progress in pollution prevention and good housekeeping. Reporting on these measurable goals (in the annual report or other forum) would also provide useful information to parties interested about the pollution prevention and good housekeeping activities in a given municipality.

Some of these municipal operation categories or sample measurable goals may not apply to all municipalities (e.g. marinas and streambank stabilization / hydrologic habitat modification). The following eight categories of operations in Tables 3.1 through 3.8 are included as suggestions for a comprehensive municipal pollution prevention and good housekeeping program. Although MS4s are required to reduce discharges to the maximum extent practicable, MS4s are not specifically required to make additions to the program that were not planned in the original Notice of Intent (NOI) that address all of these suggestions.

Table 3.1

**Street and Bridge Maintenance
Sample Measurable Goals**
[\(Detailed Municipal Operation Resources\)](#)

POLICIES AND PROCEDURES

1. Policies and procedures have been developed for street and bridge maintenance which address:
 - a. street cleaning priorities
 - b. schedules and frequency
 - c. priority waterbody considerations (PWL, Section 303(d) List / TMDL, other)
 - d. equipment
 - e. sidewalks and municipally owned parking lots cleaning
 - f. pollution prevention and streambank erosion control in bridge maintenance
 - g. maintenance of unpaved roads (drainage, erosion and dust control)
2. Street and bridge maintenance staff have been trained regarding the above elements and stormwater management principles.

IMPLEMENTATION

1. Approximate quantity (tons or cubic yards) of debris cleaned from streets, sidewalks and parking lots (cumulative for calendar year).
2. Number of bridge repair/replacement projects with incorporated pollution prevention or streambank erosion control components.
3. Street and bridge maintenance staff retraining or continuing education activities related to policies, procedures and stormwater management.
4. Street and bridge maintenance policies and procedures, or BMP updates or revisions.
5. Erosion control and drainage measures implemented for roads.

Table 3.2

**Winter Road Maintenance
Sample Measurable Goals**
([Detailed Municipal Operation Resources](#))

POLICIES AND PROCEDURES

1. Policies and procedures have been developed for winter road maintenance which address:
 - a. deicing material storage methods
 - b. storage site operations and cleanup
 - c. salt reduction options, including alternative materials
 - d. improved application technologies
 - e. application equipment maintenance
 - f. vehicle washing
 - g. sensitive ecosystems or priority waterbody considerations (PWL, Section 303(d) List / TMDL, other)
 - h. drinking water well considerations, including private wells
2. Winter road maintenance staff have been trained regarding these elements and stormwater management principles.

IMPLEMENTATION

1. Salt storage structures have been inspected for structural integrity and necessary repairs have been scheduled or completed.
2. All deicing materials, including salt-sand mixed abrasives, have been stored under permanent or temporary cover.
3. Application technology components (spreaders, road-weather systems, etc.) have been tested, calibrated and maintained at manufacturer recommended intervals.
4. Modified deicing methods (material selection, improved technology, application strategy, training) have resulted in decreased overall annual salt usage accounting for seasonal weather variability. Estimated reduction (tons).
5. Winter road maintenance staff training or continuing education activities related to policies, procedures, BMPs, and stormwater management.
6. Winter road maintenance policies, procedures or BMP updates or revisions.

Table 3.3

**Stormwater Drainage, Conveyance and Treatment System Maintenance
Sample Measurable Goals**

[\(Detailed Municipal Operation Resources\)](#)

POLICIES AND PROCEDURES

1. Policies and procedures have been developed for maintenance of the stormwater drainage, conveyance and treatment system which address:
 - a. priority setting for different portions of the system which considers waterbody impacts and other factors (PWL, Section 303(d) List, other)
 - b. inspection of system components, and record-keeping and frequency tracking
 - c. technology improvements and installation
 - d. maintenance, repair and cleanout of system components
 - e. public education and communications
 - f. maintenance of open drainage ditches
2. Staff responsible for the system have been trained regarding these elements and stormwater management principles.

IMPLEMENTATION

1. Approximate quantity (tons or cubic yards) of material cleaned from structures in the stormwater drainage, conveyance and treatment system.
2. Length of storm drain pipe cleaned.
3. Number of outfalls cleaned.
4. Upgrades or technology improvements implemented in overall system (specify).
5. Stormwater system maintenance staff training or continuing education activities related to policies, procedures, BMPs, and stormwater management.
6. Stormwater system maintenance policies, procedures or BMP updates or revisions.
7. Approximate length of open drainage ditches maintained with enhanced implementation of erosion control practices in ditch (e.g. hydroseeding).

Table 3.4

**Vehicle and Fleet Maintenance
Sample Measurable Goals**
([Detailed Municipal Operation Resources](#))

POLICIES AND PROCEDURES

1. Policies and procedures have been developed for vehicle and fleet maintenance which address:
 - a. wastewater disposal and treatment from vehicle washing
 - b. site drainage system maintenance and cleanout
 - c. recycling (including oil and antifreeze)
 - d. hazardous materials storage
 - e. spill prevention and response (petroleum and other substances)
 - f. solid waste disposal
 - g. alternative product usage
2. Fleet maintenance staff have been trained regarding these elements and stormwater management principles.

IMPLEMENTATION

1. Number of cleanouts of oil and grit separators or similar maintenance operations for site drainage structures.
2. Recycling program results:
Oil
Antifreeze
Other (specify)
3. Proper treatment and disposal of wastewater from vehicle washing has been implemented. Number of facilities implemented.
4. Fleet maintenance staff training or continuing education activities related to policies, procedures, BMPs and stormwater management.
5. Vehicle and fleet maintenance policies, procedures or BMP updates or revisions.

Table 3.5

**Parks and Open Space Maintenance
Sample Measurable Goals**
([Detailed Municipal Operation Resources](#))

POLICIES AND PROCEDURES

1. Policies and procedures have been developed for different components of parks and open space maintenance which address:
 - a. Grounds Maintenance
 - integrated pest management
 - use of pesticide alternatives
 - fertilizer use, alternatives and reductions
 - erosion control practices
 - solid waste: waste reduction, recycling and litter control
 - hazardous materials storage
 - pesticide and fertilizer usage records
 - b. Golf Course Maintenance
 - same elements as Grounds Maintenance, above.
 - c. Marina Maintenance
 - fuel storage and spill prevention and response
 - boat cleaning and painting operations
 - pumpouts and haul-out pit maintenance
 - hazardous material storage
 - solid waste: waste reduction, recycling and litter control
 - d. Municipal Pool Maintenance
 - hazardous materials storage
 - alternative discharge options for chlorinated water
 - e. Onsite Septic Systems
 - inventory of existing systems
 - inspections and record keeping
 - pumpouts and maintenance

- f. Animal Waste Management
 - pet waste control, education and enforcement
 - bird waste control
 - domestic animals (fairgrounds, municipal farms, equestrian center)
 - wildlife
 - public education and communication
- 2. Staff responsible for each of these categories of parks and open space maintenance have been trained regarding the appropriate elements and stormwater management principles.

IMPLEMENTATION

- 1. Grounds Maintenance
 - a. Percent of staff applying pesticides who are NYS Certified Applicators
 - b. Reduction in pesticide usage and/or adoption of alternative post control approaches (less toxic or persistent products, integrated pest management)
 - c. Reduction in fertilizer usage
- 2. Golf Maintenance
 - a. Percent of staff applying pesticides who are NYS Certified Applicators
 - b. Reduction in pesticide usage and/or adoption of alternative post control approaches (less toxic or persistent products, integrated pest management)
 - c. Reduction in fertilizer usage
- 3. Marina Maintenance
 - a. Program established for hull wash-down debris control.
 - b. Program established for sanding and painting debris and dust control.
 - c. Waste tank pumpout system is available and maintained.
 - d. Continuous boater education program, including printed material distribution.
 - e. Solid waste program in place at marina, including litter control, recycling, and waste oil/antifreeze recovery.

- f. Petroleum spill prevention and response program is in place.
- 4. Municipal Pool Maintenance
 - a. Procedures in place for proper drainage and discharge of pool water.
 - b. Hazardous materials stored in secure structures to prevent exposure or illicit entry.
- 5. Onsite Septic Systems
 - a. Date of most recent inspection (month/year).
 - b. Date of most recent pumpout (month/year).
 - c. Documented problems in operation.
- 6. Animal Waste Management
 - a. Ordinance in place for proper collection and disposal of pet wastes (from parks, public sidewalks and streets).
 - b. Program in place for control of concentrated sources of bird waste or other animal wastes.
- 7. (GENERAL - applies to all parks/open space categories) Parks/open space maintenance staff training or continuing education activities related to policies, procedures, BMPs and stormwater management.
- 8. (GENERAL - applies to all parks/open space categories) Parks/open space maintenance policies, procedures or BMP updates or revisions.

Table 3.6

**Municipal Building Maintenance
Sample Measurable Goals**
([Detailed Municipal Operation Resources](#))

POLICIES AND PROCEDURES

1. Policies and procedures have been developed for municipal building maintenance which address:
 - a. petroleum bulk storage spill prevention and response
 - b. hazardous material storage (including pesticides)
 - c. onsite septic system inspection and maintenance
 - d. grounds maintenance (pesticides, fertilizers, erosion control)
 - e. erosion control for new construction or other land disturbance
 - f. waste disposal and recycling
 - g. alternative product usage
 - h. building site drainage, roof drainage system, infiltration
2. Building maintenance staff have been trained regarding these elements and stormwater management principles.

IMPLEMENTATION

1. Number of onsite septic system inspections or maintenance operations (pumpout, etc.).
2. Number of alternative products adopted for use.
3. Reduction (if any) in fertilizer usage.
4. Pesticide usage changes, including any of the following: (a) adoption of integrated pest management program, (b) reductions in pesticide usage, or (c) conversion to alternative less toxic or persistent pest control products.
5. Implementation of recycling program.
6. Building site drainage, including roof drainage system, modifications to manage “clean water” and prevent or minimize contact with pollutant sources and maximize infiltration.
7. Municipal building maintenance staff training or continuing education activities related to policies, procedures, BMPs and stormwater management.
8. Municipal building maintenance policies, procedures or BMP updates or revisions.

Table 3.7

**Solid Waste Management
Sample Measurable Goals**
[\(Detailed Municipal Operation Resources\)](#)

POLICIES AND PROCEDURES

1. Policies and procedures have been developed for elements of a solid waste management program which address:
 - a. prevention of illicit dumping
 - b. litter control
 - c. animal waste controls (pets, birds, wildlife, domestic animals)
 - d. waste reduction and recycling
 - e. household hazardous waste collection (including from municipal buildings)
2. Staff responsible for relevant portions of the solid waste program and enforcement have been trained regarding these elements and stormwater management principles.

IMPLEMENTATION

1. Frequency of hazardous material collection events.
2. Sites been identified where illegal dumping is known to occur.
3. Number of sites that have been modified to discourage illegal dumping.
4. Number of litter reduction events conducted or endorsed by municipality (including stream/streambank cleanup and beach cleanup).
5. Municipal recycling program results (tons or cubic yards) for glass, metal, paper, plastic, organic materials.
6. Solid waste management staff training or continuing education activities related to policies, procedures, BMPs and stormwater management.
7. Solid waste management policies, procedures or BMP updates or revisions.

Table 3.8

**Streambank Stabilization and Hydrologic Habitat Modification
Sample Measurable Goals**

[\(Detailed Municipal Operation Resources\)](#)

POLICIES AND PROCEDURES

1. Policies and procedures have been developed for streambank stabilization, pond maintenance, and hydrologic habitat modification which address:
 - a. priority setting for streambank stabilization projects
 - b. opportunities for alternative, soft-engineering approaches for erosion control
 - c. priority setting for sediment removal and pond maintenance
 - d. opportunities for hydrologic habitat improvements
 - e. application of fluvial geomorphic assessments in erosion control projects
 - f. opportunities for community sponsored volunteer stream walks
2. Staff responsible for streambank, pond and hydrologic habitat maintenance have been trained regarding these elements and stormwater management principles.

IMPLEMENTATION

1. Linear feet of streambank stabilized by:
 - a. “Hard” Engineering Methods (rock, rip-rap, etc.)
 - b. “Soft” Engineering Methods (plantings, alternative materials, etc.)
2. Linear feet of pond/lake shoreline stabilized by:
 - a. Hard Engineering Methods
 - b. Soft Engineering Methods
3. Number of ponds/lakes having siltation/sediment forebays.
4. Cubic yards of material removed from siltation/sediment forebays.
5. Streambank/pond/hydrologic habitat maintenance staff training or continuing education activities related to policies, procedures, BMPs and stormwater management.
6. Streambank/pond/hydrologic habitat maintenance policies, procedures or BMP updates or revisions.
7. Linear distance of stream/riverbank walked (staff/volunteers) including GPS identification and visual records for identified problem areas.

Section 4

Pollution Prevention and Good Housekeeping Assistance Documents for Municipal Operations

4.1 Introduction

This section highlights several of the principal BMP references that support implementation of Minimum Control Measure 6. Comprehensive references which address many operations associated with Minimum Control Measure 6, along with several references that may address only a single category of operation or a special topic are included. Potentially useful assistance documents have been published by other states and have been included as selected references.

NYSDEC does not exclusively endorse or mandate one specific BMP publication for meeting Minimum Control Measure 6 requirements, because many groups across the country are actively developing BMP descriptions and municipalities across New York have different capabilities, needs and management priorities.

The organization of the remaining sections is as follows:

- *Section 4.2 Key Best Management Practice References for Minimum Control Measure 6*

The principal BMP references that are relevant to Minimum Measure 6 are very briefly described and sources for print copies and web page editions are listed.

- *Section 4.3 Overview of Best Management Practice References for Municipal Operations*

To assist municipalities and lead users to the more beneficial sections of published references, a summary assessment of the usefulness and applicability of the references is presented.

- *Section 4.4 Expanding the Assistance Network - Other Resources for Minimum Control Measure 6 Assistance*

Outside of published BMP descriptions, there are other resources for Minimum Control Measure 6 assistance, both within and outside New York State. This section provides an introduction to these professional institutional and organizational resources.

4.2 Key Best Management Practice References for Minimum Control Measure 6

The baseline references for pollution prevention and good housekeeping in municipal operations are comprised of a series of publications by the New York State Department of Environmental Conservation (DEC) and the United States Environmental Protection Agency (USEPA). DEC recognizes that other states and organizations have published useful reference documents and endorses them as alternative sources of management practice recommendations.

This section lists the baseline references and selected alternative references for activities related to Minimum Control Measure 6. Brief descriptions of the references are provided and sources of the documents (print and/or internet, where available) are listed.

This listing of baseline BMP references and selected alternatives is not exhaustive. Some of the other available references, from other states or professional organizations, overlap considerably with these listed references. The actual field effectiveness of some of these BMPs is still being evaluated across the nation. As additional information on effectiveness is developed, New York will consider establishing a peer review process to provide more up-to-date information on recommended municipal pollution prevention and good housekeeping practices.

Section 4.3 provides further information on selected portions of these references, guiding users to elements that are more relevant to specific categories of municipal operations.

Each of the key references is addressed in a separate subsection, as follows:

4.2.1 *Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection in New York State* [\(Municipal Operations Addressed by Reference\)](#)

This catalogue is comprised of nine individual documents, available separately, which address different aspects of nonpoint source pollution prevention, grouped by the source category. The more useful documents are listed below in relative priority order:

- Urban/Stormwater Runoff Management Practices Catalogue for Nonpoint Source Pollution Prevention in New York State (February 2002)
- Roadway and Right-of-Way Maintenance (June 1994)
- Onsite Wastewater Treatment Systems (December 1996)
- Hydrologic Habitat Modification (June 2002)

- Environmental Compliance, Pollution Prevention, and Self Assessment Guide for the Marina Industry (March 2004)
- Construction Management Practices Catalogue for Nonpoint Source Pollution Prevention in New York State (June 2000)

The remaining documents in the series will have limited relevance to most municipalities except those that manage forested land, agricultural operations, or resource extraction. Pesticide management practices, included in these documents, are also addressed in other documents in the series listed above. The remaining documents in the series are:

- Agriculture (May 1996)
- Silviculture (October 1993)
- Resource Extraction (April 1995)

These documents are available individually in print form from the following DEC office. They are not currently available in electronic form on the internet. Alternative internet sources that address many of the same practices are described in the following sections.

Nonpoint Source Management Section
Division of Water
NYSDEC
625 Broadway
Albany, NY 12233-3502

4.2.2 *Pollution Prevention/ Good Housekeeping for Municipal Operations (USEPA)* **(Municipal Operations Addressed by Reference)**

This guidance document is available only in electronic form from the USEPA at the following web address:

<http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm>

The document, most recently updated in 2002, includes a series of Best Management Practice (BMP) fact sheets on various source controls and materials management topics directly related to Minimum Control Measure 6. In the menu page at this web address, links are also provided to a series of EPA Stormwater Management Fact

Sheets (published in 1999) that are relevant to Minimum Control Measure 6.

The organization of these EPA Best Management Practice Fact Sheets is similar to those in the NYS Nonpoint Source Management Practices Catalogue. The following are discussed in each fact sheet:

- Description of practice
- Applicability
- Design considerations
- Limitations
- Maintenance considerations
- Effectiveness
- Cost Considerations
- References

The USEPA Guidance on Pollution Prevention/Good Housekeeping for Municipal Operations includes fact sheets, ranging from 3 to 9 pages each, on the following topics:

Source controls

- Pet waste collection
- Automobile maintenance
- Vehicle washing
- Illegal dumping control
- Landscaping and lawn care
- Pest control
- Parking lot and street cleaning
- Roadway and bridge maintenance
- Septic system controls
- Storm drain system cleaning
- Alternative discharge options for chlorinated water

Materials management

- Alternative products
- Hazardous materials storage
- Road salt application and storage
- Spill response and prevention
- Used oil recycling
- Materials management

Additional Fact Sheets

- Airplane Deicing Fluid Recovery System
- Catch Basin Cleaning
- Coverings
- Employee Training
- Flow Diversion
- Handling and Disposal of Residuals
- Environmental Effects from Highway Ice and Snow Removal Operations
- Internal Reporting
- Materials Inventory
- Preventative Maintenance
- Record Keeping
- Spill Prevention Planning
- Storm Water Contamination Assessment
- Visual Inspections

4.2.3 *New York State - Pollution Prevention Guidance for Small Business and Local Government* **(Municipal Operations Addressed by Reference)**

This guidance manual is most valuable as a reference guide to New York State Rules and Regulations related to pollution prevention. It also includes a very useful introduction to the concepts and principles of pollution prevention that may be applied to Minimum Control Measure 6 activities. However, it does not include specific BMP recommendations or procedures for representative municipal operations.

This document organized the review of existing rules and regulations according to the major program organization of the NYS Department of Environmental Conservation (e.g., air resources, water, spill prevention and response, solid and hazardous materials, natural resources, etc.)

The document was most recently revised in 1998, and is available in print form from:

Pollution Prevention Unit
Division of Environmental Permits
NYSDEC
625 Broadway
Albany, NY 12233

The document is also available electronically online at the following web address:

<http://www.dec.state.ny.us/website/ppu/eppgsblg.pdf>

4.2.4 New York State Bulk Storage Program Guidance

A series of guidance documents is available from the DEC Division of Environmental Remediation regarding petroleum and chemical bulk storage and spill response. These are key issues for municipally owned or operated petroleum or chemical bulk storage. The most common applications will be for gasoline facilities, but they may also apply to heating oil storage or special chemical storage cases. Although most municipal operations storing chemicals may not qualify as “bulk storage,” some of the pollution prevention principles may be relevant.

The series of guidance documents related to operation of petroleum or chemical bulk storage may be downloaded or accessed electronically at the following web address:

<http://www.dec.state.ny.us/website/der/bulkstor/guidance>

These address such issues as: secondary containment, spill prevention, testing, site assessment, and permanent closure.

Additional useful information and web-links related to petroleum and chemical storage and spill prevention, including regulations, DEC and county contacts, and other frequently asked questions can be accessed at the following web address:

<http://www.dec.state.ny.us/website/der/bulkstor/index.html>

4.2.5 California Stormwater Quality Association - Best Management Practice Handbook - Municipal [\(Municipal Operations Addressed by Reference\)](#)

This handbook, published in 2003 and revised in 2004, expands on concepts and BMP recommendations that are addressed in the DEC and USEPA documents. Though it includes certain cross-references to California municipalities and programs, it is broad in scope and is generally applicable in most states.

This document includes a particularly useful expanded listing of key recommendations for a broad range of Minimum Control Measure 6 activities. These recommendations are organized for each BMP category into the following highlighted sections:

- Approach
- Pollution Prevention Principles
- Suggested Protocols
- Training

- Spill Response and Prevention (or other special considerations)
- Costs
- Maintenance
- Supplemental Information

The document is available electronically online at the following web address:

<http://www.cabmphandbooks.com/Municipal.asp>

The handbook is also available in a print form (\$85.00 members; \$95.00 non-members) from the following address:

California Stormwater Quality Association
PO Box 2105
Menlo Park, CA 94026-2105

Order forms or online purchases may be accessed at the following web address:

<http://www.cabmphandbooks.com>

The electronic format of this handbook and companion stormwater handbooks may also be downloaded through links from this web address.

4.2.6 Center for Watershed Protection - Urban Subwatershed Restoration Manual Series

The Center for Watershed Protection has published 5 of a projected series of 11 guidance manuals on techniques to restore small urban watersheds. These manuals are closely related to stormwater management. Two of these are related to Minimum Control Measure 6 activities.

The most directly useful document, *Manual 9 - Municipal Practices and Programs* is in development and not yet published. It will focus on five principal topics:

- improved street and storm drain maintenance practices
- development/redevelopment standards
- stewardship of public land
- delivery of municipal stewardship services
- watershed education and enforcement

Another Center for Watershed Protection document relevant to Minimum Control Measure 6 is *Manual 8 - Pollution Source Control Practices*, is published. This document is primarily targeted at pollution prevention in neighborhoods and residential properties and is not fundamentally related to municipal operations and

facilities. However, it includes clear and well-organized BMP profile sheets in a section on “Hotspot Pollution Prevention” that may be beneficial to Minimum Control Measure 6 activities, addressing many relevant topics, including:

- Vehicle Maintenance and Repair
- Vehicle Fueling
- Vehicle Washing
- Vehicle Storage
- Loading and Unloading
- Outdoor Storage
- Spill Prevention and Response
- Dumpster Management
- Building Repair and Remodeling
- Building Maintenance
- Parking Lot Maintenance
- Turf Management
- Landscaping/Grounds Care
- Swimming Pool Discharges
- Unique Hotspot Operations

This document, and Manual 9 when completed, is available electronically and may be downloaded at the following web address in a link titled “USRM Manuals” (Urban Subwatershed Restoration Manual)

<http://www.cwp.org>

Printed copies (\$30.00 each manual) may be ordered through that web address or at:

Center for Watershed Protection
8390 Main Street, 2nd Floor
Ellicott City, MD 21043

4.2.7 *Guidance for Highway Drainage and Unpaved Road Maintenance* **(Municipal Operations Addressed by Reference)**

Several guidance documents have been published related to maintenance of unpaved roads, with particular attention to water quality protection. These documents address road drainage and ditch maintenance practices that are also applicable to paved road drainage.

THESE REFERENCES CONTAIN SUGGESTIONS TO INSTALL BARRIERS IN AREAS OF CONCENTRATED FLOW (SILT FENCES OR BALES ACROSS DITCHES). THESE PRACTICES HAVE BEEN DEMONSTRATED TO INCREASE EROSION AND ARE STRONGLY DISCOURAGED.

These documents do contain other beneficial recommendations and include:

- ***The Massachusetts Unpaved Roads BMP Manual: A Guidebook on How to Improve Water Quality While Addressing Common Problems* (Berkshire Regional Planning Commission, 2001)**

This manual is available on the web at the following address:

<http://www.mass.gov/dep/images/dirtroad.pdf>

- ***Recommended Practices Manual - A Guideline for Maintenance and Service of Unpaved Roads* (Choctawhatchee, Pea and Yellow Rivers Watershed Management Authority, Alabama, 2000)**

This manual was prepared with special emphasis on water quality protection, and is available through a link at the following United States Environmental Protection Agency web address:

<http://www.epa.gov/owow/nps/unpavedroads.html>

- ***Great Lakes Better Backroads Guidebook - Clean Water By Design* (Huron Pines Resource Conservation & Development Area Council, Grayling, Michigan, 2000)**

This manual on unpaved road maintenance was prepared with special emphasis on water quality protection. It is available through a link on the Huron Pines RC&D Council webpage on the Better Backroads Program at the following web address:

<http://www.huronpines.org/overview.php?programId=10>

A direct link to the version published in 2000 is at the following web address:

<http://www.huronpines.org/upload/File/Better%20Backroads.pdf>

This guidance document is being revised in 2006. Information on the status of the revised document will be available by contacting the Huron Pines RC&D Council through the first listed web address.

4.3 Overview of Best Management Practice References for Municipal Operations

The key BMP references for assistance for Minimum Control Measure 6 are highlighted in Table 4.1 and briefly described in the detailed annotated resources section following the table. Key references include numerous recommendations to the different categories of municipal operations.

To assist municipalities, Table 4.1 is intended to highlight the more directly relevant reference materials (solid circles in the table) and other potentially useful materials (open circles in the table). However, some reference materials that are not highlighted for a particular

municipal operation category may contain certain relevant assistance for specific operations in that category (for example, outdoor container storage may be relevant for fuels or chemicals stored at parks and open space management facilities, but it is not highlighted).

The notes that follow Table 4.1 are intended to provide further analysis of the highlighted references in the table, giving annotated remarks, and providing key page references or subdocument numbers in the references (as in the California document numbers).

Table 4.1. Relevance of Best Management Practice References for Municipal Operations (**Key:** ● - directly related to BMPs for this municipal operation category; ○ - indirectly or partially related to BMPs for this municipal operation category).

	Municipal Operation Activities							
Resource	Street and Bridge Maintenance	Winter Road Maintenance	Stormwater Drainage, Conveyance and Treatment System Maintenance	Vehicle and Fleet Maintenance	Parks and Open Space Maintenance	Municipal Building Maintenance	Solid Waste Management	Streambank Stabilization and Hydrologic Habitat Modification
Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection in New York State (Back to Document Summary)								
Hydrologic and Habitat Modification								●
Marina Industry					●			
Onsite Wastewater Treatment Systems					○	○		
Roadway and Right-of-Way Maintenance	○	●	○					
Urban/Stormwater Runoff Management Practices	○		○		●		○	
New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series								
In-Water and Riparian Management of Sediment and Dredged Material								●

Table 4.1 (cont'd). Relevance of Best Management Practice References for Municipal Operations (**Key:** ● - directly related to BMPs for this municipal operation category; ○ - indirectly or partially related to BMPs for this municipal operation category).

Resource	Municipal Operation Activities							
	Street and Bridge Maintenance	Winter Road Maintenance	Stormwater Drainage, Conveyance and Treatment System Maintenance	Vehicle and Fleet Maintenance	Parks and Open Space Maintenance	Municipal Building Maintenance	Solid Waste Management	Streambank Stabilization and Hydrologic Habitat Modification
<u>Pollution Prevention/Good Housekeeping for Municipal Operations (USEPA) (Back to Document Summary)</u>								
Alternative Discharge Options for Chlorinated Water					●			
Alternative Products		●		●		●		
Automobile Maintenance				●				
Hazardous Materials Storage		○		●	●	○	●	
Illegal Dumping Control			●				○	
Landscaping and Lawn Care					●	●		
Materials Management		●		●	●			
Parking Lot and Street Cleaning	●						●	
Pest Control					●			
Pet Waste Collection					●		●	
Road Salt Application and Storage		●						
Roadway and Bridge Maintenance	●	○						
Septic System Controls					●	●		
Spill Response and Prevention	○	●	○	●	●	●	○	
Storm Drain System Cleaning			●					
Used Oil Recycling				●				
Vehicle Washing		○		●				

Table 4.1 (cont'd). Relevance of Best Management Practice References for Municipal Operations (**Key:** ● - directly related to BMPs for this municipal operation category; ○ - indirectly or partially related to BMPs for this municipal operation category).

	Municipal Operation Activities							
Resource	Street and Bridge Maintenance	Winter Road Maintenance	Stormwater Drainage, Conveyance and Treatment System Maintenance	Vehicle and Fleet Maintenance	Parks and Open Space Maintenance	Municipal Building Maintenance	Solid Waste Management	Streambank Stabilization and Hydrologic Habitat Modification
	New York State – Pollution Prevention Guidance for Small Business and Local Government (Back to Document Summary)							
							●	
					●	●		
	●	●		●	●	●	●	
	○	●	○	●	●	●	●	
California Stormwater Quality Association – Best Management Practice Handbook – Municipal (Back to Document Summary)								
Building & Grounds Maintenance					●	●		
Drainage System Maintenance			●				●	
Fountain & Pool Maintenance					●			
Housekeeping Practices		●		●	●	●	●	
Landscape Maintenance					●	●		
Non-Stormwater Discharges			○					
Outdoor Container Storage				●		●		
Outdoor Equipment Maintenance				●				
Outdoor Loading/Unloading		○				○		
Outdoor Storage of Raw Materials		●		○		○		
Over Water Activities					●			

Table 4.1 (cont'd). Relevance of Best Management Practice References for Municipal Operations (**Key:** ● - directly related to BMPs for this municipal operation category; ○ - indirectly or partially related to BMPs for this municipal operation category).

	Municipal Operation Activities							
Resource	Street and Bridge Maintenance	Winter Road Maintenance	Stormwater Drainage, Conveyance and Treatment System Maintenance	Vehicle and Fleet Maintenance	Parks and Open Space Maintenance	Municipal Building Maintenance	Solid Waste Management	Streambank Stabilization and Hydrologic Habitat Modification
California Stormwater Quality Association – Best Management Practice Handbook – Municipal (continued) (Back to Document Summary)								
Parking/Storage Area Maintenance	●	●		●		●	○	
Plaza & Sidewalk Cleaning	●							
Road & Street Maintenance	●	●						
Safer Alternative Products		●		●	●	●		
Spill Prevention, Control & Cleanup	○	●	○	●	●	●		
Vehicle and Equipment Cleaning		○		●	○			
Vehicle and Equipment Fueling				●	●			
Vehicle and Equipment Repair				●				
Waste Handling & Disposal	○			●	●	●	●	
Waste Handling and Disposal – Reuse/Recycle			●	○	○	○	●	
Water & Sewer Utility Maintenance			●					

Table 4.1 (cont'd). Relevance of Best Management Practice References for Municipal Operations (**Key:** ● - directly related to BMPs for this municipal operation category; ○ - indirectly or partially related to BMPs for this municipal operation category).

Municipal Operation Activities									
Resource	Street and Bridge Maintenance	Winter Road Maintenance	Stormwater Drainage, Conveyance and Treatment System Maintenance	Vehicle and Fleet Maintenance	Parks and Open Space Maintenance	Municipal Building Maintenance	Solid Waste Management	Streambank Stabilization and Hydrologic Habitat Modification	
Massachusetts Unpaved Roads BMP Manual (Back to Document Summary) Great Lakes Better Backroads Guidebook (Back to Document Summary) Recommended Practices – A Guideline for Maintenance and Service of Unpaved Roads (Back to Document Summary) (All three of the above manuals contain similar material)									
Road Surface Maintenance	○								
Ditch Maintenance			●						
Culvert Maintenance			●						
Outlet Protection			●						
Bank Stabilization	●		●						
Erosion and Sediment Control	●		●						

DETAILED ANNOTATED RESOURCES FOR INFORMATION IN TABLE 4.1

Street and Bridge Maintenance

Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection in New York State

Roadway and Right-of-Way Maintenance Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection in New York State

- **Control of Bridge Paint Residuals** – describes methods for avoiding the transport of paint chips and dust to waterbodies from road resurfacing projects (p. 15 – 16)

Urban/Stormwater Runoff Management Practices Catalogue for Nonpoint Source Pollution Prevention in New York State

- **Street and Pavement Sweeping** – explains the benefits of street sweeping (p. 81 – 82)

[Pollution Prevention/Good Housekeeping for Municipal Operations \(USEPA\)](#)

- **Parking Lot and Street Cleaning** – discusses the advantages and disadvantages of cleaning parking lots and streets to reduce the amount of potential stormwater pollutants (p. 38 – 41)
- **Roadway and Bridge Maintenance** – describes how maintenance activities can decrease the sources of stormwater pollutants from roadways and bridges (p. 42 – 46)
- **Spill Response and Prevention** – states the basic requirements of a spill response and prevention plan (p. 64 – 65)

[Pollution Prevention Guidance for Small Business and Local Government \(NYS\)](#)

- **Pollution Prevention** – explains how pollution can be prevented by utilizing practices to reduce waste generation and pollutant sources, discusses the advantages of pollution prevention, and provides a list of pollution prevention publications and technical assistance information (p. 1 – 6)
- **Spill Response and Prevention** – summarizes regulations pertaining to the release of hazardous substances into the environment, explains regulations for the storage of bulk chemicals, and provides a list of spill prevention and response publications (p. 62 – 65)

DETAILED ANNOTATED RESOURCES FOR INFORMATION IN TABLE 4.1 (cont'd)
Street and Bridge Maintenance (continued)

[California Stormwater Quality Association – Best Management Practice Handbook – Municipal](#)

- **Spill Prevention, Control & Cleanup** – describes components of a spill response and control plan (SC – 11)
- These documents describe steps that can be taken to reduce stormwater pollution from the activities referenced below:

- o **Parking/Storage Area Maintenance** (SC – 43)
- o **Plaza and Sidewalk Cleaning** (SC – 71)
- o **Road and Street Maintenance** (SC – 70)
- o **Waste Handling & Disposal** (SC – 34)

NOTE: The next three references on unpaved road maintenance contain suggestions to install barriers in areas of concentrated flow (e.g. silt fences or hay / straw bales across ditches). These practices have been demonstrated to increase erosion and are strongly discouraged.

[Massachusetts Unpaved Roads BMP Manual \(Massachusetts DEP\)](#)

- **Road Surface Maintenance** – explains road surface maintenance practices (p. 7 – 14)
- **Bank Stabilization / Erosion and Sediment Control** – explains importance to water quality and describes BMPs (p. 45 – 65)

[Great Lakes Better Backroads Guidebook \(Huron Pines RCDAC\)](#)

- **Road Surface Maintenance** – explains road surface maintenance practices (p. 5 – 10)
- **Bank Stabilization / Erosion and Sediment Control** – explains importance to water quality and describes BMPs (p. 37 – 60)

[Recommended Practices Manual – A Guideline for Maintenance and Service of Unpaved Roads \(CPYWMA\)](#)

- **Road Surface Maintenance** – explains road surface maintenance practices (p. 1 – 9)
- **Bank Stabilization / Erosion and Sediment Control** – explains importance to water quality and describes BMPs (p. 25 – 45)

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DETAILED ANNOTATED RESOURCES FOR INFORMATION IN TABLE 4.1 (cont'd)

Winter Road Maintenance

Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection in New York State

Roadway and Right-of-Way Maintenance Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection in New York State

- **Abrasive and Deicing Material Application and Cleanup** – addresses the proper way to apply and clean up abrasives and deicing materials (p. 1 – 2)
- **Deicing Material Mixing and Handling** – explains how to mix and handle deicing materials to prevent transport to surface or ground waters (p. 3 – 4)
- **Salt Storage Systems** – describes criteria for salt storage systems to prevent contamination of surface and ground waters; criteria include drainage, foundation/floor, shelter/cover and site location selection (p. 5 – 12)

Pollution Prevention/Good Housekeeping for Municipal Operations (USEPA)

- **Alternative Products** – provides examples of alternative product usage that could contribute to fewer stormwater pollutants (p. 57 – 59)
- **Hazardous Materials Storage** – explains management considerations for hazardous materials storage (p. 60 – 62)
- **Materials Management** – describes steps for management of stored chemicals to decrease the potential for stormwater pollution (p. 72 – 73)
- **Road Salt Application and Storage** – discusses the benefits of proper road salt application and storage as well as alternatives to road salt application (p. 62 – 63)
- **Roadway and Bridge Maintenance** – describes how maintenance activities can decrease the sources of stormwater pollutants from roadways and bridges (p. 42 – 46)
- **Spill Response and Prevention** – states the basic requirements of a spill response and prevention plan (p. 64 – 65)
- **Vehicle Washing** – explains impacts of outdoor vehicle washing and how to keep polluted stormwater out of the storm sewer (p. 15 – 18)

Pollution Prevention Guidance for Small Business and Local Government (NYS)

- **Pollution Prevention** – explains how pollution prevention can be achieved by utilizing practices to reduce waste generation and pollutant sources, discusses the advantages of pollution prevention, and provides a list of pollution prevention publications and technical assistance information (p. 1 – 6)

DETAILED ANNOTATED RESOURCES FOR INFORMATION IN TABLE 4.1 (cont'd)

Winter Road Maintenance (continued)

[Pollution Prevention Guidance for Small Business and Local Government \(NYS\)](#)

- **Spill Response and Prevention** – summarizes regulations pertaining to the release of hazardous substances into the environment, explains regulations for the storage of bulk chemicals, and provides a list of spill prevention and response publications (p. 62 – 65)

[California Stormwater Quality Association – Best Management Practice Handbook – Municipal](#)

- **Housekeeping Practices** – describes housekeeping practices that can be used when handling potentially harmful materials (SC – 60)
- **Safer Alternative Products** – promotes the use of less potentially harmful materials in municipal operations (SC – 61)
- **Spill Prevention, Control & Cleanup** – describes the components of a spill response and control plan (SC – 11)
- These documents describe steps that can be taken to reduce stormwater pollution from the activities referenced below:
 - o **Outdoor Loading/Unloading** (SC – 30)
 - o **Outdoor Storage of Raw Materials** (SC – 33)
 - o **Parking/Storage Area Maintenance** (SC – 43)
 - o **Road and Street Maintenance** (SC – 70)
 - o **Vehicle and Equipment Cleaning** (SC – 21)

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Stormwater Drainage, Conveyance and Treatment System Maintenance

Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection in New York State

Roadway and Right-of-Way Maintenance Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection in New York State

- **Catch Basin Cleaning** – describes the need and process for cleaning catch basins (p. 13 – 14)
- **Proper Road Ditch Maintenance** – explains how to keep ditches stable while cleaning and removing sediment (p. 23 – 24)

DETAILED ANNOTATED RESOURCES FOR INFORMATION IN TABLE 4.1 (cont'd)
Stormwater Drainage, Conveyance and Treatment System Maintenance (continued)

Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection in New York State

Urban/Stormwater Runoff Management Practices Catalogue for Nonpoint Source Pollution Prevention in New York State

- **Collection and Treatment of Stormwater** – basic explanation about the collection and treatment of stormwater (p. 3 – 4)
- **Spill Response and Prevention** – summarizes regulations pertaining to the release of hazardous substances into the environment, explains regulations for the storage of bulk chemicals, and provides a list of spill prevention and response publications (p. 62 – 65)

[Pollution Prevention Guidance for Small Business and Local Government \(NYS\)](#)

[Pollution Prevention/Good Housekeeping for Municipal Operations \(USEPA\)](#)

- **Illegal Dumping Control** – explains steps that municipalities can follow to create an illegal dumping control program (p. 19 - 22)
- **Spill Response and Prevention** – states the basic requirements of a spill response and prevention plan (p. 64 – 65)
- **Storm Drain System Cleaning** – describes the basics of storm drain system maintenance (p. 53 – 54)

[California Stormwater Quality Association – Best Management Practice Handbook – Municipal](#)

- **Drainage System Maintenance** – describes drainage system maintenance activities to ensure proper functioning of the system (SC – 74)
- **Non-Stormwater Discharges** – explains the sources of non-stormwater discharges to storm sewer systems, how to investigate/detect sources and supplemental information about non-stormwater discharges (SC – 10)
- These documents describe steps that can be taken to reduce stormwater pollution from the activities referenced below:
 - o **Waste Handling and Disposal** – Recycling/Reuse (SC – 75)
 - o **Water & Sewer Utility Maintenance** (SC – 76)

DETAILED ANNOTATED RESOURCES FOR INFORMATION IN TABLE 4.1 (cont'd)

Stormwater Drainage, Conveyance and Treatment System Maintenance (continued)

NOTE: The next three references on unpaved road maintenance contain suggestions to install barriers in areas of concentrated flow (e.g. silt fences or hay / straw bales across ditches). These practices have been demonstrated to increase erosion and are strongly discouraged.

[Massachusetts Unpaved Roads BMP Manual \(Massachusetts DEP\)](#)

- **Ditch Maintenance** – explains importance of ditch maintenance to water quality and describes BMPs (p. 15 – 25)
- **Culvert Maintenance** – explains importance of culvert maintenance to water quality and describes BMPs (p. 27 – 36)
- **Outlet Protection** – explains importance of outlet protection to water quality and describes BMPs (p. 37 – 43)
- **Bank Stabilization / Erosion and Sediment Control** – explains importance to water quality and describes BMPs (p. 45 – 65)

[Great Lakes Better Backroads Guidebook \(Huron Pines RC DAC\)](#)

- **Ditch Maintenance** – explains importance of ditch maintenance to water quality and describes BMPs (p. 11 – 15)
- **Culvert Maintenance** – explains importance of culvert maintenance to water quality and describes BMPs (p. 26 – 32)
- **Outlet Protection** – explains importance of outlet protection to water quality and describes BMPs (p. 33 – 36)
- **Bank Stabilization / Erosion and Sediment Control** – explains importance to water quality and describes BMPs (p. 37 – 60)

[Recommended Practices Manual – A Guideline for Maintenance and Service of Unpaved Roads \(CPYWMA\)](#)

- **Ditch Maintenance** – explains importance of ditch maintenance to water quality and describes BMPs (p. 11 – 13)
- **Culvert Maintenance** – explains importance of culvert maintenance to water quality and describes BMPs (p. 15 – 20)
- **Outlet Protection** – explains importance of outlet protection to water quality and describes BMPs (p. 21 – 24)
- **Bank Stabilization / Erosion and Sediment Control** – explains importance to water quality and describes BMPs (p. 25 – 45)

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DETAILED ANNOTATED RESOURCES FOR INFORMATION IN TABLE 4.1 (cont'd)

Vehicle and Fleet Maintenance

[Pollution Prevention/Good Housekeeping for Municipal Operations \(USEPA\)](#)

- **Alternative Products** – provides examples of alternative product usage that could contribute to fewer stormwater pollutants (p. 57 – 59)
- **Automobile Maintenance** – explains how to design an outreach/education program to decrease stormwater pollutants targeting groups that perform automobile maintenance (p. 10 – 14)
- **Hazardous Materials Storage** – explains management considerations for hazardous materials storage (p. 60 - 62)
- **Materials Management** – describes steps for management of stored chemicals to decrease the potential for stormwater pollution (p. 72 – 73)
- **Spill Response and Prevention** – states the basic requirements of a spill response and prevention plan (p. 64 – 65)
- **Used Oil Recycling** – explains the benefits and limitations of recycling used motor oil (p. 67 – 71)
- **Vehicle Washing** – explains impacts of outdoor vehicle washing and how to keep polluted stormwater out of the storm sewer (p. 15 – 18)

[Pollution Prevention Guidance for Small Business and Local Government \(NYS\)](#)

- **Pollution Prevention** – explains how pollution prevention can be achieved by utilizing practices to reduce waste generation and pollutant sources, discusses the advantages of pollution prevention, and provides a list of pollution prevention publications and technical assistance information (p. 1 – 6)
- **Spill Response and Prevention** – summarizes regulations pertaining to the release of hazardous substances into the environment, explains regulations for the storage of bulk chemicals, and provides a list of spill prevention and response publications (p. 62 – 65)

DETAILED ANNOTATED RESOURCES FOR INFORMATION IN TABLE 4.1 (cont'd) Vehicle and Fleet Maintenance (continued)

[California Stormwater Quality Association – Best Management Practice Handbook – Municipal](#)

- **Housekeeping Practices** – describes housekeeping practices that can be used when handling potentially harmful materials (SC – 60)
- **Safer Alternative Products** – promotes the use of less potentially harmful materials in municipal operations (SC – 61)
- **Spill Prevention, Control & Cleanup** – describes the components of a spill response and control plan (SC – 11)
- These documents describe steps that can be taken to reduce stormwater pollution from the activities referenced below:
 - o **Outdoor Container Storage** (SC – 31)
 - o **Outdoor Equipment Maintenance** (SC – 32)
 - o **Outdoor Storage of Raw Materials** (SC – 33)
 - o **Parking/Storage Area Maintenance** (SC – 43)
 - o **Vehicle and Equipment Cleaning** (SC – 21)
 - o **Vehicle and Equipment Fueling** (SC – 20)
 - o **Vehicle and Equipment Repair** (SC – 22)
 - o **Waste Handling & Disposal** (SC – 34)
 - o **Waste Handling and Disposal – Recycling/Reuse** (SC – 75)

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Parks and Open Space Maintenance

Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection in New York State

Environmental Compliance, Pollution Prevention, and Self-Assessment Guide for the Marina Industry

- Following are pertinent regulations addressed in this document:
 - o **Hazardous Waste Regulations** (p. 30 – 37)
 - o **Solid Waste Regulations** (p. 43 – 44)
 - o **Bulk Storage Regulations** (p. 45 – 48)

DETAILED ANNOTATED RESOURCES FOR INFORMATION IN TABLE 4.1 (cont'd)

Parks and Open Space Maintenance (cont'd)

Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection in New York State (cont'd)
On-Site Wastewater Treatment Systems Management Practices Catalogue

- **Administration, Operation and Maintenance – Inspection and Pumping:** basic explanation about the need for septic tank and drainfield inspections and septic tank pumping (p. 35 – 36)
- **Operation and Maintenance for Septic Tanks and Standard Absorption Systems:** basic explanation of on-site septic system inspection and maintenance requirements (p. 33 – 34)

Urban/Stormwater Runoff Management Practices Catalogue for Nonpoint Source Pollution Prevention in New York State

- **Integrated Pest Management** – describes a variety of methods for pest control (p. 35 –36)
- **Irrigation Water Management, Scheduling** – explains the need for scheduling irrigation (p. 37 – 38)
- **Nutrient Management** – explains the need for managing nutrient applications and components of nutrient management programs (p. 39 – 40, 43 – 46)
- **Pathogen and Nutrient Management Control** – provides information about controlling pathogens and nutrients from nuisance birds, pet and waterfowl waste (p. 47 – 52)
- **Pesticide Management** – gives information about proper equipment usage and pesticide application (p. 55 – 62)

[Pollution Prevention/Good Housekeeping for Municipal Operations \(USEPA\)](#)

- **Alternative Products** – provides examples of alternative product usage that could contribute to fewer pollutants in stormwater (p. 57 – 59)
- **Hazardous Materials Storage** – explains management considerations for hazardous materials storage (p. 60 -62)
- **Landscaping and Lawn Care** – explains how stormwater pollution can be decreased and prevented by using less lawn care materials and modifying landscaping practices (p. 23 – 31)
- **Materials Management** – describes steps for management of stored chemicals to decrease the potential for stormwater pollution (p. 72 – 73)
- **Pest Control** – explains how changing pest control practices can contribute to improved water quality (p. 32 – 37)
- **Pet Waste Collection** – explains environmental problems associated with pet waste and what can be done to address pet waste problems (p. 4 – 9)
- **Septic System Controls** – describes proper septic system maintenance (p. 47 – 52)
- **Spill Response and Prevention** – states the basic requirements of a spill response and prevention plan (p. 64 – 65)

DETAILED ANNOTATED RESOURCES FOR INFORMATION IN TABLE 4.1 (cont'd)

Parks and Open Space Maintenance (continued)

[Pollution Prevention Guidance for Small Business and Local Government \(NYS\)](#)

- **Pesticides** – summarizes regulations about pesticide handling, storage, disposal and safety and about disposal of pesticide containers and unwanted pesticides (p. 22)
- **Pollution Prevention** – explains how pollution prevention can be achieved by using practices to reduce waste generation and pollutant sources, discusses the advantages of pollution prevention, and provides a list of pollution prevention publications and technical assistance information (p. 1 – 6)
- **Spill Response and Prevention** – summarizes regulations pertaining to the release of hazardous substances into the environment, explains regulations for the storage of bulk chemicals, and provides a list of spill prevention and response publications (p. 62 – 65)

[California Stormwater Quality Association – Best Management Practice Handbook – Municipal](#)

- **Housekeeping Practices** – describes housekeeping practices that can be used when handling potentially harmful materials (SC – 60)
- **Safer Alternative Products** – promotes the use of less potentially harmful materials in municipal operations (SC – 61)
- **Spill Prevention, Control & Cleanup** – describes the components of a spill response and control plan (SC – 11)
- These documents describe steps that can be taken to reduce stormwater pollution from the activities referenced below:
 - o **Building & Grounds Maintenance** (SC – 41)
 - o **Fountain & Pool Maintenance** (SC – 72)
 - o **Landscape Maintenance** (SC – 73)
 - o **Over Water Activities** (SC – 50)
 - o **Vehicle and Equipment Cleaning** (SC – 21)
 - o **Vehicle and Equipment Fueling** (SC – 20)
 - o **Waste Handling & Disposal** (SC – 34)
 - o **Waste Handling and Disposal – Recycling/Reuse** (SC – 75)

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DETAILED ANNOTATED RESOURCES FOR INFORMATION IN TABLE 4.1 (cont'd)

Municipal Building Maintenance

Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection in New York State

On-Site Wastewater Treatment Systems Management Practices Catalogue

- **Administration, Operation and Maintenance – Inspection and Pumping:** basic explanation about the need for septic tank and drainfield inspections and septic tank pumping (p. 35 – 36)
- **Operation and Maintenance for Septic Tanks and Standard Absorption Systems:** basic explanation of on-site septic system inspection and maintenance requirements (p. 33 – 34)

[Pollution Prevention/Good Housekeeping for Municipal Operations \(USEPA\)](#)

- **Alternative Products** – provides examples of alternative product usage that could contribute to fewer stormwater pollutants (p. 57 – 59)
- **Hazardous Materials Storage** – explains management considerations for hazardous materials storage (p. 60 -62)
- **Landscaping and Lawn Care** – explains how stormwater pollution can be decreased and prevented by using less lawn care materials and modifying landscaping practices (p. 23 – 31).
- **Materials Management** – describes steps for management of stored chemicals to decrease the potential for stormwater pollution (p. 72 – 73)
- **Pest Control** – explains how changing pest control practices can contribute to improved water quality (p. 32 - 37)
- **Septic System Controls** – describes proper septic system maintenance (p. 47 – 52)
- **Spill Response and Prevention** – states the basic requirements of a spill response and prevention plan (p. 64 – 65)

[Pollution Prevention Guidance for Small Business and Local Government \(NYS\)](#)

- **Pesticides** – summarizes regulations about pesticide handling, storage, disposal and safety and about disposal of pesticide containers and unwanted pesticides (p. 22)
- **Pollution Prevention** – explains how pollution prevention can be achieved by using practices to reduce waste generation and pollutant sources, discusses the advantages of pollution prevention, and provides a list of pollution prevention publications and technical assistance information (p. 1 – 6)
- **Spill Response and Prevention** – summarizes regulations pertaining to the release of hazardous substances into the environment, explains regulations for the storage of bulk chemicals, and provides a list of spill prevention and response publications (p. 62 – 65)

DETAILED ANNOTATED RESOURCES FOR INFORMATION IN TABLE 4.1 (cont'd)
Municipal Building Maintenance (continued)

[California Stormwater Quality Association – Best Management Practice Handbook – Municipal](#)

- **Housekeeping Practices** – describes housekeeping practices that can be used when handling potentially harmful materials (SC – 60)
- **Safer Alternative Products** – promotes the use of less potentially harmful materials in municipal operations (SC – 61)
- **Spill Prevention, Control & Cleanup** – describes the components of a spill response and control plan (SC – 11)
- These documents describe steps that can be taken to reduce stormwater pollution from the activities referenced below:
 - o **Building & Grounds Maintenance** (SC – 41)
 - o **Landscape Maintenance** (SC – 73)
 - o **Outdoor Loading/Unloading** (SC – 30)
 - o **Outdoor Container Storage** (SC – 31)
 - o **Outdoor Storage of Raw Materials** (SC – 33)
 - o **Parking/Storage Area Maintenance** (SC – 43)
 - o **Waste Handling & Disposal** (SC – 34)
 - o **Waste Handling and Disposal – Recycling/Reuse** (SC – 75)

[\(Back to Sample Measurable Goals\)](#)

Solid Waste Management

Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection in New York State

- Urban/Stormwater Runoff Management Practices Catalogue for Nonpoint Source Pollution Prevention in New York State
- **Proper Use and Disposal of Household Hazardous Substances** – explains how to properly use and dispose of household hazardous chemicals (p. 65 – 66)

DETAILED ANNOTATED RESOURCES FOR INFORMATION IN TABLE 4.1 (cont'd)

Solid Waste Management (continued)

[Pollution Prevention/Good Housekeeping for Municipal Operations \(USEPA\)](#)

- **Illegal Dumping Control** – explains steps that municipalities can follow to create an illegal dumping control program (p. 19 - 22)
- **Hazardous Materials Storage** – explains management considerations for hazardous materials storage (p. 60 -62)
- **Parking Lot and Street Cleaning** – discusses the advantages and disadvantages of cleaning parking lots and streets to reduce the amount of potential stormwater pollutants (p. 38 – 41)
- **Pet Waste Collection** – explains environmental problems associated with pet waste and what can be done to address pet waste problems (p. 4 – 9)
- **Spill Response and Prevention** – states the basic requirements of a spill response and prevention plan (p. 64 – 65)

[Pollution Prevention Guidance for Small Business and Local Government \(NYS\)](#)

- **Hazardous Waste** – summarized regulations for managing, storing and shipping hazardous wastes (p. 31 – 32)
- **Pollution Prevention** – explains how pollution prevention can be achieved by using practices to reduce waste generation and pollutant sources, discusses the advantages of pollution prevention, and provides a list of pollution prevention publications and technical assistance information (p. 1 – 6)
- **Spill Response and Prevention** – summarizes regulations pertaining to the release of hazardous substances into the environment, explains regulations for the storage of bulk chemicals, and provides a list of spill prevention and response publications (p. 62 – 65)

[California Stormwater Quality Association – Best Management Practice Handbook – Municipal](#)

- **Drainage System Maintenance** – describes drainage system maintenance activities to ensure proper functioning of the system (SC – 74)
- **Housekeeping Practices** – describes housekeeping practices that can be used when handling potentially harmful materials (SC – 60)
- These documents describe steps that can be taken to reduce stormwater pollution from the activities referenced below:
 - o **Parking/Storage Area Maintenance** (SC – 43)
 - o **Waste Handling & Disposal** (SC – 34)
 - o **Waste Handling and Disposal – Recycling/Reuse** (SC – 75)

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DETAILED ANNOTATED RESOURCES FOR INFORMATION IN TABLE 4.1 (cont'd)
Streambank Stabilization and Hydrologic Habitat Modification

Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection in New York State

Hydrologic and Habitat Modification

- **Streambank and Shoreline Protection** - This chapter describes various methods for streambank and shoreline protection (p. 30 – 56)
- **Water Quality and Habitat Protection** - Improving Instream and Riparian Habitat – describes how to create instream and on-bank structures to improve or create habitat (p. 61 – 63).

[New York State Technical & Operational Guidance Series \(TOGS\)](#)

- **In-Water and Riparian Management of Sediment and Dredge Material** - this document provides guidance on the steps to follow when performing dredging (in-water activities to move or remove sediment) operations (p. 1 – 77)

[\(Back to Sample Measurable Goals\)](#)

4.4 Expanding the Guidance Network - Other Resource for Minimum Control Measure 6 Assistance

A variety of professional and government organizations and associations can provide networking support or assistance to municipalities in their pollution prevention efforts. Connections to other municipal officials across the state or nation that are involved in pollution prevention can also be made through these organizations. This section reviews some of these organizations and provides World Wide Web addresses for them. These complement county and regional organizations and agencies that may also provide pollution prevention support, such as those referenced in Section 2.2 (County Soil and Water Conservation District, County Water Quality Coordinating Committee, Regional Planning Council or other regional planning agencies).

Professional associations exist for nearly every aspect of municipal activity related to Minimum Control Measure 6, from fleet management to parks administration and others. The webpage for the American Public Works Association, serves as a link to many of these and thus the wide range of existing associations are not individually listed.

This listing of professional associations is not complete, and may be augmented in future editions of this guidance.

- **American Public Works Association (APWA)**

The APWA has an extensive website which provides links to additional web resources on pollution prevention and public works maintenance.

The most useful directory on this website is the APWA Resource Center which is located at:

<http://www.apwa.net/ResourceCenter/>

This page provides sublinks to a wide variety of professional association resources and publications, including many categories related to Minimum Control Measure 6:

- Equipment and Fleet Management
- Facility and Grounds Management
- Right of Way Management
- Solid Waste
- Street Sweeping
- Transportation
- Urban Issues
- Water Resources

- **Cornell Local Roads Program (CLRP)**

The Cornell Local Roads Program serves as New York State's Local Technical Assistance Program Center, as established by the Federal Highway Administration. In addition to the many training events for local highway and public works officials, the CLRP offers direct technical assistance support. The CLRP website is located at:

<http://www.clrp.cornell.edu>

On the CLRP webpage, tabs at the top of the page provide access to the CLRP technical assistance referral, the CLRP Library and to a wide variety of state and federal resources and links with direct relevance to Minimum Control Measure 6.

- **New York State Department of Transportation**

The New York State Department of Transportation (NYSDOT) is a source of specifications and guidance for various operations related, directly or indirectly, to Minimum Control Measure 6. Among these operations are winter road maintenance, street and bridge maintenance, hazardous materials handling, and various aspects of erosion and sediment control.

The NYSDOT Environmental Procedures Manual is available online at the following web address:

<http://www.dot.state.ny.us/eab/epm.html>

The Environmental Procedures Manual, in the online version, serves as a compendium, with numerous weblinks to specific guidance on the above topics.

Additional NYSDOT publications may be located through the NYSDOT publications webpage, located at the following address:

<http://www.dot.state.ny.us/pubs/publist.html>

From this page, links can be made to an extensive series of NYSDOT Standard Specifications (listed as "Standard Specifications" in the publications). These specifications cover numerous topics outside the scope of Minimum Control Measure 6, but some are relevant. Among these topics listed in the Standard Specifications Table of Contents are:

Section 104-06:	Site Housekeeping
Section 106-05:	Storage of Materials
Section 200:	Earthwork (various topics)
Section 570:	Environmental and Groundwater Protection
Section 571:	Treatment and Disposal of Paint Removal Waste
Section 600:	Incidental Construction (various topics)
Section 602:	Rehabilitation of Culvert and Storm Drain Pipes
Section 713:	Landscape Development Materials
Section 740:	Painting Procedures
Section 741:	Paint Removal and Containment

Updated Standard Specifications are also posted, with links to these from the NYSDOT publications listing at the above web address.

The NYSDOT publications webpage (see above address) also includes a series of training materials, some of which are relevant to Minimum Control Measure 6 actions. These are accessed through the publications link titled “Transportation Maintenance Division Training Materials,” and then through a second link titled “Equipment Training: Evaluation Guide for Skills Demonstrations.” A series of Evaluation Guides and Maintenance Checklists then appears for different equipment categories. The most relevant categories are Catch Basin Cleaner, Sewer Cleaner, Sweeper, and Herbicide Truck. These may be directly accessed at the following webpage:

<http://www.dot.state.ny.us/tmdtraining/evalguides.html>

These guides are primarily to ensure proper maintenance and operation of equipment used for BMP implementation, and are not BMP descriptions themselves.

- **New York State County Highway Superintendents Association (NYSCHSA)**

The NYSCHSA hosts two conferences annually and is active in supporting other events by peer organizations such as Cornell Local Roads. A calendar of training events and conferences and links to other professional and local government associations is found on their webpage at the following address:

<http://www.countyhwys.org>

- **Center for Dirt & Gravel Road Studies**

The Center for Dirt & Gravel Road Studies, operated by Pennsylvania State University, provides a range of informational and technical bulletins, which are available from its website (under the tab heading “resources”). The focus of the Center is directly related to stormwater management, with its primary purpose being to mitigate sediment pollution to streams originating from dirt and gravel roads. Although the focus of its education, training and local funding programs are in Pennsylvania, the technical expertise offered may be useful to New York communities. The website for the Center is located at:

www.mri.psu.edu/centers/cdgrs

- **Federal Highway Administration (FHWA)**

The FHWA offers broad support to managers of the nation’s roads and highways. The FHWA website provides a wide range of links to resources relevant to Minimum Control Measure 6 and is located at:

<http://www.fhwa.dot.gov>

Of special interest is technical support to winter maintenance programs and the FHWA provides a guidebook titled “Manual of Practice for an Effective Anti-icing Program” at the following website:

<http://www.fhwa.dot.gov/reports/mopeap/eapcov.htm>

- **Transportation Association of Canada (TAC)**

The Transportation Association of Canada has developed technical guidance which complements the FHWA guidance. A guidance manual related to winter maintenance, titled “Syntheses of Best Practices-Road Salt Management” can be downloaded in nine separate chapters from the TAC’s “Reading Room” webpage at the following:

<http://tac-atc.ca/english/information/services/readingroom.cfm>

The TAC has also developed a short guide that highlights environmental principles in establishing policies and procedures titled, “Guide to Integrating Environmental Management Principles Into Operating Codes of Practice.” This is available at the TAC Reading Room website listed above.

- **Association of Towns of the State of New York**
- **New York State Conference of Mayors and Municipal Officials (NYCOM)**
- **New York State Association of Counties (NYSAC)**

Each of these associations for municipal, town and county governments provides training and conference opportunities that address a broad range of public concerns and issues. Although they are not as directly or exclusively involved with Minimum Control Measure 6 issues as some of the previously listed organizations, their forums may address them as special topics, and the organizations may cosponsor events that address stormwater issues. Calenders of events, useful directories, and special links may be located on their webpages, as follows:

Association of Towns: <http://www.nytowns.org>

NYCOM: <http://www.nycom.org>

NYSAC: <http://www.nysac.org>

- **Audubon International**

Audubon International is a not-for-profit educational organization that offers three programs that may assist municipalities in their pollution prevention efforts. Audubon International may offer services and work directly in cooperation with a municipality in its following three programs:

- **Audubon Cooperative Sanctuary Programs**

For existing facilities and properties, such as golf courses, parks and other properties.

- **Audubon Signature Programs**

For new developments, including new municipal parks, golf courses, etc.

- **Sustainable Communities Program**

To assist municipalities in merging economic development with protection and enhancement of a community's environment, and for facilitating partnerships.

Detailed descriptions of these programs, and contacts, may be located on the Audubon International webpage located at:

<http://www.auduboninternational.org>

and accessed through the drop-down tab titled "programs" at the top of the page.

Responsiveness Summary

Municipal Pollution Prevention and Good Housekeeping Program Assistance

NYSDEC
May 2006

The New York State Department of Environmental Conservation (DEC) prepared the Municipal Pollution Prevention and Good Housekeeping Program Assistance document. The document incorporates guidance and references to assist municipalities in developing policies and procedures and establishing measurable goals for maintenance activities for municipal operations and facilities. These can be used to create effective pollution prevention and good housekeeping programs.

DEC distributed this DRAFT assistance document, along with three other draft assistance documents, to regulated Phase II Municipal Separate Storm Sewer System (MS4) municipalities in August 2005. The public comment period ran from August through December 2005. Below are responses to the main issues raised for the Municipal Pollution Prevention and Good Housekeeping Program Assistance document during that comment period.

Comments on Original NOI and Potential New Requirements Suggested in the Guidance

Comments:

The document outlines a self-assessment procedure to determine management needs in eight principal pollution prevention/good housekeeping practice categories. It is not clear whether additions to the MS4s program that were not planned in the original NOI are required if they are identified through the self-assessment.

It is a bit difficult to determine whether policies and procedures are adequate in any of the eight areas using this assessment. Without hard and fast requirements, it is not always possible to determine whether the number of staff available for an activity is adequate.

The document does not provide a specific exercise for municipalities to prioritize management practices or geographic areas. Municipalities were given freedom in their NOIs to design their program with a consideration of the pollutants and bodies of water that are of most concern in their municipality. Clarification is needed as to whether new priorities are now required, or if the municipalities should maintain their focus on only those areas they indicated in their NOI.

The “Guiding Principles for Stormwater Pollution Prevention” is helpful in that it actually provides specific examples of types of improvements that need to be made in municipal operations. However, an expansion of this listing into a full checklist of concrete and quantifiable actions, and some measurement of how much is enough to comply, is what is

needed for municipalities to properly assess what improvements they must make in order to achieve compliance.

Response:

MS4s are required to reduce discharges to the maximum extent practicable. The self-assessment procedure described in the guidance is a suggested tool for accomplishing that requirement. However, the self-assessment itself is not required. MS4s are not specifically required to make additions to the program that were not planned in the original Notice of Intent (NOI), or to otherwise refocus their programs as a result of the self-assessment, unless it is determined that the MS4 is not reducing discharges to the maximum extent practicable. Consequently, the self-assessment procedure described in the guidance does not prescribe specific standards for staffing or other internal policies and procedures for MS4s. This is considered to be pragmatic, given the wide variability in MS4 capabilities and the nature of local non-point source issues.

For similar reasons, the guidance does not prescribe a mandatory exercise for determining local priorities, or a mandatory checklist procedure for determining concrete actions and numerical benchmark measures of progress that would apply to all MS4s. The MS4 is required to reduce discharges to the maximum extent practicable, and the focus of the NOI remains unless it is determined that this requirement is not met. New priorities are not specifically required as a result of self-assessment or priority evaluations suggested in the guidance.

Comments on Sample Measurable Goals for Municipal Operation Categories

Comment 1:

In the Sample Measurable Goal listings, there are no benchmarks provided regarding what is considered acceptable progress. No suggestions are offered as to how much work needs to be done in order to achieve compliance. Obviously, the amount of effort needed under the various categories will differ widely from one MS4 to the next, but some examples or ballpark figures based on population, area or miles of roads would be very useful.

Response 1:

Benchmarks for Minimum Control Measure 6 - Pollution Prevention/Good Housekeeping are described in the Stormwater Management Program document titled *Critical Path to Compliance*. These benchmarks are described as progressive program development and implementation stages, with annual target dates. New York has determined that establishing quantitative benchmarks (such as tons of sediment or debris cleaned or number of various clean outs) based on MS4 population or other geographic characteristics are not practicable.

Comment 2:

The Sample Measurable Goals for “Street and Bridge Maintenance,” Table 3.1, should include sample goals relevant to low traffic and unpaved roads addressing road drainage, erosion control and dust control. Section 4 should indicate which references provide guidance on these issues.

Response 2:

Sample measurable goal citations have been added to Table 3.1 for unpaved road maintenance, at a level of detail comparable to other measurable goals. Selected references for guidance on unpaved road maintenance have been added to Section 4.

Comment 3:

The Sample Measurable Goals for “Stormwater Drainage, Conveyance and Treatment System Maintenance,” Table 3.3, should include sample goals relevant to open ditches addressing stabilization and erosion control for roadside ditches.

Response 3:

Sample measurable goal citations have been added to Table 3.3 for open ditch maintenance, at a level of detail comparable to other measurable goals. Selected references for guidance on open ditch maintenance have been added to Section 4.

Comment 4:

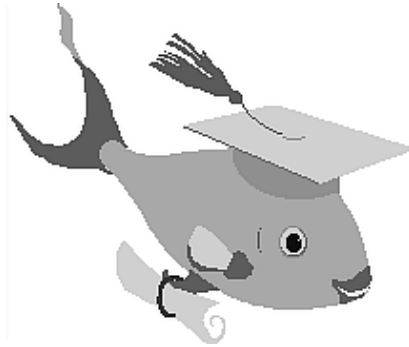
The inclusion of Sample Measurable Goals for “Streambank Stabilization and Hydrologic Habitat Modification,” Table 3.8, raises questions about whether this is a required part of the MS4 stormwater program. If streambank stabilization and stream maintenance are recommended, rather than required, please state this clearly. The MS4 permit is for discharges from municipal storm sewer systems; in-stream projects are addressed under other permit programs. If stream maintenance is an integral part of a municipality’s responsibilities under Minimum Control Measure 6, stream management objectives should be included in the “Guiding Principles for Stormwater Pollution Prevention”, with additional references provided in Section 4.

Response 4:

MS4s are required to reduce discharges to the maximum extent practicable. MS4s are not specifically required to make additions to the program that were not planned in the original Notice of Intent (NOI). Streambank stabilization and related management activities are suggested, or recommended, but are not required unless specifically stated in the NOI. Clarification has been added to the Guidance. The “Guiding Principles” described in Section 2.3 are broadly applicable to many municipal operations and pollution prevention activities. At least three of these principles are relevant to Streambank Stabilization and Hydrologic Habitat Modification: (1) Prevent Pollution at its Source; (5) Practice Preventive Maintenance; and (6) Identify Potential Pollution

Sources. The examples listed for these principles are intended for illustration only, and are not comprehensive. To avoid confusion regarding requirements related to streambank management in Minimum Control Measure 6, additional examples relevant to this topic have not been added in Section 2.3. We consider this guidance to be an evolving document. Additional references relevant to streambank stabilization and hydrologic habitat modification will be added as they are published and determined to be appropriate for this document.

Roadway and Roadside Drainage



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Roadway and Roadside Drainage

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NEW YORK LTAP CENTER

CLRP #98–5
updated February 2003

Acknowledgment

The Cornell Local Roads Program would like to acknowledge the support and assistance of many people who helped put this manual together. An advisory committee of twelve individuals helped review topics, provide documentation and resources, and reviewed the draft of this workbook for content and flow. The advisory committee includes:

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Several of the Local Technical Assistance Program (LTAP) Centers, located in various states, contributed their resources and supplied technical information during the development of this manual.

In addition, many other people provided photographs, materials for use in training and research of the topics, and offered advice on topics and issues facing highway departments in New York State. Thank you to all of those who helped.

Background

The principal author of this manual is David P. Orr, P.E.. He is currently the Technical Assistance Engineer with the Cornell Local Roads Program. Prior to coming to the program in January 1996, David worked for eight years at the Yates County Highway Department. His positions at Yates County included highway engineer, civil engineer, and deputy superintendent. He is a graduate of Cornell University with a B.S. in engineering and is a licensed engineer in New York State.

Preface

This workbook is intended to provide basic drainage information to people who fix roads in New York State. It does not, and cannot provide all of the information needed to maintain and construct drainage systems along our streets and roads. Such a manual would be several hundred pages thick and would collect dust on a shelf. Therefore, I have included some basic information to help people who build and maintain drainage systems in New York State.

The emphasis of this publication is on open drainage systems. However, It still should provide valuable information to anyone who maintains any drainage system.

The accompanying training session and this workbook are complementary. Some of the information in this workbook will not be discussed in depth, and some of the training will give details not included in the book.

Both the workbook and the training system employ the KISS system: Keep It Simple Dave. I hope this workbook will help you as you read it and use it in the future. Please let me know what improvements can be made. They will be made if possible. Thank you.

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*Drainage:
The process of removing and controlling excess surface and
subsurface water to help maintain roads and streets.*

1 - INTRODUCTION

1.1 HISTORY

In the late 1800s, roads in the United States were, to be honest, poor. To a large extent, they lacked proper construction, maintenance, and drainage. The year 1880 saw the creation of a group that helped to change the conditions of roads in this country, the League of American Wheelmen, an association of bicycle riders! The League's efforts eventually led to the creation of the U.S. Office of Road Inquiry in the Department of Agriculture in 1893.

By 1904, about 7 percent of the roads in the U.S. were "improved". Improved meant gravel, graded and smoothed, not blacktop. With the advent of the Rural Free Delivery mail and the increase in the use of cars, more pressure was placed on government to build better roads and highways.

The Good Roads movement in the early 1900s kept pressure on government and led to the 1916 Federal-Aid Road Act, a nationwide effort to "get the farmer out of the mud". This bill is the direct ancestor of the Transportation Equity Act for the 21st Century (TEA21), today's federal program for highways and streets.

While the condition of roads has greatly improved since the early part of the century when the United States was considered 50 years behind the rest of the industrial world, we still have a long way to go. Many of those problems are drainage related.

1.2 EXTENT OF DRAINAGE PROBLEMS

Highway agencies spend more than 25 percent of their budget on drainage. Typical problems caused by poor drainage include:

- Rutting
- Cracking
- Potholes
- Erosion
- Washouts
- Heaving
- Flooding

Together or alone, these defects will lead to **premature failure of roadway**



Figure 1 - Rural road in the early 1900s
Source: ARTBA

Almost four billion dollars were spent on roads in New York State in 1995. This means approximately **one billion** dollars were spent on drainage in New York!

Table 1
Miles of roads and streets maintained by governments in New York State

Jurisdiction	Miles
State	15,657
County	20,424
Town	57,033
City and Village	18,356
Total	111,470

Local jurisdictions (counties, towns, cities, and villages) maintain 85 percent of the mileage in the state.

1.3 UNDERSTANDING WATER MOVEMENT

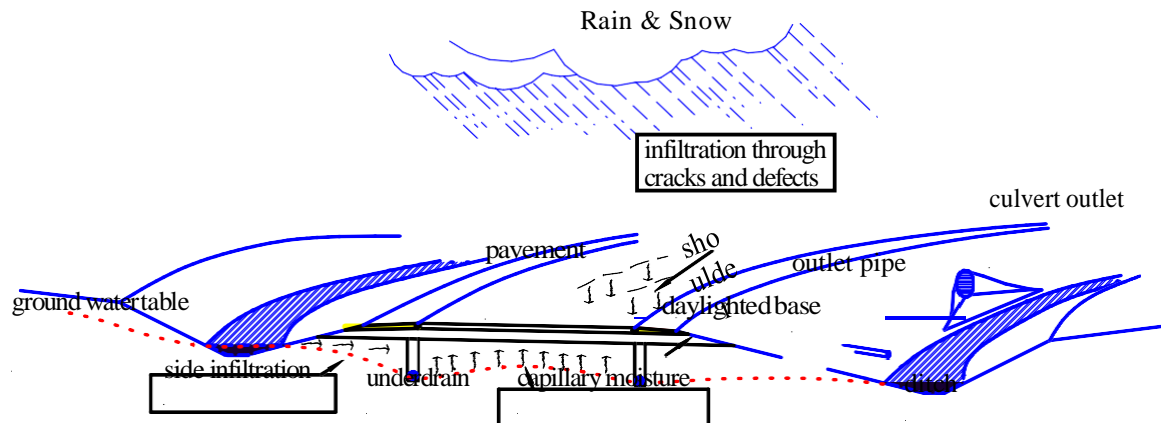


Figure 2 - Conceptual road drainage system

1.3.1 Hydrologic cycle

Rain and snow falling on the ground will run overland or soak into the ground. Eventually all the runoff will reach lakes, streams, or the ocean where the water will evaporate and start the cycle all over again.

1.3.2 Water movement around roads

When maintaining and building roads and streets, we must be concerned with water flowing around them. Figure 2 shows a conceptual drainage system and how water may enter a road. Water may enter roadways through “cracks and surface defects” on the pavement. Or it can “infiltrate from the side” through the fill. “Capillary action” may draw moisture up from the water table and cause the base to become saturated. “Excess water” in ditches and flowing through culverts can cause damage to roads by causing washouts and failure of storm water systems, slope instability, and erosion.

1.4 KINDS OF HIGHWAY DRAINAGE

1.4.1 Roadway

“Roadway drainage” is the control of water within the roadway including moving water off the surface of the roadway, and removing excess subsurface water infiltrating the roadway base and subgrade. We need to intercept and direct excess water away before it gets in to the roadway and use materials and techniques to allow excess moisture in the roadway to drain away.

1.4.2 Roadside

Roadside drainage is the controlling of water beyond the roadway, including water coming from the roadway surface and out subsurface drains. This includes water in ditches, culverts, and coming from surrounding land. This water needs to be moved away from the road as soon as feasible. Reducing erosion and sedimentation helps control excess water flow.

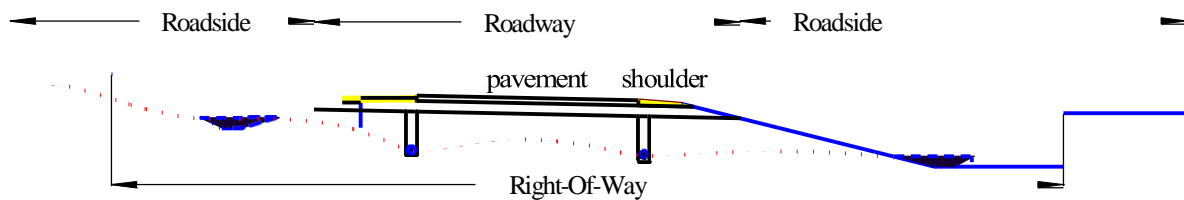


Figure 3 - Roadway vs. roadside drainage

2 - EARTH MATERIALS

Roads are built on top of native soils. Earth materials and aggregates (gravels) are used to build and construct roads. Good drainage starts with using the correct materials to construct the base of a road. Understanding some properties of the materials we use to build roads will make our jobs easier. More information on earth materials is available in the Cornell Local Roads Program manual, *Basics of a Good Road*.

2.1 SOILS

Soils are classified by their size into four general categories. Soil analysis starts by classifying soils by the percentage of each size material they contain. We need to know the amount of each category of material in an aggregate to determine if it is suitable for building a road.

Table 2
Soil classes and sizes

Soil types	Size (mm)	Sieve sizes
Boulders & cobbles	>75 mm	Retained on the 75 mm (3") sieve
Gravel	2.0 to 75 mm	Retained on the #10 sieve
Sand	0.075 to 2.0 mm	Retained on the #200 sieve
Fines (silt & clay)	<0.075 mm	Passes the #200 sieve

Boulders and cobbles are very large and should not be used in the base and surface of roads. They are very useful for erosion control, scour protection and filling gabions.

Gravel particles are large and have high strength. Due to their importance in providing strength, we refer to the mixture of particles used to build roads as gravel.

Sands drain very well and are relatively stable. They fill the voids between gravel particles.

Fines (silts and clays) have the smallest size particles. Clay soils are hard when dry, but very soft when wet. Clays feel greasy when wet. Silts are slightly larger and will erode very easily. Fines provide no strength. Their primary purpose in gravels is to help bind together surface materials exposed to traffic.

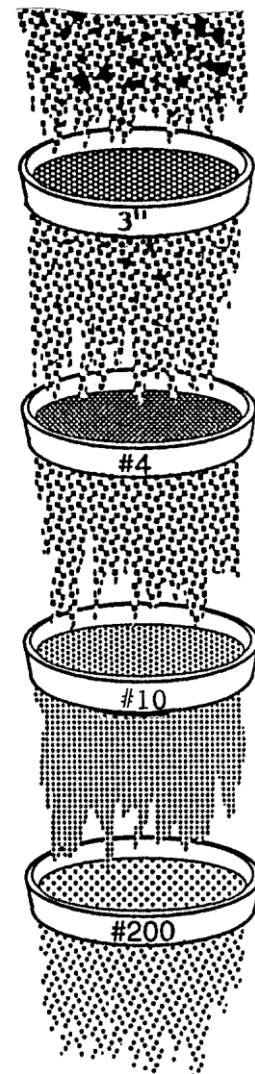


Figure 4 - Sieve analysis

A simple test can be performed in a lab or in the field in approximately 30 minutes. The Sand Equivalent Test measures the proportion of clay-like particles in the sand size and smaller particles of a gravel. A sample of material is placed in a cylinder with a special solution and let to soak. It is then shaken and the sand particles settle out almost immediately. After twenty minutes the clay-like particles have settled to some value in the cylinder (Clay reading). The sand particles, which can support a weight, have settled to a lower value (Sand reading). The ratio of these two lines, reported as a percentage, is the Sand Equivalent. For more information, request the *Gravel Series* (three newsletter articles) from the Cornell Local Roads Program.

2.2 ROAD MATERIALS

We build roads with earth materials that are a mixture of different size materials as listed above. Gravels and aggregates used to build roads should be clean, hard, durable, angular, and not susceptible to damage due to freezing and thawing. The strength and quality of the gravel is directly related to the gradation or mixture of different size particles. Gravel particles are needed for their strength and durability. Sand size particles are needed to fill the voids between the gravel particles and help stabilize the aggregate. Some fine particles are needed with surface gravels to bind the gravel together and help eliminate dust problems.

2.2.1 Surface gravels

The material used for the surface of a gravel road needs to have slightly more fines than a base gravel to help hold the particles in place during dry periods. Without enough fines, traffic will cause the material to ravel and washboard. On the other hand, excessive fines will cause the surface to be too soft during spring thaw. Ruts and other depressions during spring thaw are often due to excessive fines in the surface and base.

2.2.2 Base

The material below the surface of a road whether it is paved or not is the base. The materials in the base of the road should be clean (very few fines). A material that is good as a surface gravel will NOT be a good material for the base of a roadway. A good base will be free draining and have a high permeability. Excess fines will hold moisture, and the base will be weaker than it should.

The following table and figure show the recommended gradations for materials used in road building.

Table 3
Gradations of gravels for roads

Soil type	Percentage of materials		Notes
	SURFACE	BASE	
Cobbles	0%	0%	No material larger than 3" should be used
Gravel	50 - 70%	50 - 70%	Same for both surfaces and bases
Sand	25 - 40%	25 - 40%	Same for both surfaces and bases
Fines	8 - 15%	0 - 8%	More fines needed in a surface gravel

Note: The amount of gravel and sand is the same for both base and surface materials. The fines are needed on the surface to bind the material together. The fines do nothing to help the strength of the material. If placed below a surface where evaporation cannot occur, the gravel will be too soft and premature failure will occur.

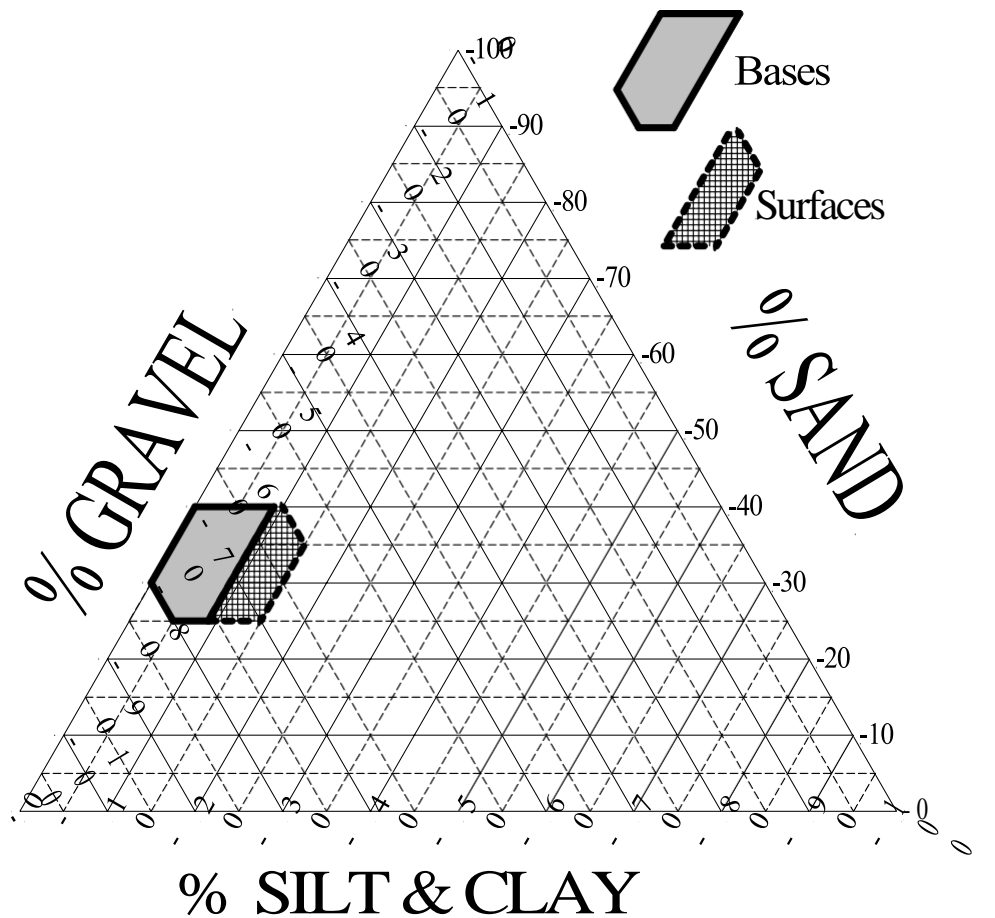


Figure 5 - Classification chart

Naturally occurring materials have a tremendous variation in gradation. Only a small amount of natural material is suitable for use in roads and streets.

2.2.3 Subgrade

The subgrade is just a fancy name for the native material we build the roadway on after we have removed any topsoil. The objective of any road construction is to build a road that does not overstress the subgrade. For drainage, we need to be concerned about the water carrying capability of the subgrade and the height of the water table within it. Also, we need to make sure the surface of the subgrade can drain before placing material on top of it.

Box 1 - Stabilization of base and surface gravels

Use of materials that do not have the proper gradation will lead to problems. If we have too many fines, we may stabilize the gravel using mechanical or chemical methods to change the gradation to a suitable one.

“Mechanical stabilization” is the mixing of materials that do not have a good gradation for use as a gravel by themselves to give a gradation which is applicable for use as a base or surface. Typically this is done by thoroughly mixing a dirty material with a very clean material. Calculations must be performed to ensure the final mixture will have a proper gradation.

“Chemical stabilization” is the addition of the chemical to bind or cement together the smaller particles in a dirty gravel. Asphalt emulsion, foamed asphalt, cement, fly-ash, and lime have all been used as chemical agents to stabilize dirty material. Calcium chloride is also used as a chemical stabilization material. It lowers the freezing point of a gravel and can reduce or eliminate freeze-thaw problems. However, it does not change the gradation, and problems due to poor gradation will still exist.

Help on both mechanical and chemical stabilization is available from vendors and the Cornell Local Roads Program.

3 - SUBSURFACE WATER

Water within the surface, base, and subgrade materials of a roadway is subsurface water. Some water will always be present and may actually be beneficial by helping to hold together the soil particles. However, excess subsurface water will cause a lot of damage to a roadway. Several factors affect the ability of soil to carry and allow infiltration of subsurface water.

3.1 ABILITY OF WATER TO BE HELD BY SOIL

Fines (silts and clays) hold water within soil in the same way water is held by a sponge. The higher the fines content, the more water held by the soil. Water held within the soil due to the presence of fines will not be removed by the force of gravity. Underdrains and daylighting dirty bases will not keep them dry. Use of clean materials is absolutely critical to keep soils dry and strong.

3.1.1 Capillary action

Capillary action is the rising of water above the free water table similar to how wax is wicked up in candles. The smaller the particles, the more susceptible to capillary action they are. Clays have the ability to wick water upwards of 30 feet. Silts and fine sands can raise water one to ten feet in a single wet season.

Table 4 - Height of capillary rise

Soil type	Height of rise (feet)
Gravel	0.1 – 0.4
Coarse sand	~ 0.5
Fine sand	1 - 3
Silts	3 - 30
Clays	30 - 90
Type #4 gravel	Less than 1 foot

3.1.2 Permeability

The ability of water to pass through a soil is known as permeability. Gravels and sands have high permeabilities. Clays and silts act as barriers to the movement of water. They have very low permeability. If we are trying to drain soils, the presence of clays and silts will greatly hamper our effort to remove the water.

Table 5 - Permeability rates (typical)

Soil type	Rate (feet/day)
Gravel	2,500 – 25,000
Sand	10 – 25
Silts	0.025 – 2.5
Clays	0.00001 – 0.025
Type #4 gravel	~ 50

3.2 EFFECTS OF EXCESS SUBSURFACE WATER

3.2.1 Frost Action (heaving)

Frost heave is a major problem in New York State or wherever freezing temperatures occur for prolonged periods. Heaving occurs when there are:

- Freezing temperatures
- Free water available to create ice lenses
- Frost-susceptible soils present

All three must be present to have frost heaving. Since we cannot control the weather, we usually concentrate on eliminating the source of free water or using non-frost susceptible soils.

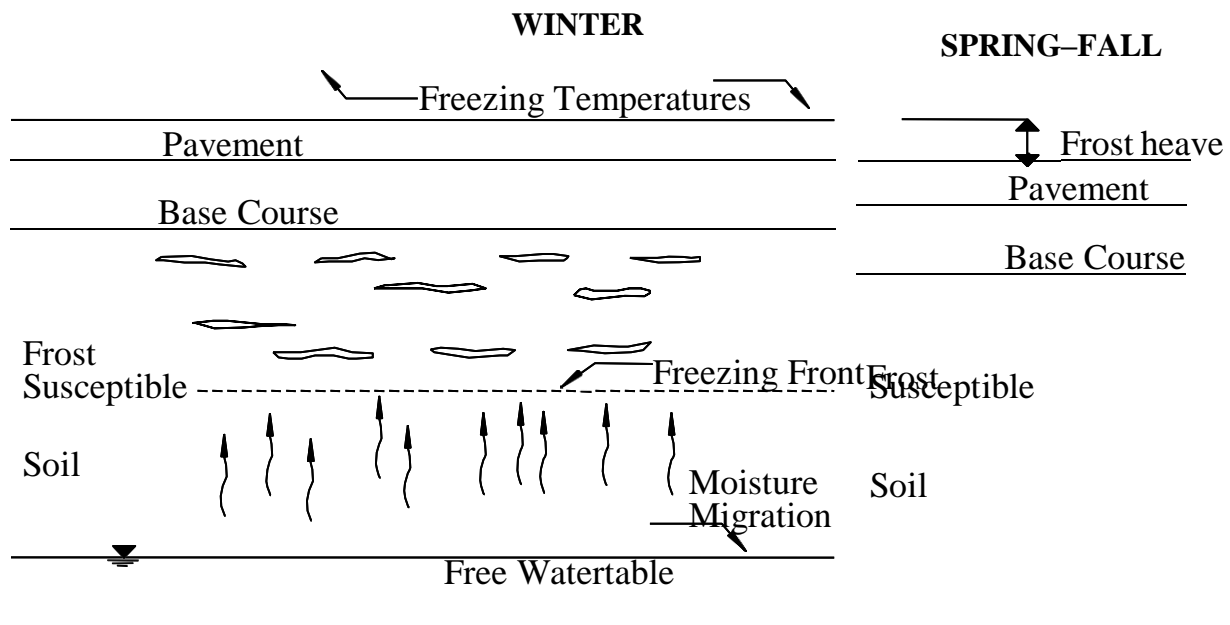


Figure 6 - Ice lenses

Figure 6 shows the effects of frost heaving. Free water is drawn up by capillary action. As the ground freezes from above, a line between the frozen ground above and the unfrozen ground below (freezing front) moves down. Where the freezing front interacts with water drawn up by capillarity, ice lenses grow. As the front moves down, additional lenses grow and the ground heaves.

In the spring, thawing occurs from the top down. Any excess moisture trapped in ice lenses will cause the pavement to be excessively weak. It is critical that we do not use frost-susceptible soils in our bases and surfaces. Frost-susceptible materials are prone to more problems and will be weaker in the spring.

Eliminating the source of free water is done by use of intercepting drains, trench drains, or intercepting ditches. Lowering the water table by use of underdrains is of limited effectiveness due to the high level water can be raised from capillary action.

Frost-susceptible soils are ones that have both high capillarity and permeability. Clays are not as frost susceptible as silts, but are very weak when wet. They have a high capillary action but pull water so slowly that by the time enough water has been pulled through them to create ice lenses, it is spring. Silts are very susceptible to frost heaving. Gravels and sands are the best materials to use to eliminate the problems of frost heaving.

We cannot typically replace the subgrade (native materials) but we **MUST** use non-frost susceptible materials in our bases to help reduce problems.

Table 6 - Frost-susceptible soils

Frost susceptibility	Soil types
Low	Clean gravels and washed sands
Medium	Unwashed sands with moderate amounts of silty fines
High	Dirty gravels and pure clays
Very high	Silts and silty materials (including most materials called clay in New York State)

Note: We cannot eliminate frost heaving subgrades, but we can build roads on them with the use of clean, high quality materials.

Box 2 - Alleviating sinter settling due to frost heave

One note of caution must be made when we make roadway repairs. Every winter a few culverts seem to “sink” or “settle”. Many of these culverts were actually compacted with non–frost susceptible materials, and the roadway around them is just heaving up to make them seem lower. When backfilling pipes, we should reuse the material, if possible, in the trench around the pipe to help alleviate this problem.

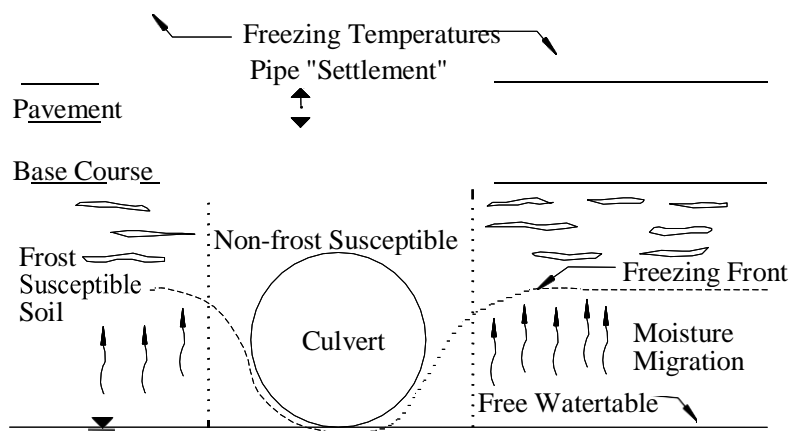


Figure 7 Winter “settling” due to frost heave

If we use a non–frost susceptible material around the culvert, it does not heave in the winter. As the road on either side heaves, the culvert appears to settle.

3.2.2 Pumping

Pumping is the mixing of layers of soil due to the vibration and loads of traffic. Especially during wet periods, the loads of traffic can cause the soil of the subgrade to be pushed or pumped into the base gravel. If the amount of fines pumped into the base is too great, the material will become weak and fail prematurely. Use of a separation fabric or sand filter layer between the native soil and the base of the roadway will eliminate most of this problem.

3.2.3 Potholes

Potholes are formed by the interaction of excess water, traffic, and weak materials. Excess water is the most significant culprit. Good materials may still form potholes if excess moisture is present.

Potholes form when the lower layers, softened by excess water, do not provide strength to the pavement above. The surface layer is overstressed and cracks or softens. Traffic pushes this weak material away and potholes are formed. Since we cannot stop traffic and even good materials will eventually pothole, we must eliminate excess moisture by use of free draining bases and interception drains.

3.2.4 Spring thaw

Spring thaw is when we get to harvest our most famous crop, potholes. Roads thaw from the top down. Also, the shoulders may remain frozen while the roadway has thaws. This is especially true if the materials in the shoulder have a higher fine content than the base under the road. When this happens, spring thaw is worse than a typical rainy period. With an unfrozen layer over the frozen base and the shoulders frozen, the road acts like a bathtub. If we do not allow for the water to drain with underdrains or daylighted bases, the saturated soils will be much weaker than they should be and will fail much sooner.

Posting roads to restrict heavy vehicles may be necessary to keep roads from failing during the spring thaw period. Roads should be posted for as short a period as possible. Tire pressure restrictions have been used by some agencies to help reduce damage to rural roads.

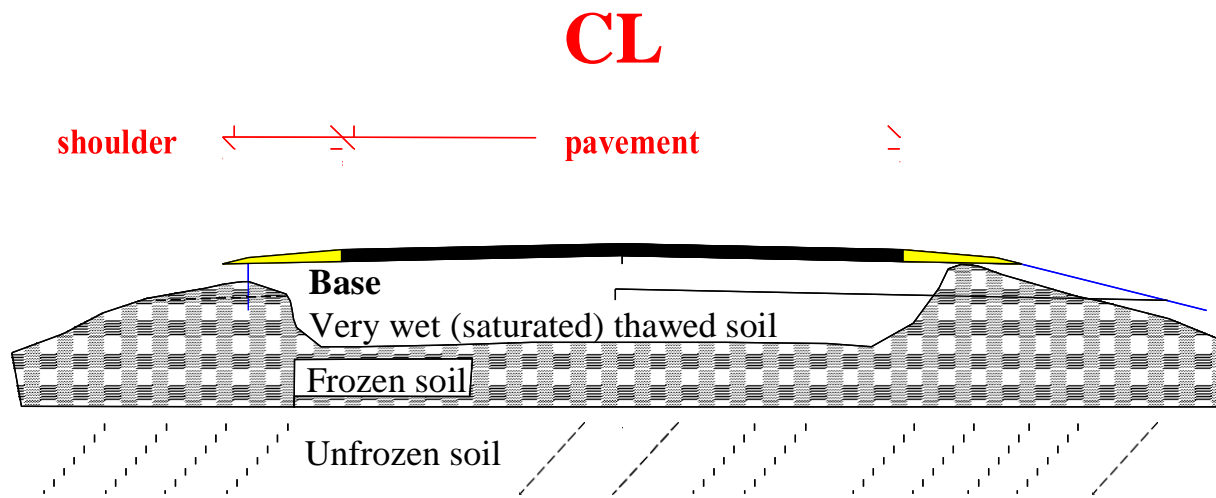


Figure 8 - Thawing of pavement creating spring time bathtub

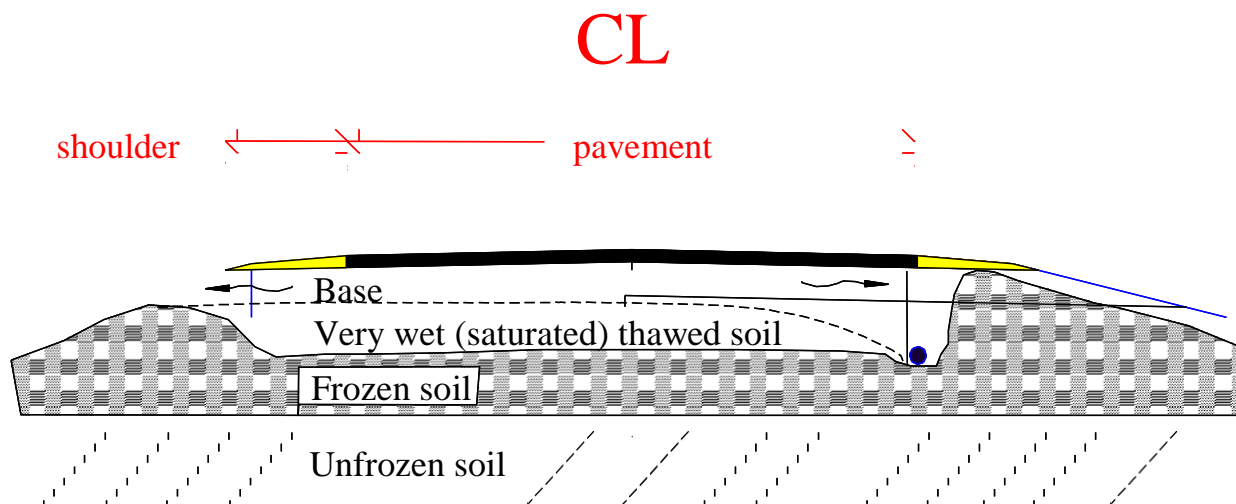


Figure 9 - Draining thawing base (one side with underdrains, one with daylight)

The thawing of the roadbed in the spring occurs from the top down and usually starts under the center of the roadway. The shoulders stay frozen and trap water in the base and subgrade. This saturated material is very weak and fails prematurely.

Removal of the excess water can be done by either daylighting the base (the daylighted material thaws faster than a dirty material) or installing subsurface drains to help remove the free water.

3.3 FREE-DRAINING LAYER (PERMEABLE BASE)

The use of a layer of free draining, clean material will go a long way to helping keep the roadway dry. The free-draining layer should have no more than 5 percent fines. Also, the material must be daylighted into a ditch or connected to some form of subsurface drainage system or excess moisture will be trapped like water in a bathtub.

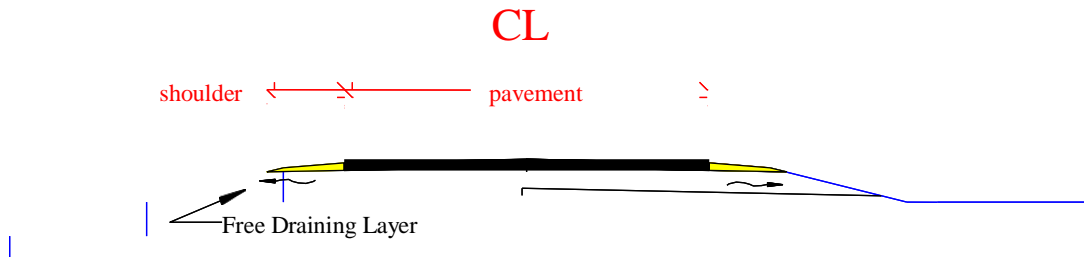


Figure 10 - Free-draining layer

4 - SUBSURFACE DRAINS

Subsurface drains, including underdrains and trench drains, are not miracle workers. They do three things: intercept water before it gets to the road, lower the water table, and remove excess free moisture. There are lots of claims made about what subsurface drains can do. All of the items which subsurface drains do fall into one of these categories.

4.1 WHAT SUBSURFACE DRAINS DO

4.1.1 Interception

Subsurface drains can keep water from getting to a roadway. This is most critical in cut or side hill sections where high water tables provide a large amount of water trying to get to the base of the roadway. When we install a base of gravel, the gravel will, typically, allow more water through it than the surrounding soils. If there is any pressure to the subsurface water, the water will come out in the road and cause the materials in the road to weaken. In a side hill section, if the materials become too wet, they may slide and cause a roadway failure.

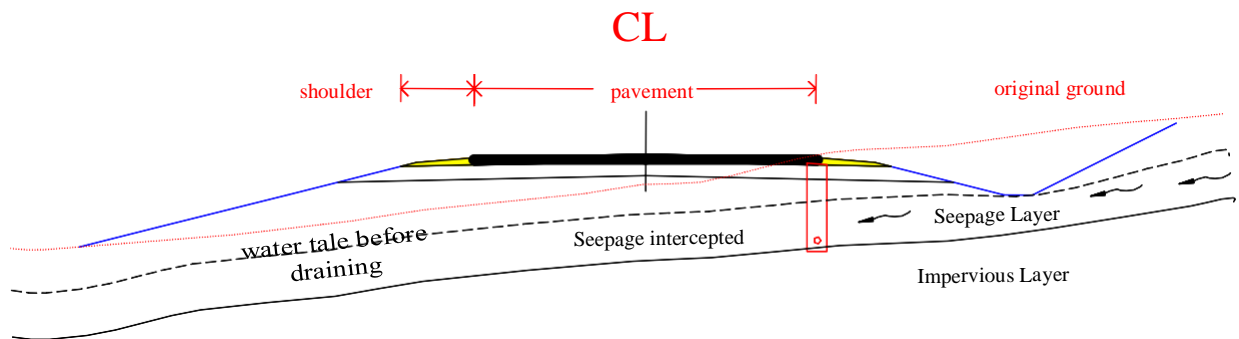


Figure 11 - Interceptor drains (side hill and cut)

4.1.2 Lower water table

To keep the water table below a depth susceptible to capillary action and help keep the base dry, deep vertical trenches filled with pipes along the edge of the pavement (underdrains) may be installed. Realize, most underdrains are only a maximum of three to four feet deep. If capillary action is greater than this depth, the lowering of the water table with the underdrain is not going to be very useful.

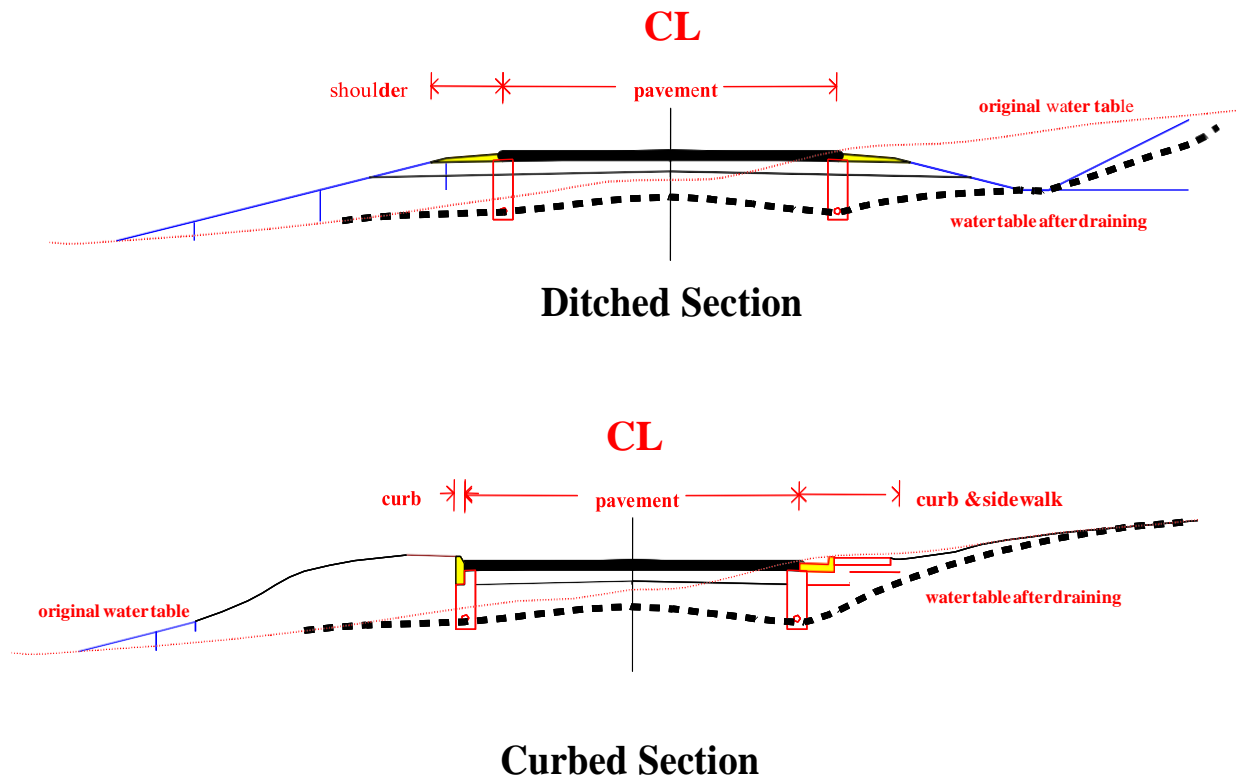


Figure 12 - Edge drains (underdrains)

4.1.3 Remove excess moisture

Excess moisture can be in a free draining base material during spring thaw, during wet seasons, or due to a spring under the roadway. Drains are used to intercept the springs, and remove water trapped by a frozen layer during spring thaw. Like removing a sponge from a bowl of water, underdrains can remove excess water trapped in a roadway. Excess moisture will move due to gravity to subsurface drains or through free draining layers. Only the water which will flow due to gravity can be removed by subsurface drains.

4.2 WHAT SUBSURFACE DRAINS DO NOT DO

4.2.1 Dry out materials (especially dirty materials)

Subsurface drains do NOT dry out soils. Dirty soils with high fine contents will not dry out due to the installation of subsurface drains. It would be like expecting a sponge to dry just by picking it up out of a bowl of water. A coarse-grained sponge, like an open clean gravel, will be mostly dry. But, a fine-grained sponge, like a dirty gravel, will remain wet for a long time. Only time will allow the sponge to dry out. However, roads get rain and snow year-round. We cannot predict or prevent precipitation. Also, if we cover the base gravel with a pavement or surface treatment, we seal in the water, and it may never dry out completely.

4.2.2 Make a poor road good

If the materials are weak and susceptible to failure, drains will not solve the problem. We need to know what is causing the material to be weak. If eliminating free moisture will not make the materials strong enough for traffic, subsurface drains alone will not be enough to make the road better.

4.3 UNDERDRAINS vs. TRENCH DRAINS

4.3.1 Underdrains

Underdrains differ from trench drains in that they are usually very narrow and have some form of pipe in them. They are usually installed by a special machine. The pipe materials come in two styles, pipes and fins. They may or may not be wrapped in a fabric.

The purpose of the fabric is to keep fines, silts and clays, from filling the pipe and causing it to plug. The fabric is only effective if it is a filter fabric. Many of the socks on the pipes do not act as filters. Two alternatives are used to backfill the trench. In one, a layer of fabric is placed into the trench prior to placement of the pipe and clean stone is placed around the pipe. Alternatively, washed concrete sand (NYSDOT spec. #703–07) can be used to fill the trench. The sand will perform the same function as the fabric. Since the pipe should be backfilled with new material anyway, it will be less expensive to install. Some of the manufacturers call for backfilling the pipes with the material removed from the trench. Although it is easier, the increased chances of premature plugging of the fabric justifies the cost of a clean backfill or sand.

Box 3 - Backfilling subsurface drains

Substructure drains need to:

- a. Be more permeable than the surrounding soil
- b. Act as a filter to keep fines and small sand particles from plugging the perforated pipe.

Backfill	More permeable	Acts as a filter	Can be used
Existing material	NO	NO	NO
Pea stone (no fabric)	YES	NO	NO
Pea stone (with fabric)	YES	YES	YES
Washed concrete sand	YES	YES	PREFERRED

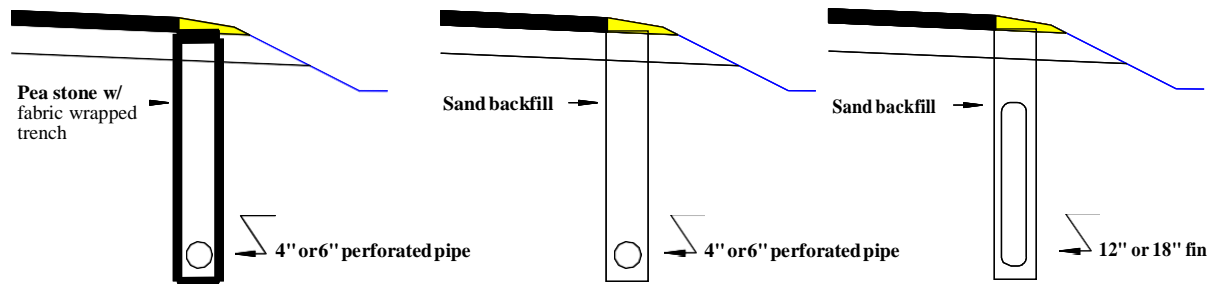


Figure 13 - Drains with pipe, fins, sand, fabric

4.3.2 Trench Drains

Trench drains are usually installed with a backhoe or excavator, are fairly wide, and may or may not have a pipe at the bottom. Installation of a small pipe is prudent to increase the life of the drain and help remove excess flows of water. This method is typically used to intercept springs. A layer of fabric should be used in a similar fashion to an underdrain fabric. Due to the wide width of a typical trench drain, the use of sand is not usually feasible as a backfill. Clean stone approximately $\frac{1}{2}$ to $\frac{1}{4}$ inch in size is usually used. However, this material will fill quickly with fines if a fabric is not used.

4.4 INSTALLATION

4.4.1 Drain to an opening

Many subsurface drain systems fail because the outlets are too low. Outlets need to be free draining or back flows will cause the pipe to silt up quickly. The outlet of the pipes should be at least 12 inches above the ditch line when installed. This will allow some filling of the ditch before causing problems for the subsurface drain opening.

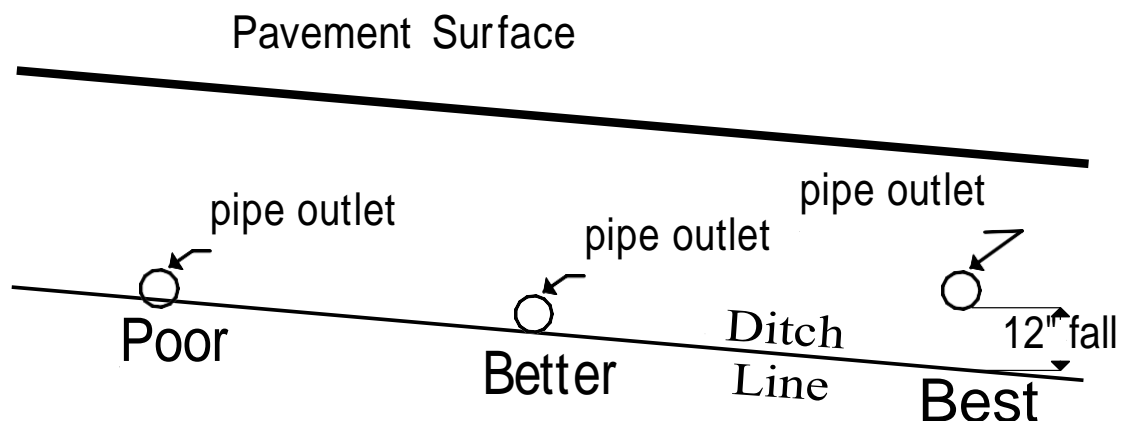


Figure 14 - Good and bad openings

4.5 MAINTENANCE

Subsurface drains are not maintenance free. They need to be cleaned periodically to keep them clean. A sewer cleaner can perform the job very effectively. Only the last 25 feet or so need to be cleaned to re-establish flow. Deeper cleaning may be needed if the pipe has completely plugged. Also, openings need to be cleared of debris and flow at outlets maintained. Animal guards should be installed if rodents start using the pipes as homes and tunnels. When crews are mowing around the drains, care should be taken not to crush or damage the openings.

5 - CROSS SECTION ELEMENTS

5.1 PAVEMENT

The pavement (subbase, base, and surface) of a roadway should be built and maintained to help eliminate excess water. Water infiltration through the surface is a major concern on local roads, especially gravel surfaces.

5.1.1 Paved vs. gravel

A paved road has a higher capital construction cost than a gravel road but may be less expensive to maintain. Asphalt and surface treatments keep dust down and are better suited for high speed and high volume traffic. Gravel roadways may be less expensive, especially at lower traffic volumes. Proper maintenance is critical for both pavement types.

5.1.2 Cross slopes

Cross slopes are needed to help direct rain and snow from the pavement to the shoulders. The shoulders carry the water to ditches. Water will flow faster on a paved surface. Therefore, the slope of a paved roadway does not need to be as steep. *Figure 15* shows the recommended slope for the surface and shoulder of a roadway. The cross slope should not be too steep. If it is, the water running off the side will start eroding the shoulder and sides of the road.

Note: The slope of the lower layers is also sloped to drain. If the lower layers do not have a crown, they will hold water and will not be as strong as they could be.

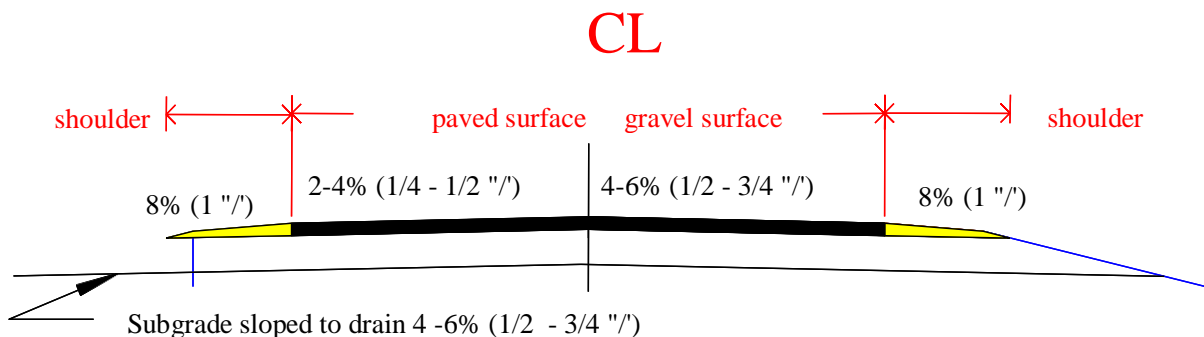


Figure 15 - Cross slope

5.1.3 Sealed surface

Sealing the surface with a surface seal or blacktop will lower maintenance costs and reduce the infiltration of water from the top. However, the surface of a gravel road should not be sealed without reducing the fine content of the gravel to the proper gradation.

5.1.4 Repairs

5.1.4.1 Paved roads

Crack repairs are needed to keep water out of the pavement. More detail on repairs is available in the SHRP, *Asphalt Pavement Repair Manuals of Practice*. Three general kinds of repairs are performed as shown in the table below. Surface treatments and overlays may be used to reseal a porous surface.

Table 7 - General repairs

Distress	Repair
Moving cracks	Crack sealing
Non-moving cracks	Crack filling
Alligator cracks	Patching

5.1.4.2 Unpaved roads

Dragging and **reshaping** are the most common forms of maintenance on unpaved, gravel roads. This maintenance needs to be done on a routine basis and care should be taken to do it right the first time.

Dragging (also known as **blading**) is done when ruts, depressions, and potholes are infrequent but loose aggregate and minor problems exist. The blade of the grader is set at 90 degrees to the surface and the grader travels very slowly (~ 2 mph) to *drag* the surface. If the distresses are more than an inch deep, dragging will not solve the problem. It will only fill in the problems and the distress will return very quickly.

Regrading is needed to fix severe problems that are more than an inch deep. The grader blade is set at a lower angle, and the operator scarifies below the level of the damage to avoid reoccurrence. Care must be taken not to leave a flat spot at the centerline due to an extra pass. Although easier for the operator, it usually causes potholes to form down the centerline of the road.

5.2 SHOULDERS

Shoulders help hold snow in the winter, provide lateral support for the pavement, carry water from the pavement to ditches, and give vehicles a place to go if they lose control or need to stop in an emergency. For drainage they need to be slightly steeper than the pavement and should be able to withstand occasional traffic.

The material used for the surface should be strong enough to hold occasional traffic. Erosion and washing of shoulders is a major problem and should be addressed by using less erosive materials on the surface. Shoulders by mailboxes may need to be paved or covered with different materials to handle the daily traffic placed upon them.

5.2.1 Maintenance

Maintenance of shoulders consists of three basic operations; cutting, filling, and regrading.

Cutting is similar to surface dragging in that it is only applicable for small defects. If the grader blade does not go below the defect, the problem will reoccur. The blade needs to be set at a sharp angle, the material brought into the roadway and cleaned up with a loader.

Filling ruts at the edge of the shoulder can be done several ways. The material used to fill the rut should be stable and easily compacted. It must be rolled or the rut will reform almost immediately. Where the rut is formed due to traffic such as at a mailbox, the use of asphalt is recommended. Box out of the rut with a backhoe to remove any contaminated material.

Regrading is needed when the distresses are too large for cutting and the width of distress is fairly wide. New material should be brought in to replace the material lost in the operation. The new material needs to be stable.

5.2.2 Materials and types

Shoulders can be made of several materials. The following table shows some of the possibilities.

Table 8 - Shoulders (materials and types)

Material	Advantages	Disadvantages
Earth	Cheap	Not recommended; erodes easily, and requires lots of maintenance
Grass	Pleasing to the eye	Not stable under traffic, and easily damaged by snow plows
Surface treated	Provides protection from erosion; is driveable, relatively inexpensive, and can be repaired by hand methods	Once punctured is easily erodible, and joint with pavement difficult to keep sealed
Paved	Strong and durable; blocks entry of water under the traveled way	Expensive to install
Rock	Durable and driveable	May erode easily if installed improperly, and does not keep surface water out of pavement
Curb and gutter	Controls water, and helps delineate traffic	Expensive; requires pavement up to gutter or curb, and need drop inlets or catch basins to drain water into a storm water system

5.3 BASE AND SUBGRADE

5.3.1 Daylighting vs. bathtub construction

Failure to allow base layers to be drained, sometimes referred to as bathtub construction, will cause holding of excess water and premature failure of the roadway. The best way to stop bathtub construction problems is to daylight the base by carrying the base clear out to a ditch. Another alternative is to install underdrains or trench drains.

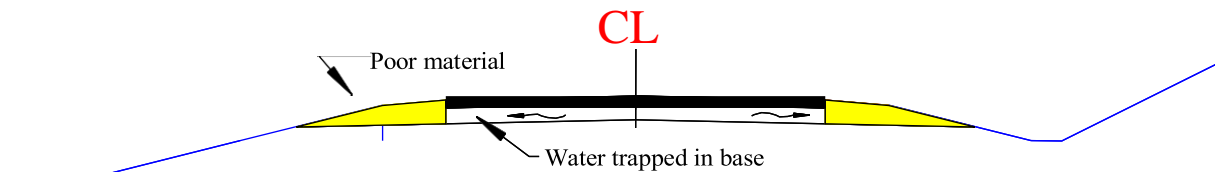


Figure 16 - Bathtub construction

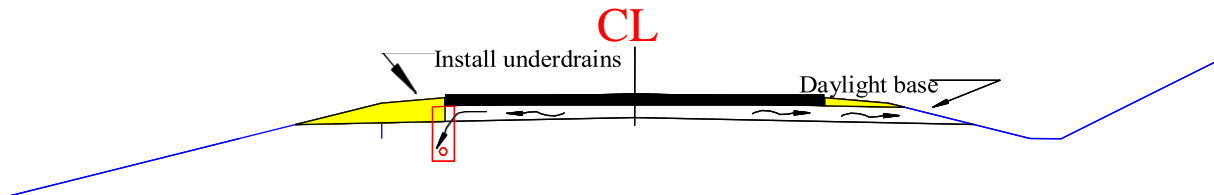


Figure 17 - How to fix bathtub base

5.3.2 Subgrade and cross slope

The grading of the subgrade to drain is very important. Failure to provide a positive cross slope in the subgrade will cause water pockets, ice lenses, and other problems to form. The subgrade should be sloped at $\frac{1}{4}$ inch per foot ($\frac{3}{4}$ inch per foot preferred) and daylighted to a ditch or drainage structure. The subgrade should be rolled prior to placing the base. Otherwise, it will settle during construction and the value of grading the pavement will be lost.

5.3.3 Fabrics (geotextiles)

Geotextiles for subsurface construction come in many varieties. They generally are classified as woven or non-woven. The two main purposes for fabrics are separation of different materials, and providing extra strength to existing materials. Some materials used for separation are also used for drainage, but the separation is the primary function.

When draining soils or placing gravel over a subgrade or in a trench, a major concern is the mixing or pumping of the materials into each other. A separation fabric, usually non-woven, will keep the material separate by reducing the movement of fines. When used in drainage, the fabric is critical in stopping the migration of fines. The fabric will allow water to flow through, but will trap suspended fines.

Use of the wrong fabric can actually create problems. Get help to determine the right fabric to use. **DO NOT ASSUME.**

More details on the installation of geotextiles is available from manufacturers. Also, the manual, *Geotextiles Selection and Installation Manual for Rural Unpaved Roads*, available from the Cornell Local Roads Program, can be of assistance.

5.4 DRIVEWAYS

Driveways should be graded and sloped to keep water away from the pavement. Failure to do so can result in ice lenses and damage due to excess moisture. Providing positive drainage on driveways can be done with swale construction or intercepting drains.

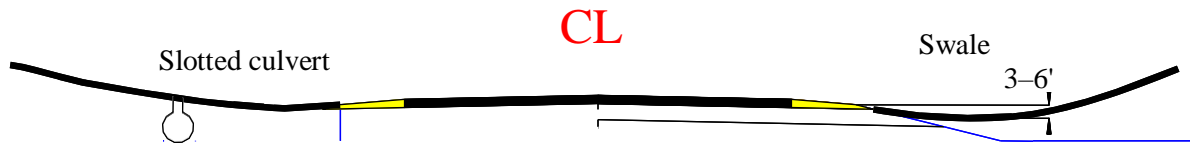


Figure 18 - Use of swale or intercepting drain to provide positive drainage

6 - LEGAL ISSUES

When working around roads, we need to be concerned with legal issues. If we do not take care, we can get sued, pay damages, or have work stopped because a few simple procedures are not followed. Keep the elected board informed. Good communication will help solve many problems.

6.1 LAW

Each state has legal requirements for working in and around streams. In New York State, regulations and laws are enforced by the New York State Department of Environmental Conservation (DEC). They have police powers and can enforce the laws and regulations with fines, orders to stop work, and penalties.

Two general rules of law are in effect with regard to drainage in the United States: *Common Law* and *Civil Law*. New York State uses a mixture of the two concepts, identified as *reasonable use*.

6.1.1 Reasonable use

Reasonable use as used in New York State is most closely a modification of English common law. Water is a common enemy. A landowner can improve the land to improve drainage as long as doing so would be a reasonable use for the type of land. But, the landowner cannot improve land so as to cause additional volumes of water to flow onto neighboring land without getting permission and showing justifiable reasons. This includes local governments. However, repairs and replacements of existing drainage structures that are performed as necessary to maintain a road are an acceptable reasonable use of land by a highway department.

6.2 RIGHTS AND RESPONSIBILITIES

6.2.1 Rights

Highway agencies have the right to work on roads within the right-of-way (R.O.W.). As long as improvements do not cause damage to properties up or downstream, you can do what you need to do within the R.O.W. You **can** make improvements, outside the R.O.W., if they are necessary for the safety of the public and would cause economic harm to the municipality if the work is not done. However, landowners may need to be compensated even for work in the R.O.W. if the improvement is not deemed a reasonable use of the land. You will need to get permission for most work prior to leaving the R.O.W.

Highway agencies can work outside the right-of-way under limited circumstances. The most common method used to get permission is obtaining an easement. If work must be done off of the right-of-way and the landowner will not sign an easement, *eminent domain* is a possible recourse. Negotiation and reasonable alternatives are usually better options.

6.2.2 Responsibilities

Highway agencies are the keepers of the land that roads use. This includes the responsibility to treat the land with care and maintain it properly. A stable stream and roadway is as good for the environment as it is easy to maintain. Being a good steward of the land, makes the job of road maintenance easier. Good road building practices and good environmental practices are compatible and complementary.

6.3 RIGHT-OF-WAY/EASEMENTS

6.3.1 Right-of-way (R.O.W.)

6.3.1.1 In the R.O.W.

In the R.O.W. you have the right to maintain the road in a manner consistent with the needs of the public. You can replace most pipes, clean ditches, or reconstruct a road with no legal requirements for permission. However, you still need to get permits to work in protected streams. Notifying the public will make your job easier.

Locating the edge of the R.O.W. is usually the biggest problem encountered by local agencies. Specific questions about the location of the R.O.W. should be directed to an attorney.

Towns generally have a right-of-way by use. Town roads that have been dedicated are a minimum of three rods wide.

Counties are covered under Highway Law. If the county does not own the roadway, the right-of-way is usually, **but not always**, at least three rods wide (49.5 feet).

Village and city R.O.W. are different for each street or road as listed in official maps.

Box 4 - Determining Right-of-Way

Two rules of thumb should be employed by road crews for determining R.O.W.:

- **One: If in doubt, find it out**
Either get permission or find out the exact distance. Most of the time the owner of the land will be more than happy to provide a temporary easement to allow you to do your job. This is one case where getting permission is definitely better than seeking forgiveness. And, it could be a lot cheaper than if the municipality gets sued.
- **Two: Play it safe**
Find out what the minimum right-of-way is and work inside that range. For instance, a county crew may be able to work 24'9" from the centerline of the roadway. Many slopes, culverts, and ditches extend beyond that distance so rule one should be used. Within a village or city, Rule One should be followed.

6.3.1.2 Outside the R.O.W.

When outside the R.O.W., get easements to perform work. Easements can be temporary or permanent. They are used to protect both the landowner and the municipality. Also, they protect the road crew from false accusations.

6.3.2 Easements

6.3.2.1 Temporary

A temporary easement can be obtained to remove debris, clean the end of a pipe, or perform other work which is temporary in nature. To obtain a temporary easement, knock on the door of the landowner and fill out a simple easement form. A blank sample is provided, *see Appendix B, page 78*.

TEMPORARY EASEMENT CONSENT TO ENTER AND DO WORK	
<input checked="" type="radio"/> We, <u>John & Jane Doe</u>	(Name(s) of property owner(s)),
for the consideration of \$1.00 (payment waived) grant to TOWN OF ANYTOWN the right to enter my <input checked="" type="radio"/> our property at <u>123 Our Road</u> (Location of property) to do the following work in connection with the TOWN OF ANYTOWN highway system:	
<u>dump ditch cleaning materials in a pile</u>	
The TOWN OF ANYTOWN may enter upon the property described above within <u>3</u> (Number of) days <input checked="" type="radio"/> weeks months (circle one) of the date of this temporary easement, after which this easement shall automatically terminate.	
The TOWN OF ANYTOWN will cause no unreasonable damage to the land during the work and will restore the land to substantially the same condition as it was before such work to the extent practical in keeping with the purpose of the work.	
PROPERTY OWNER(S)	
Date:	<u>7/30/97</u> <u>7/30/97</u>
Owner's Signature(s)	<u>John Doe</u> <u>Jane Doe</u>
Property Owner's Name(s)	<u>John Doe</u> <u>JANE DOE</u>
Address	<u>314 Pie Circle</u> <u>314 PIE CIRCLE</u> <u>Anytown, NY 12345</u> <u>ANYTOWN, NY 12345</u>
Phone	<u>(607) 159-2653</u> <u>(607) 159-2653</u>
TOWN OF ANYTOWN REPRESENTATIVE	
Date:	<u>7/30/97</u>
Signature	<u>DMC</u>
Municipal Representative Name	<u>David Orr</u>
Title	<u>foreman</u>

Figure 19 - Temporary easement (blank form in Appendix B, page 78)

6.3.2.2 Permanent

A permanent easement is needed to extend a pipe, cut a slope, or perform other work of a permanent nature. Consult your municipal attorney for advice.

6.4 PERMITS AND PROCEDURES

Obtain permits for some drainage work, and follow certain procedures before starting any work.

6.4.1 One-Call Organizations

A one-call organization **must be called for any work involving digging into the ground**. A free phone call three working days prior to starting work is required. They will contact necessary utilities. Within two full working days after the call, marks are made around the work site showing the location of any utilities. It is a lot better to wait than pay to replace a fiber-optic cable or cause the death of an employee due to an exploding gas pipe. Dig Safely, NY is the one-call organization in New York State, (outside of New York City, and Long Island). In New York City and Long Island, you should call 1 (800) 272-4480.



Figure 20 - Dig Safely telephone number in New York State



Figure 21 - One-call telephone number in New York City and Long Island

6.4.2 PERMITS

6.4.2.1 Department of Environmental Conservation (NYSDEC) Army Corps of Engineers (ACOE)

6.4.2.1.1 Protection of Waters & Freshwater Wetlands Programs

When working in a stream, along a lake or other shoreline, or near a wetland, a permit to do the work should be obtained from the NYS DEC /ACOE before starting work. Your local NYS DEC office has the forms. They, along with the local Soil and Water Conservation District (SWCD), can offer advice to make the work more successful and less expensive.

6.4.2.1.2 SPDES (State Pollutant Discharge Elimination System) Permit

If working on a new development or reconstruction of a road that exposes more than one acre of land to erosion, a SPDES permit needs to be obtained from the NYS DEC. For most reconstruction work, the permit will be a general blanket permit that does not require much paperwork. Contact the NYS DEC for more information.

While most routine maintenance activities do not require a permit, care should be taken to reduce erosion. Municipalities may still be liable for any damage due to poor maintenance or construction practice. As a general rule of thumb, any capital construction more than ¼ mile in length will need the SPDES permit. Good construction practices should always be used for any repair activity.

6.4.2.2 Other permits

The permits listed above are a few of the more common permits used in New York State. Many other permits may be needed to do drainage work. The DEC has other permits such as Coastal Erosion Control and Tidal Wetlands. In addition, agencies like the Adirondack Park Agency and local jurisdictions may have their own permits and regulations. You should check with them prior to starting work. This is one time when getting forgiveness does not work.

6.4.2.3 Cleaning streams

Cleaning a stream by running a bulldozer up the stream and straightening it out does not work. This has to be repeated on a regular basis. Streams need a constant slope for a given flow. If the slope is too steep, there will be siltation or scour until the stream is at the same slope it had before cleaning was done. Straightening out a stream changes the slope. Commonly, the lower end of the cleaned section, usually by the road, will silt up. The cleaning will need to be done again. Contact the NYS DEC for advice on how to perform this work and still meet requirements and regulations.

In addition, straightening a stream is not stable. The banks and bed of the stream have certain characteristic shapes and slopes. You cannot fight nature, you need to work with it. A general rule of thumb is, *a stable stream bed maintains itself*.

7 - CULVERTS

A culvert helps move water under a road or driveway to a stream, lake, or detention basin. While culverts can, and have been, defined in many ways (such as any span under 20 feet), for drainage, a culvert is usually prefabricated and comes in standard sizes. In addition, a culvert is allowed to have the ends completely submerged.

The first item we need to understand is the amount of flow a culvert will need to carry. Then we can look at the materials, installation, inspection, and maintenance.

7.1 HYDROLOGY AND HYDRAULICS

In the simplest terms, *hydrology* is concerned with measuring the amount of runoff and precipitation that flows to a particular spot such as a culvert inlet. *Hydraulics* is the determination of the amount of flow capacity in a given culvert, ditch, or other drainage structure.

Detailed engineering studies can calculate these two quantities. However, most culverts and driveways do not need detailed studies. A *rule of thumb* can be used to do most culvert sizing and alignments. For larger structures and culverts, detailed studies may be needed. Resources available to help design culverts and determine flows are: the Cornell Local Roads Program, Soil and Water Conservation Districts, county highway departments, consulting engineers, and other municipal engineering personnel.

7.1.1 Runoff

The first step in determining the size of a culvert (or other drainage structure, including ditches) is calculating the runoff or flow coming to a culvert. Several methods exist for determining the amount of flow. TR-55; the Soil Conservation Service's Graphical method; the Bureau of Public Roads; the Rational method; and other methods are used to determine the amount of runoff. The Rational method, used for small watersheds, is useful to explain the concepts of runoff.

Runoff at a specific site is controlled by many factors including the intensity of precipitation, the area of the watershed, and the proportion of rainfall which gets to the culvert.

The Rational Method uses the formula:

$$Q = C \times I \times A, \text{ where } Q = \text{flow in cubic feet per second}$$

I = Intensity (inches/hour) Intensity is the amount of rain that will fall onto the watershed each hour during the design storm. The larger the design storm, the more rainfall that will need to be handled by the culvert.

A = area of watershed (acres) The area of land from which falling rain and snow will eventually flow into a culvert is the watershed.

C = Coefficient of runoff (between 0 and 1) The coefficient of runoff is the portion of rainfall which actually flows to a culvert. Different terrain and land use types have different runoff coefficients. Not all of the rain and snow that falls onto the watershed reaches a culvert at the critical time during a flood. Some of the precipitation is absorbed by the ground and vegetation. If the watershed is very flat, the flow may take so long to get to the culvert that the flood is over by the time some of the water runoff gets to the pipe.

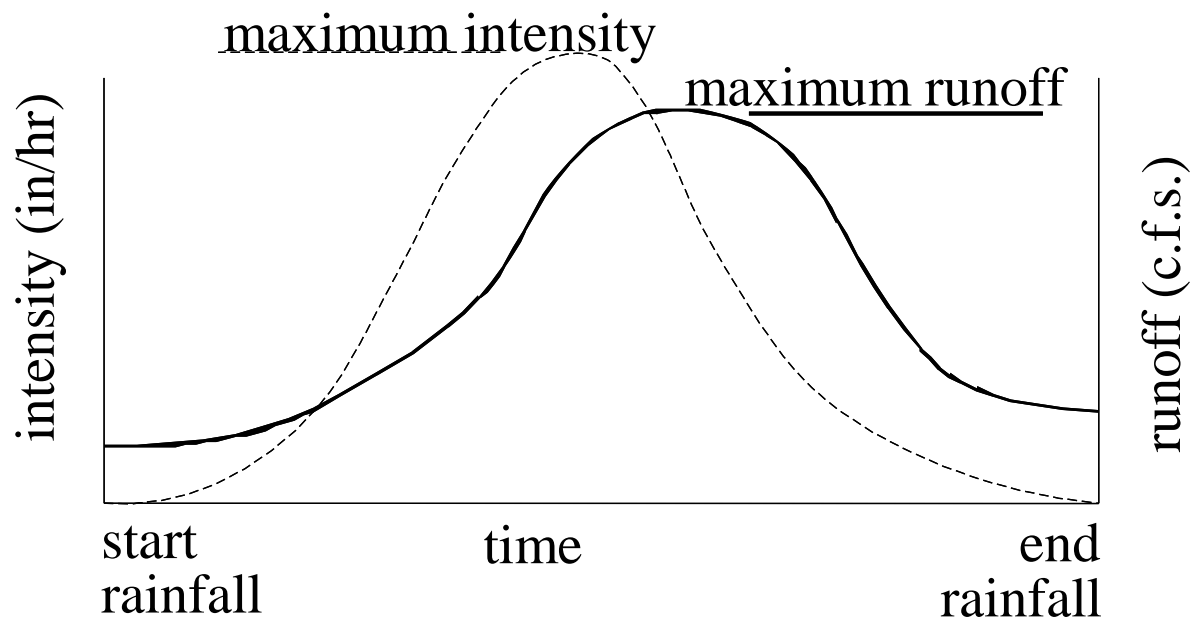


Figure 22 - Precipitation and runoff (hydrograph)

Note: Peak runoff lags behind the peak rainfall. Rainfall is the intensity times the area of the watershed.

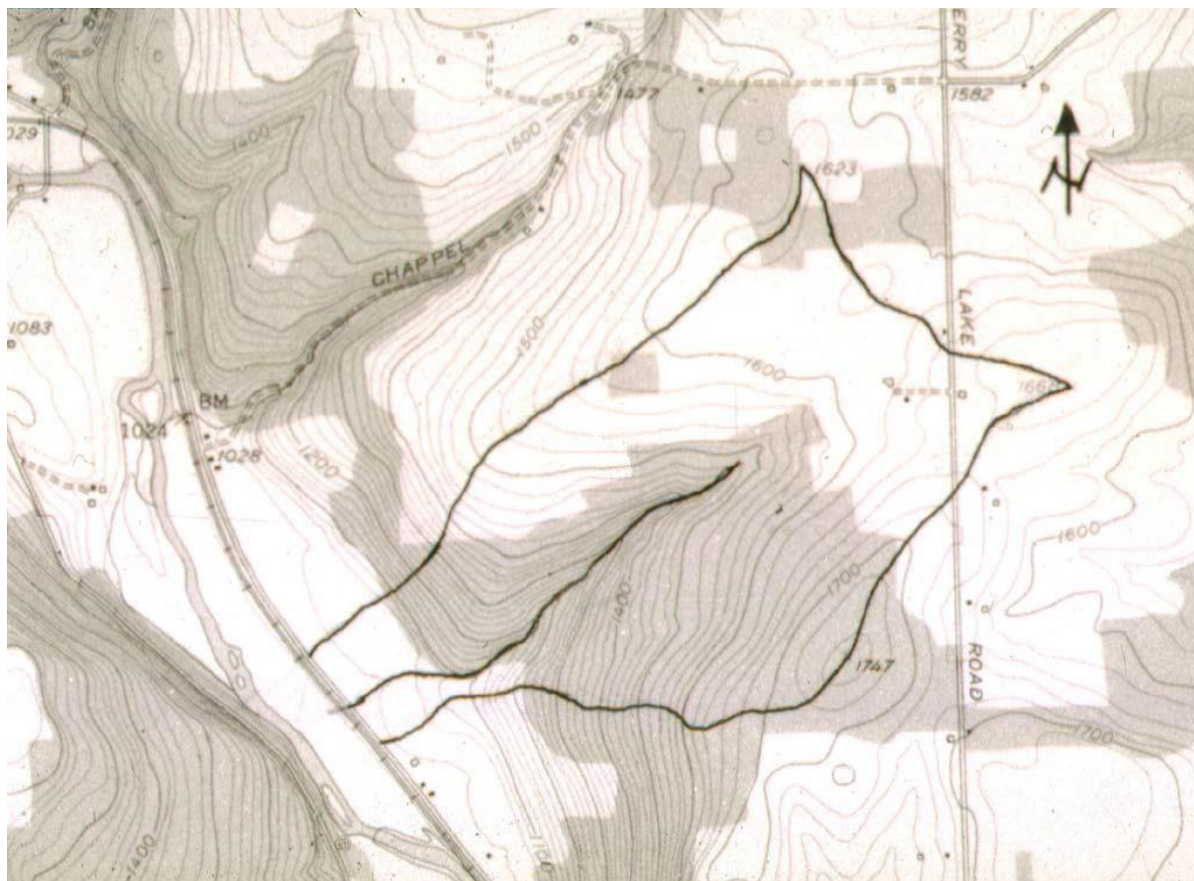


Figure 23 - Area of watershed (USGS map)

Note: The ridges and peaks define the perimeter of the watershed.

Table 9 - Coefficient of runoff (table of values)

C	Land type
0.1 – 0.4	Forested land
0.3 – 0.4	Suburban residential areas
0.3 – 0.5	Single-family residences
0.7 – 0.9	Downtown business districts
0.1 – 0.2	Parks and cemeteries
0.2 – 0.4	Pastures
0.2 – 0.5	Cultivated land
0.8 – 0.9	Paved development

7.1.2 Land use

Land use can affect the amount of runoff. In fact, it is the reason many culverts, which had previously been fine and handled heavy rains, have flooded and washed out. For example, if a forested area is cleared and a parking lot and building are put in on a 10-acre site and no detention basins or other mitigation is done, the flow could increase by up to 400 percent. Use of detention basins and other mitigation may need to be done if the land use changes drastically.

7.1.3 Design storm

Engineers use the concept of a *design storm* to determine the amount of flow a pipe needs to handle. The design storm is the average time between storms. A storm which has a $1/25$ chance of occurring in a given year is called a 25-year storm. Since $1/25$ is 4 percent, the storm is also known as a 4 percent storm. A 50-year storm would be one with a $1/50$ (2 percent) chance of occurring in a given year. Since 4 percent is twice 2 percent, a 25-year storm is twice as likely to occur in a given year as a 50-year storm.

If a 50-year storm occurs in a given year, it does not mean another 50-year storm will not occur for 50 years. Each year the chances of a given storm are the same.

Box 5 - 50-year storm

Take a card from a deck of 50 cards (a standard deck without the 2 of clubs and 2 of spades). The chance of picking the Ace of spades is $1/50$. If you put the card back in the deck and reshuffle, what are the chances of picking the Ace of spades? Still $1/50$, just like the 50-year storm in a given year.



Figure 24 - Pick a card

The greater the design storm value (in years) the less likelihood of a flood causing a failure during the life of the culvert. What storm should be used for design? The initial cost of placing a larger pipe needs to be weighed against the risk of failure. Placing a pipe which is too small means the chances of washout or failure may be too great. Placing too large of a pipe may be uneconomical and dangerous if, as an example, the depth of a ditch needed for the culvert is so deep it will swallow up cars if they drive into it.

During heavy rains some flooding will occur. The objective of a highway department is to build culverts which can survive a storm and be in service after the rain has lessened. To this end, we design for different design storms for different situations. Table 10 shows the design year for different roads. In all cases, the minimum pipe size should be 12 inches for driveways and 18 inches for culverts.

Table 10 - Design year for various road types and drainage items

Road type	Culvert	Driveway	Ditches
Town roads/Village streets with low traffic	10	5	5
Town roads/Village streets with high traffic	25	10	10
County roads with low traffic	25	10	10
County roads with high traffic	50	25	25
Arterials (State and very important roads)	100	50	50

All of the above aside, there are three things to remember:

- Most pipes can be designed using general rules of thumb
(see Section 7.5, *CHOOSING PIPE SIZE*)
- A 100-year storm volume is not two times the 50-year storm. Listed below is an example from two moderately-sized watersheds. **Get help to calculate the amount of runoff.**
- Changes in land use and stream bed conditions affect the capability of a culvert to handle high flows. Cleaning a stream or new developments may cause flooding at pipes which have been adequate for many years.

Table 11 - Runoff from two watersheds using different analyses (cubic feet per second)

Watershed	1			2	
Drainage area	240 ac	240 ac	240 ac	161 ac	161 ac
Analysis	BPR	TR-55	Rational	TR-55	Rational
Design storm (year)					
10	103	101	115	101	78
25	140	139	135	136	92
50	155	165	162	160	109
100	165	179	173	172	116

Notes:

- The three methods are very similar for the first watershed.
- Note the similarity in runoff using the TR-55 method between the two watersheds. The faster runoff in Watershed 2 is due to a steeper watershed.
- The difference between the values on Watershed 2 is due to ponding in the watershed. The TR-55 method only allows a maximum of 5 percent ponding and swamps in a given watershed.

7.2 MATERIALS, SHAPES, and SIZES

Culvert pipes come in many materials, shapes, and sizes. Each material has its own characteristics and advantages. The four most common materials are corrugated metal pipe (CMP), plastic, concrete, and smooth steel. The pipes are generally thought of in two broad categories which correspond to the way they carry loads, rigid and flexible.

Flexible pipe (CMP and plastic) gains strength by transferring some of the load into the surrounding soil. Imagine what would happen if you drove a fully loaded truck over a flexible pipe. It would crush. It gains strength from the surrounding soil when it flexes.

Flexible pipes must be backfilled properly and have a minimum amount of cover or the loads do not build up in the soil and the pipe will fail. They are generally less expensive to place than rigid pipes but do not last as long. Coatings may increase their lifespan. Failure to bed the pipe carefully will shorten the life of the pipe and may cause premature failure.

Rigid pipes (concrete, heavy steel, and masonry) are strong enough by themselves to carry all loads. The transferring of loads is of secondary benefit. They generally last longer than flexible pipes but are much more expensive to place. Cranes and larger equipment are usually needed to set them.

7.2.1 Corrugated metal pipe

Sometimes referred to as CMP (corrugated metal pipe), metal pipe is the most common type of material used in culverts. The versatility of the pipe and the wide range of shapes and sizes available make it a very useful product.

The base metal can be steel or aluminum. Coatings can be added to increase lifespan, reduce corrosion, and improve hydraulics (flow capacity). Steel is the most common metal used, but is usually galvanized for corrosion protection. The steel may be mixed or coated with an aluminum alloy which is more durable than galvanizing alone and does not increase the price significantly. Or, the pipe can be made of all aluminum. Care should be taken when installing an aluminum pipe, because it is easily damaged. Asphalt and concrete coatings are sometimes added for durability, improved flow characteristics, and resistance to wear from stream bed materials.

Metal pipes are manufactured in a variety of shapes as shown. Listed beside each are some of the reasons for using the different shapes.

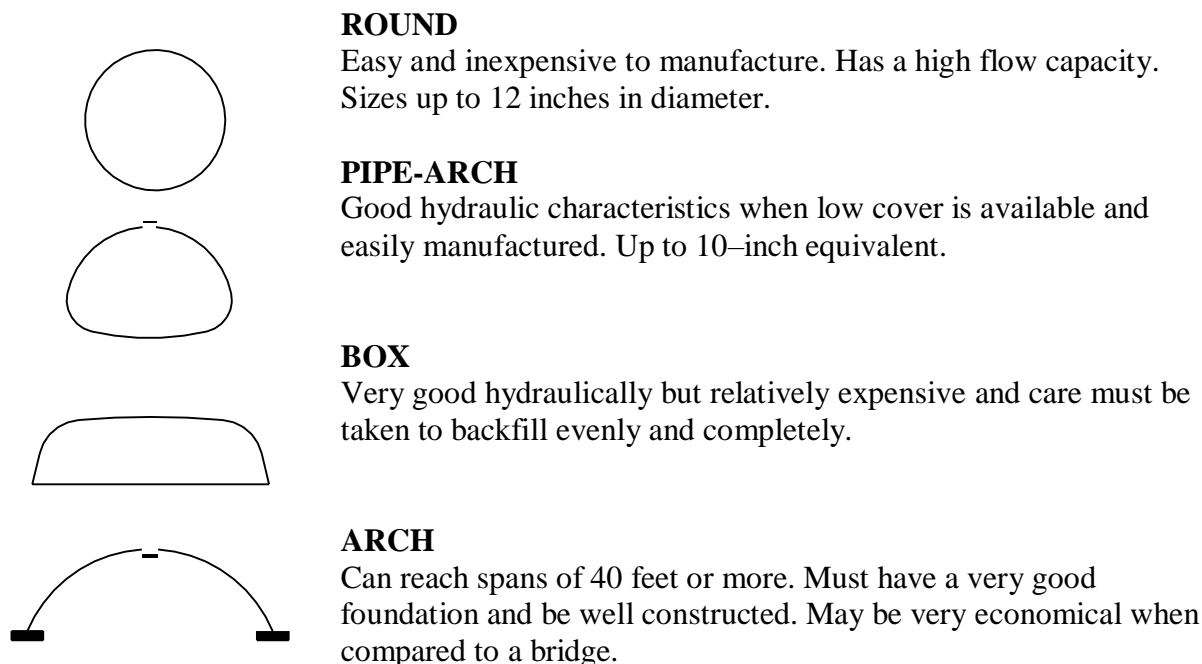


Figure 2 - Pipe shapes (metal)

7.2.2 Plastic

Plastic pipe, usually made of high density polyethylene (HDPE), is the fastest growing pipe in terms of use. It is easy to construct due to its light weight and is easy to maneuver and cut. It can be used in a variety of applications including lining existing pipes. It can be lined with a smooth section of plastic to increase flow capacity and improve strength. Plastic pipe is flammable and can be burned. The pipes are limited in size to about six feet and are uneconomical for many applications if more than four feet in diameter. New processes may provide more pipe types and sizes in the future.

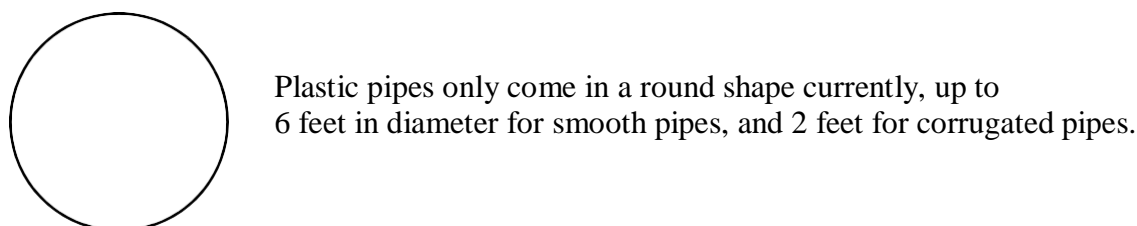


Figure 26 - Pipe shapes (plastic)

7.2.3 Concrete

Concrete pipe comes in a variety of shapes and sizes. It can be pre-cast or cast-in-place and primarily used in deep fills or urban areas where construction costs are high. It is more expensive than plastic or metal pipe but is very durable and has a long life. Cranes and other heavy equipment are usually needed to place the pipe.

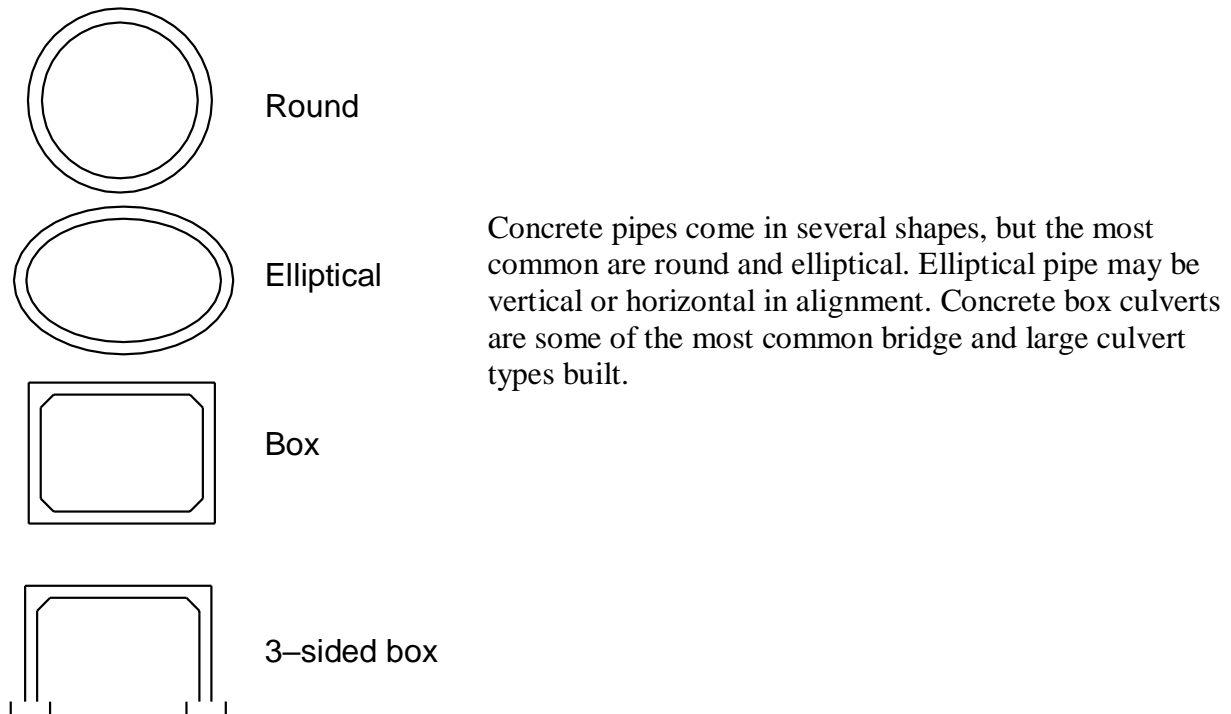


Figure 27 - Pipe shapes (concrete)
ROUND ELLIPTICAL BOX

7.2.4 Heavy steel

Solid steel pipe, sometimes made from old boilers, tank cars, or pipelines can be economical when available locally. It is usually very durable. However, the durability of the pipe is usually unknown and the pipe can deteriorate quickly. The major problem, with steel culverts, however, is the joints. They need to be well built or failure at the joint can allow infiltration of fines and settlement at the surface.

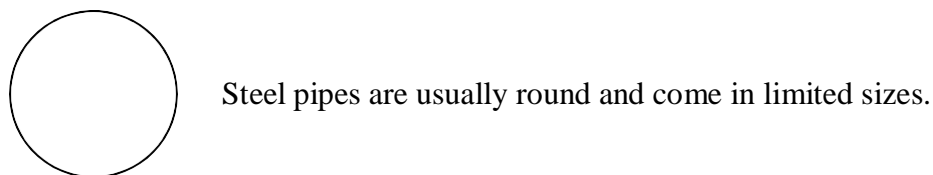


Figure 28 - Pipe shapes (steel)

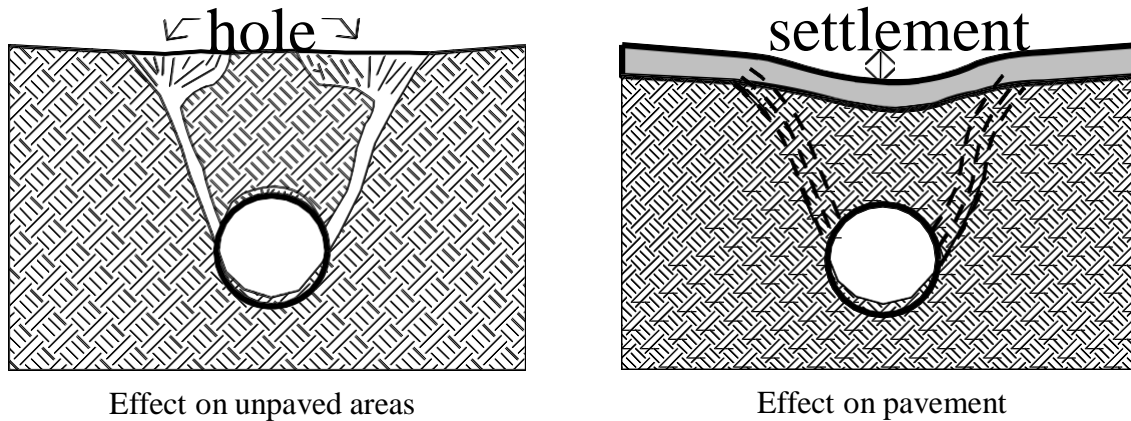


Figure 29 - Settlement due to poor joints

7.2.5 Durability

Concrete pipe is the most durable with an expected life of 75 to 100 years. It is expensive to install, but in deep fills and urban areas (villages and cities) it is usually justified by comparing the cost of replacement to the amount of time between replacement.

Solid steel is **usually** the next most durable. However, if you buy a used pipe, the lifespan may be very short.

Plastic and corrugated metal are about the same in durability. Steel pipe is better able to handle bed loads and debris but is very susceptible to corrosion due to low pH water (acidic) which is found in the Southern Tier and parts of the Adirondacks. Other areas may have high alkalinity in the soil. In those areas, plastic pipe or lining of pipes may be necessary to keep pipe from corroding early. Plastic and corrugated metal pipes have a 25 to 50 year life if designed and built properly. Also, bed load can cause premature failure. Lining of existing pipes, or adding liners during construction may be useful.

7.3 WHAT IS THE BEST TYPE OF PIPE MATERIAL TO USE?

THERE IS NO ONE BEST MATERIAL TYPE TO USE!

Cost, ease of installation, durability, capacity, and availability all must be factored into any decision about the type of pipe material to use. Capacity is usually the least critical in determining the choice of material for round pipe when there is plenty of cover. There are times when a pipe material should not be used.

7.4 SIZE AND CAPACITY

How large of a pipe is needed? Several factors need to be considered. First let's discuss the factors. Then we will bring all of the results together below.

The flow capacity of a pipe is determined by several factors including the:

- Area and shape of the opening of the pipe
- Allowable head or amount of backwater
- Kind of inlet
- Culvert length and slope
- Material used (roughness of the pipe)
- Other factors including constrictions of flow due to debris, tailwater, or channel alignment

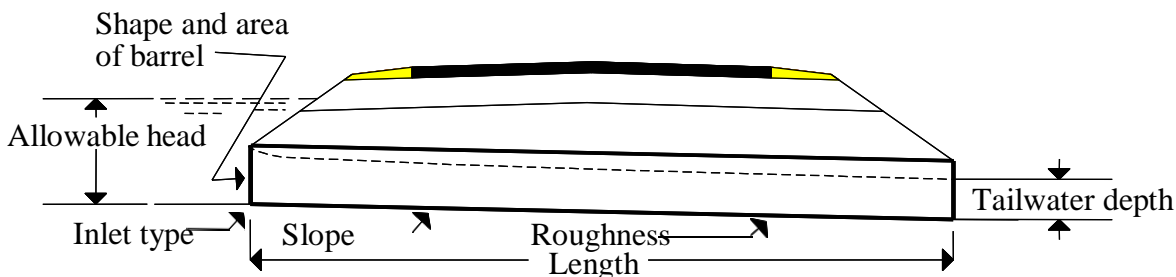


Figure 30 - Factors determining flow capacity of a pipe

7.4.1 Area and shape of opening

By far the most critical factor for determining capacity is the area of the opening of the pipe. The amount of flow that can go through a culvert is directly proportional to the area of the opening. Doubling the area doubles the capacity of the pipe. An 18-inch diameter pipe has more than twice the capacity of a 12-inch diameter pipe because the area is more than twice as large. (18-inch diameter pipe area = 254 in^2 vs. 12-inch diameter pipe area = 113 in^2).

Box 6 - Diameter versus area

If a new driveway needs a 24-inch pipe and the homeowner says he has two 12-inch pipes, is the area of the two 12-inch pipes equivalent to the 24-inch pipe? NO! Area is a function of the square of the diameter. A 24-inch pipe has 4 times the capacity of a 12-inch pipe. The homeowner would need four 12-inch pipes to replace a single 24-inch pipe.

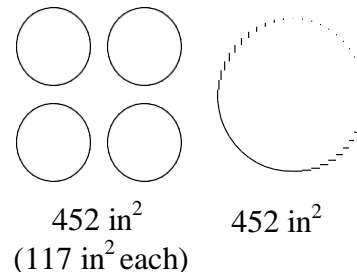
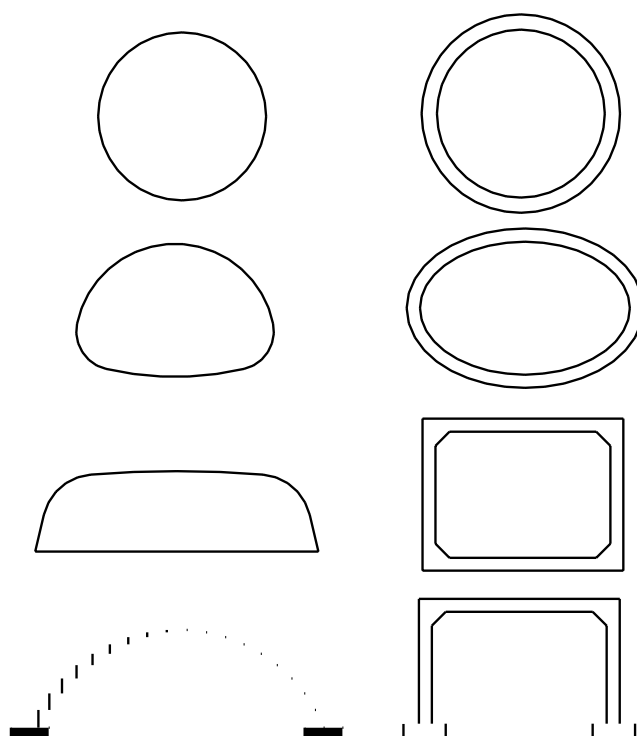


Figure 31 - 12" vs. 24" pipe

The shape of the opening also influences the capacity.



ROUND

They carry the most flow for a given opening area, but can restrict flow and have limitations.

PIPE-ARCH or ELLIPTICAL

These are used when the lack of cover reduces the amount of flow through a round pipe. Cover requirements still need to be met.

BOX

Used to increase the span and therefore the capacity of the pipe. The cost is generally higher but is usually a better alternative than a series of round pipes.

ARCH

Requiring a footing at the streambed, these culverts can have a long span to depth ratio. Usually a box will be more economical for low fills.

Figure 32 - Shape of openings

7.4.2 Allowable head or depth of water at the inlet

The allowable head is the maximum depth of flow before either the road is overtopped by the water backed up at the culvert, or damage to the road or adjacent property is likely to occur. The overtopping does not have to be at the pipe. In many cases, the flow crosses the road downhill from the culvert due to natural alignments or planned changes in the roadway. Damage could be a washout of the roadway due to overflow or inundation of a building that is built lower than the roadway elevation.

The greater the allowable depth, the more flow can be pushed through the pipe. Increases in the cover over a pipe (and therefore increases in allowable depth) can greatly increase the allowable flow in the pipe. Care must be taken to use existing allowable heads or increases in the height of the roadway. Lowering the pipe to get more cover does not work. The pipe will probably fill in with sediment and the area of the opening will be diminished, reducing the flow capacity by far more than the increase due to extra head.

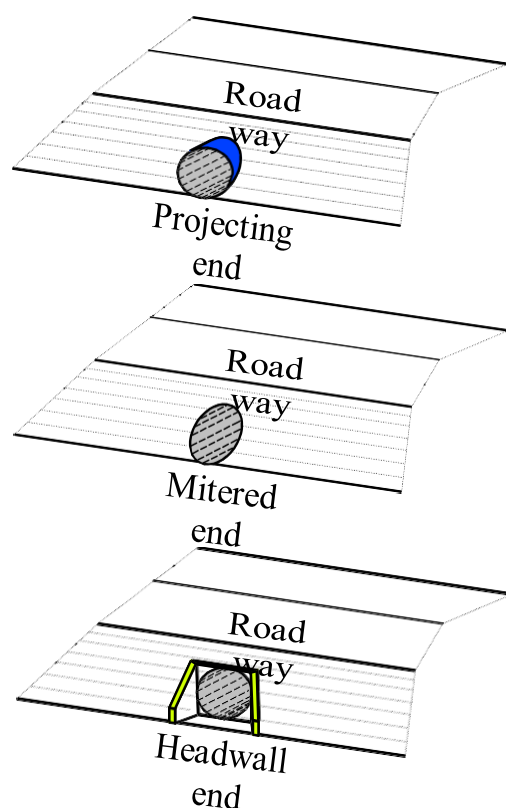


Figure 33 - Inlet (outlet) designs (projecting, mitered, and headwall)

7.4.3 Kind of inlet

The most common inlet (and outlet) type is the *projecting pipe*. Small increases in the capacity can be gained by using the *mitered* or *headwall* inlet. Also, use of special ends on both the upstream and downstream side can reduce scour, improve appearance, and make maintenance easier. The extra capacity in a culvert due to use of inlets is anywhere from no increase to 10 percent increase in the flow capacity.

Most commonly, inlets are placed to improve characteristics other than flow. Mitering the pipe to fit the slope makes the slope safer for errant vehicles and is easier to maintain. However, the ends are susceptible to failure if the ends are not anchored properly. A set of #8 rebars placed on a one-foot grid over the opening allows the highway department to eliminate the use of guiderail. The bars help keep debris out of the pipe. Care must be taken to leave an opening below the grate to allow the majority of the flow through the pipe or plugging can occur and damage the pipe.

Special ends can be purchased to attach to the ends of most round pipes. The price can be very high for larger pipes, but the ends protect against scour, have good appearances, and can be protected by a rebar grate in the same way a metered end is protected. In addition, if there is a need to extend the pipe in the future, the end can be removed, a new section of pipe added to the first section, and the end replaced.

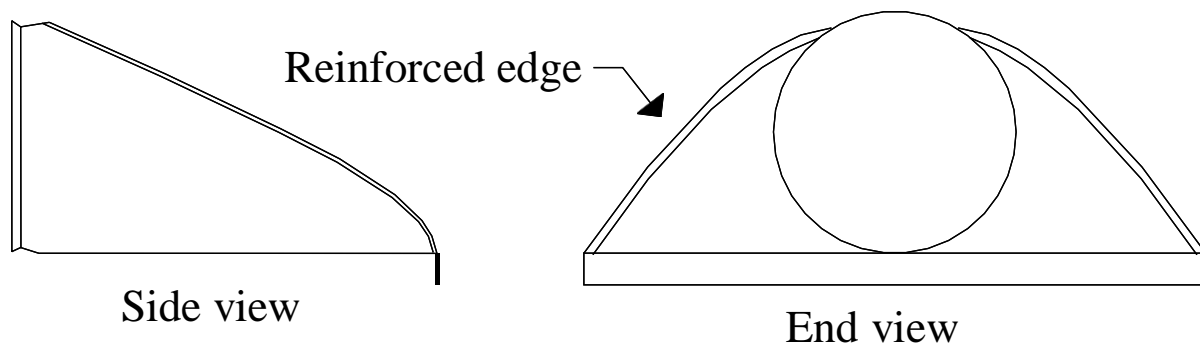


Figure 34 - Corrugated pipe special end section

Headwalls are usually used with high flows, major alignment changes near the openings which cause heavy scour, and deeper pipes which warrant more expensive protection. The headwalls can be made on concrete, precast concrete and masonry, gabion baskets, plastic, and timber. Concrete is more expensive, but fits the opening better and reduces the chances of piping. Gabion baskets are fairly labor intensive, but can be shaped to fit the pipe. Masonry and precast concrete do not fit the pipe and usually some grout or concrete must be placed around the opening to get a good fit. Timber and other items (tires, sandbags) are not as effective due to shorter life spans and uncertainty about durability.

7.4.4 Culvert length and slope

For most small culverts (60 feet or less) the capacity of the pipe is not affected by the slope. The opening of the pipe will control the amount of water that can get into the pipe. Increasing the slope will increase the velocity of the flow but the capacity will NOT increase.

For culverts of more than 60 feet, the slope and length do make a difference but usually only at very flat slopes (1 percent or less [3 inches per 20-foot section of pipe]). In fact, increasing the slope beyond 2 percent (5 inches per section of pipe) can actually cause problems due to increases in velocity of the water leaving the pipe.

7.4.5 Material used

Concrete, steel, and smooth plastic may have slightly more capacity than corrugated pipes. However, this is only true for pipes that are fairly long and flat. In most cases, the selection of the material to be used is a function of cost, availability, ease of construction, maintenance, and longevity. In many cases, the smoother pipes are used at flat slopes because they are less likely to fill with sediment and plug. However, use of smooth pipes on steep slopes can actually cause erosion and other problems.

7.4.6 Miscellaneous considerations

Several other factors can influence the capacity of a culvert, but do not generally affect most typical installations.

7.4.6.1 Tailwater

The *tailwater* is the depth of water ponded or flowing at the downstream side of a pipe. It can restrict the flow through the pipe and reduce capacity. If tailwater is a concern, GET HELP!

7.4.6.2 Alignment

Alignment of the pipe can be important for two reasons, capacity and scour. Trying to turn water at the end of a culvert creates eddies in the flow and slows the velocity of the water. This can reduce the amount of water getting to the pipe. Therefore, the capacity is reduced. Also, siltation can occur due to the changes in the velocity. Use natural alignments where possible.

7.4.6.3 Debris

Debris plugging or covering a pipe can reduce capacity. Maintenance and debris catchers should be used if this is a problem.

7.4.6.4 Multiple pipes

Multiple pipes are used when a single pipe will not fit the site due to lack of cover or other problems. Debris catching the ends between the pipes is a major problem. Multiple pipes need to be placed such that low flows use one pipe more than another and debris is handled. Having one pipe slightly lower is a common method used to direct low flows.

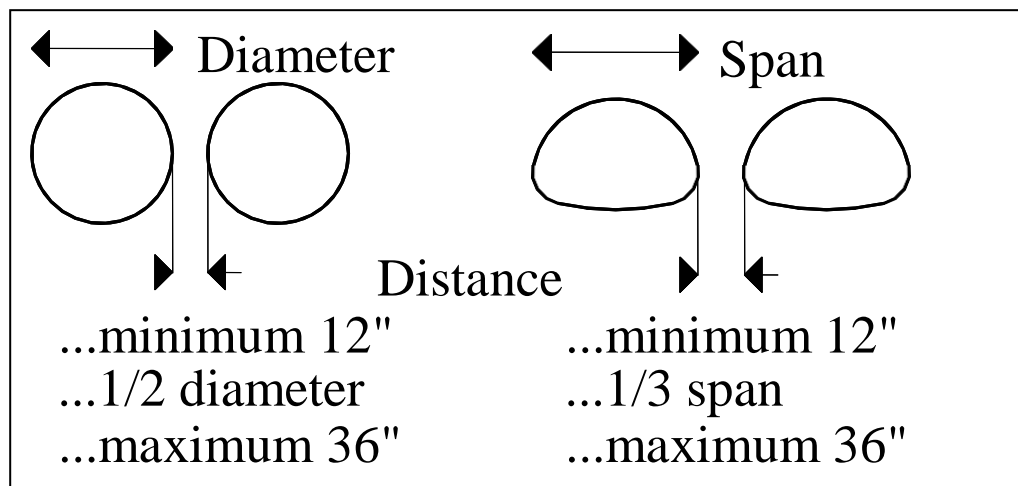


Figure 3 - Spacing between pipes

7.4.6.5 Velocity and Erosion

We need to be concerned at all times about erosion and scour. Culverts usually restrict the flow of a stream. In addition, pipes are usually smoother than the ground, and the velocity of water flowing out of a pipe is usually greater than that flowing into a pipe. If a pipe is placed too steep, the water flowing out the pipe will cause erosion and can cause the pipe to washout from the downstream end.

7.4.6.6 Inlets (scour)

At the entrance to a culvert, water will flow and swirl as it tries to enter the pipe. This can cause erosion called scour. Scouring can wash out the entire pipe. Headwalls, end sections, and other treatments are used to mitigate or eliminate the problem. With slow velocities and low flows this is not critical, but care must be taken to avoid this problem.

Also, the inlet can be plugged by sedimentation of material at the inlet due to a sudden change in velocity of the water. Especially after storms, culverts need to be inspected to see if sedimentation or debris has plugged or partially covered the opening. Debris should be cleaned as soon as possible to keep the culvert from failing.

Beavers using culverts as dam sites are fairly common. Several methods are used to fool the beaver. The methods must have the same flow as the existing culvert, be sturdy, and should be relatively inexpensive. The CLRP or NYS DEC can provide information on beaver control options. Request *Managing Nuisance Beavers Along Roadsides: A Guide for Highway Departments* from the Cornell Local Roads Program.

7.4.6.7 Outlets (scour)

At the outlet of the pipe, the high velocity of the water flowing out of the pipe, as well as the bed material which flows through the pipe, can cause erosion and scour. Energy dissipaters such as rip-rap, gabion check dams, and aprons are all commonly used to help the flow of water away from a pipe without scour.

7.5 CHOOSING PIPE SIZE

All of the above aside, there are general rules of thumb that can be used for most pipes.

- **New pipes**

For new pipes, small drainage areas can be designed using simple methods. If the watershed area is less than 20 acres, the minimum pipe size should be 8 inches plus the number of acres. As an example, if a watershed was 14 acres, the pipe should be at least 22 (8 + 14) inches in diameter. You would round up to the next larger size and use a 24-inch diameter pipe. No pipe less than 18 inches should be used for a culvert. No pipe less than 12 inches should be used for a driveway.

- **Existing pipes**

If an existing pipe has not flooded in the past and no major changes have been made to the use of the land, a pipe with the same opening area and cover will be adequate. The best way to get the history is the *knock on wood* method. Go find a neighbor close to the pipe and knock on the door. Finding someone who knows the history of the floods and land use can tell as much or more than a full blown study. In fact, a good design study will use this method to check and confirm any calculations.

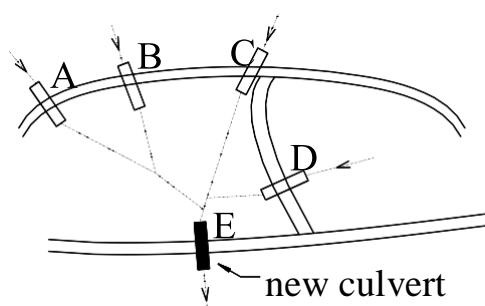
- **Check size**

Look upstream and downstream and measure the area of the pipes bringing flow to the culvert and the first pipe downstream. The area of the new culvert should be somewhere near the area of the upstream pipes or the downstream pipe. In a driveway this is very simple. If the upstream driveway pipe is 18 inches and the downstream pipe is 24 inches, the new driveway pipe should be either 18 or 24 inches. If enough cover is available, put in the 24-inch pipe. The cost difference is only in the materials. The pipe will cost slightly more, but less fill material will be needed. The installation cost will be almost the same for both sizes of pipe.

If there is more than one pipe feeding a culvert you need to be more careful. GET HELP! However, as a minimum the same rule of thumb applies. The figure below shows a location with multiple streams feeding a single culvert that needed to be replaced because it was too small. As a minimum, the opening area of the culvert should be at least equal to the opening area of the pipes upstream. NOTE THE SIZE CALCULATED BY A DETAILED DESIGN.

- **When to use**

If the area is more than 20 acres for new pipes, or if Rule 2 does not hold for existing pipes, GET HELP!



Culvert	Size	Area of opening
A	24"	3.1 s.f.
B	18"	1.8 s.f.
C	36"	7.1 s.f.
D	48"	<u>12.6 s.f.</u>
		24.5 s.f.
E Existing	48"	12.6
Minimum needed	72"	28.3
Actual designed	54" (2)	31.8

Figure 36 - Multiple streams feeding a single culvert that needs to be replaced

7.6 PLANNING A CULVERT REPLACEMENT

Planning the replacement of a culvert is a fairly straightforward project. Several factors must be considered. If any part of the replacement is of concern, GET HELP.

7.6.1 Alignment

First, choose an alignment. Use of natural alignment reduces scour, is generally no more expensive to install and is much less expensive to maintain. The extra length of pipe needed for a natural alignment is offset in cost by the need to provide extra scour protection and the chances of long-term problems. Exceptions to a natural alignment are:

- Existing pipe system is working fine
- There is a need to have a closed system in a developed area or village
- The cost of a natural alignment is prohibitive
- Or, other factors make the natural alignment less cost effective

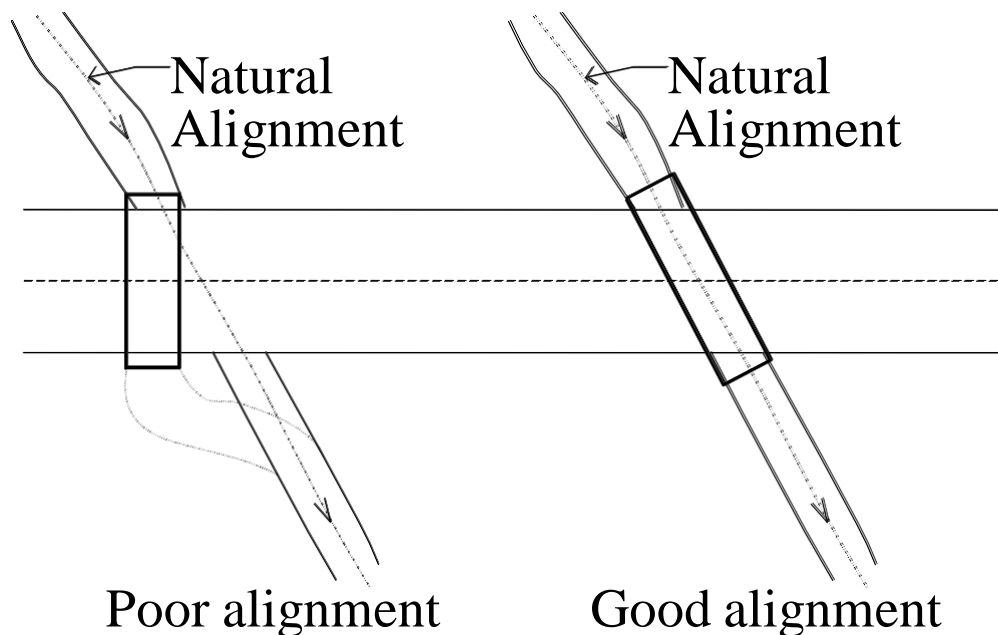


Figure 37 - Natural vs. artificial alignments

We normally express the alignment in degrees skew. For determining the amount of pipe to be used we need to know the *skew ratio*. The skew ratio is the length of a pipe along the new alignment versus a perpendicular alignment expressed in feet offset per feet of length perpendicular to the road. The easiest way to measure this distance is to measure a 10-foot width on one lane, the length of the pipe along the alignment in the 10-foot distance (“C” in *Figure 38*), and divide the result by 10.

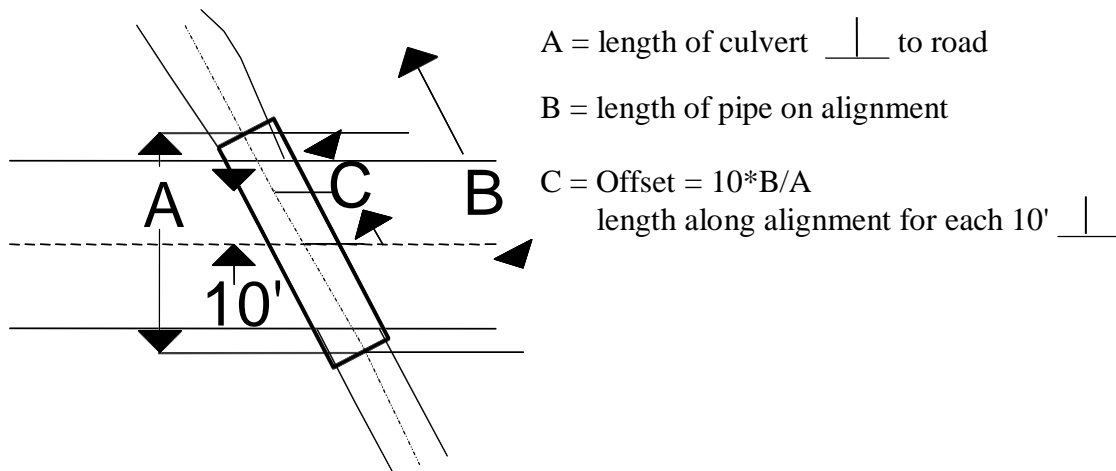


Figure 38 - Expressing alignment using offset

If “C” was 12.5 feet in the above figure, the skew ratio is 1.25 (12.5 divided by 10 = 1.25)

7.6.2 Cover and depth

Cover is the amount of fill over the top of the pipe. The cover over the top of any pipe should be at least 12 inches. Some pipes, such as plastic, may need more. Check with the pipe supplier for more details. Depth is the vertical distance to the bottom of the pipe from the edge of the road.

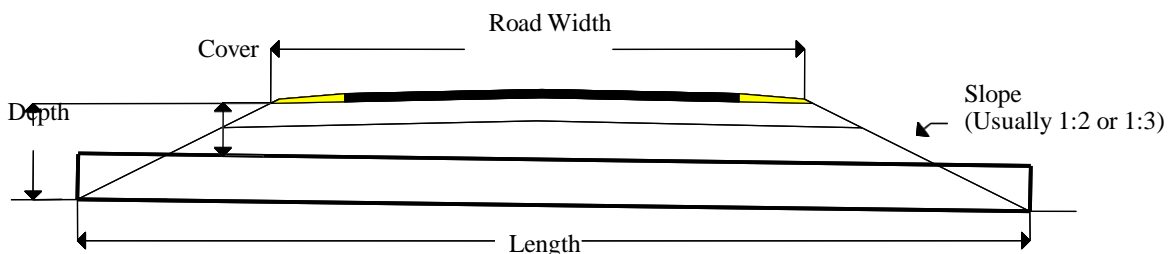


Figure 39 - Cover and depth

7.6.3 Length

Once we have chosen our alignment and know the depth of fill (height of pipe plus cover), the length is fairly easy to determine. Flexible pipes come in standard lengths of 20 feet, but ends may be cut due to right-of-way issues, specific needs to keep the end short, and cost of extra material. We need to know what the side slope along the road will be. See *Chapter 9, Erosion and Slopes*, for a discussion of what the slope should be.

Slope = (1:___)
Depth = (___)'
Skew ratio = (___')/10' of pipe

Depth = ___ average of up & down stream
 Slope = ___ ft run / ft rise
 Width = ___ ft (including shoulder)
 Skew ratio = ___ ft of pipe / ft \perp

Depth (avg.)	___
Slope	___
Sides of road	___
Width	___
Skew ratio	___
Round up to next pipe length	<input type="text"/>

$$\text{Length} = \text{Offset} * [2 * \text{Depth} * \text{Slope} + \text{Width (road including shoulders)}]$$

Figure 4 - How to calculate length of the pipe

7.6.4 Size and shape

Generally, the size is based upon the flow capacity. However, issues of constructability and availability may cause a different choice to be made. Larger pipes carry more flow, but require larger equipment to be placed. The availability of certain sizes of pipe may cause the choice of a larger pipe size. Pipes come in size increments of 6 inches (12, 18, 24, 30, 36, and so on.) However, some ½-foot sizes may not be available and the next larger even-foot size may be used. Cost must be considered as part of the selection process.

7.6.5 End treatments

You also need to decide if you are going to have inlet and outlet protection. This decision can be based upon capacity, but is usually decided by issues of erosion, maintenance, and right-of-way. Protection can be expensive so alternatives such as extending a pipe versus a headwall or purchased end sections versus a cast-in-place headwall need to be considered.

7.7 INSTALLATION

Books have been written on the installation of culvert pipes. Some basic items should be considered.

7.7.1 Stake out

Placing some simple stakes prior to starting work can make the job of replacement easier. For replacement of an existing pipe, mark the stakes with the existing elevations of the inlet and outlet. Place the stakes outside the work area so they are not damaged or knocked over by the work. See the CLRP manual, *Surveying Methods for Local Highway Departments*, for more information.

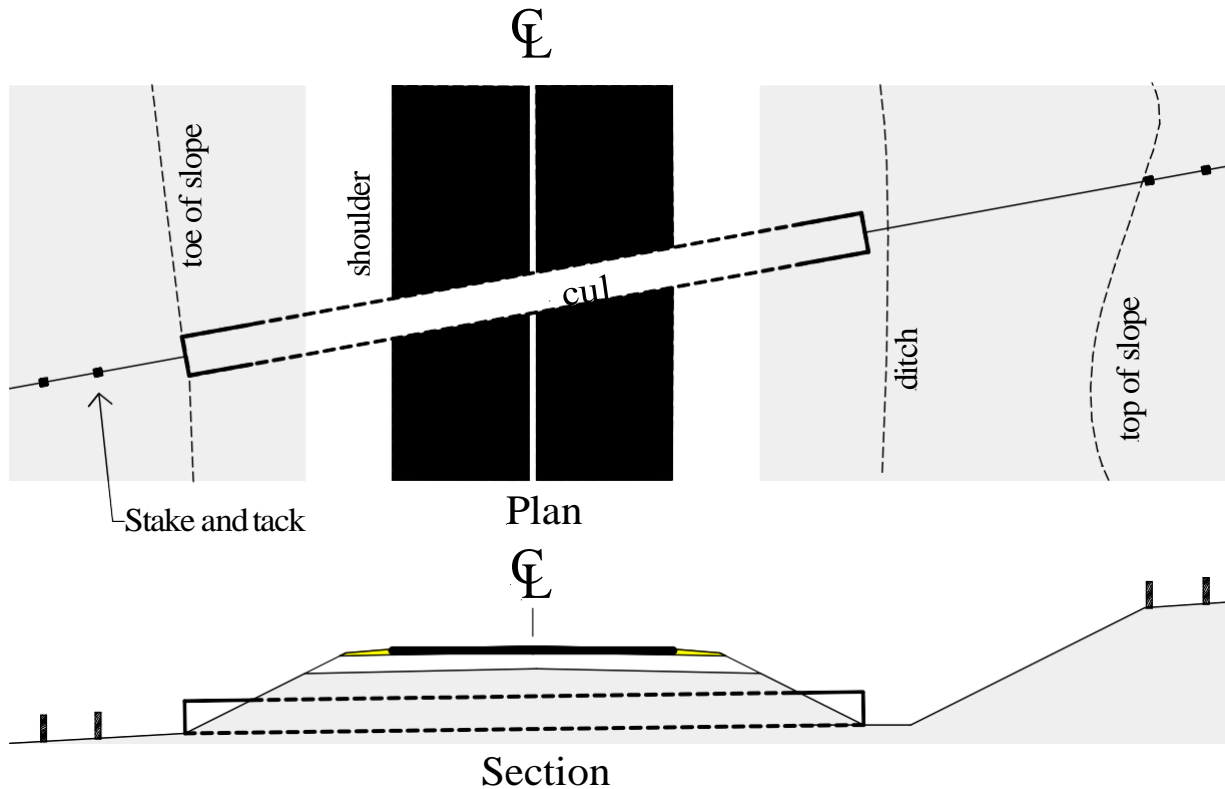


Figure 41 - Staking roadway culvert
(modified from the *Surveying Methods for Local Highway Departments* manual)

7.7.2 Construction

The placement of the pipe is absolutely critical. Work in dry weather if possible.

The bed of the pipe needs to be prepared to help backfilling. Figure 42 shows the most common bedding methods used. Class D bedding is the most common, but can lead to severe problems. The only way to place material under the pipe is by vibration during compaction. This can raise the pipe and cause the pipe to be misaligned. Class C is also common and can be made easily. Construct a flat bed of compacted material. Then using a template with the same diameter as the outside of the pipe, scrape away the material along the center of the bed. The joint collar of small diameter pipes can be used as the template.

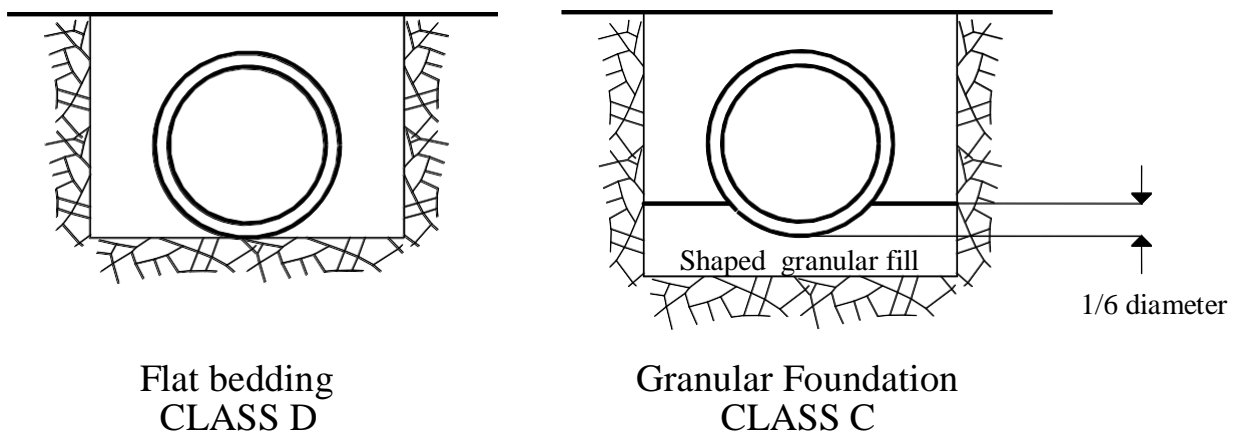


Figure 42 - Bedding of pipes

7.7.3 Placement

Placement is usually done with the machine that excavated the hole. Loaders are commonly used for heavier pipes. Be very careful near the trench edge. The material can fail quickly and injure or kill people. Pushing the pipe into the hole and letting it drop into the trench is not recommended. It can damage the pipe.

7.7.4 Backfill

The placement of well-compacted backfill is critical. The material used for backfill should be free from large materials, easy to compact, and stable under a load. Sand, fine crusher run, and gravel are all good materials to use. If sand or erodible materials are used, the ends must be protected to keep the sand from washing or piping.

7.7.5 New vs. existing backfill

When replacing a pipe, using the existing material to re-backfill the pipe is usually a good idea. Using the existing material will eliminate problems of heaving in the winter. Care should be

taken during excavation of the old pipe to keep the clean fill separated from the roadway material and large stones used for scour protection. If the existing material is too wet and cannot be compacted well, new material should be used to at least one foot above the pipe. Additional cover may be needed on larger pipes.

Box 7 - Compaction and trench width

The trench must be wide enough to allow a compactor (plate tamp or jumping-jack) between the pipe and the side of the trench. If enough room is not allowed, the pipe will not be compacted properly and could fail prematurely. The lifts of backfill should be kept to 6 to 9 inches and each lift leveled prior to compaction. Once the backfill is at least one foot over the top of the pipe, a larger roller may be used for the remaining fill.

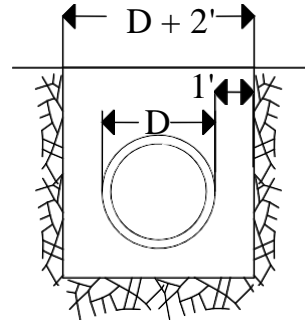


Figure 43 Minimum width of trench (pipe + 2 feet)

7.7.6 Inlets/outlets

Inlets and outlets should be placed prior to backfilling. It helps hold the fill in place and makes the job of building the inlets easier. Inlets and outlets help hold the fill in place during construction. Erosion and scour protection should be done as soon as possible after backfilling is completed.

7.7.7 Water diversion

If flows are constant year-round, diverting the water makes the work easier, faster, and safer. An easy way to divert water is to put it through another pipe while the new culvert is installed. The diversion pipe can be smaller than the new culvert. Other methods are available. GET HELP.

7.8 INSPECTION

Proper maintenance and rehabilitation of existing pipes can be much more economical than replacement. Inspections should be done on a period basis to look for problems and help plan maintenance work. For larger culverts, inspections should be done at least every other year and a quick look should be done each spring. Small pipe inspections can be done along with road inspections using a short checklist. Figure 44 is a sample inspection form, filled out for an existing culvert. A blank form is provided in *Appendix A*, page 77.

Culvert Inventory & Inspection	
Municipality: <u>Anytown</u>	Date of Inspection: <u>12/16/96</u>
Weather: <u>cloudy 50s</u>	Who did inspection: <u>David Orr</u>
Route #: <u>—</u>	Name: <u>Pacific Rd</u>
at milepost: <u> </u>	or miles from: <u>0.1 mi from ^{NY} 79</u>
Inventory	
Culvert #: <u>1 Pa</u>	<div style="text-align: center;">sketch</div>
Stream Name: <u>W. Branch Owego Creek</u>	
Shape of pipe: <u>round</u> <u>0</u>	
Material: <u>steel / CMP</u>	
Size: <u>6'</u> <u>4'</u>	
# of pipes: <u>2</u>	
Inspection	
<div style="display: flex; justify-content: space-between;"> Condition </div>	
Channel :Scour & Erosion	<u>downstream washing (right)</u>
:Debris & Plugging	<u>- Good</u>
Culvert :Pipe	<u>- Good</u>
:Inlet	<u>- projecting / some scour</u>
:Outlet	<u>- minor undermining</u>
:Cover	<u>- Good</u>
Roadway :Pavement	<u>- Good</u>
:Shoulders	<u>- Good</u>
:Embankment	<u>- some washing</u>
Recommendations and Notes: <u>- pipe floods regularly. Need to replace. Contact SWCD for help with sizing. Upstream pipes = 10' Ø pipe</u>	

Figure 44 - Culvert inspection (blank form in Appendix A, page 77)

The following items are special problems that should be checked for each culvert.

7.8.1 Piping

Piping is the flow of water along the outside of the pipe, which can remove materials and eventually cause the pipe to fail by blowout or crushing due to lack of support from the surrounding soil.

Look for erosion along the pipe at the upper end, evidence of fines leaking through joints, and flow of water outside of the pipe in the downstream end.

Corrective action includes: Installing a headwall and cutoff wall, placing a grouted protective layer on the upstream side, or using a fly-ash mixture to help fill the voids caused by piping.

7.8.2 Blowouts

Blowouts occur when a pipe under pressure is pushed right out of the fill of the roadway. Excessive vibrations caused by traffic, and flow of water along with piping can cause a loss of support. The pressure of water on the upstream side can push the entire pipe. The force of water under a moderate head can push fill and pipes a long way downstream.

Obviously a blowout is not an inspectable item. By the time you see the blowout, it is too late. Look for piping, excessive backwater and cracking of the soil near the inlet and outlet. This may indicate the pipe could blowout.

Corrective action includes: Installing a headwall and/or a cutoff wall, anchoring the pipe with deadmen, or reducing vibration problems by installing an inlet to reduce turbulence in the water.

7.8.3 Washouts

Washouts occur when a culvert is washed away by overtopping of the roadway. The capacity of the pipe has been exceeded for any number of reasons.

Look for evidence of flood marks above the roadway elevation, scour on the downstream slope and shoulder of the road, or debris that may cause plugging.

Corrective action includes: Protecting the banks from washing with stones or grout, increasing the pipe size, providing a debris catcher upstream or at the inlet, or increasing the head to provide more capacity.

7.8.4 Plugging

Plugging of a pipe does not have to be complete to cause a failure. Plugging inside is difficult to work on and can be very dangerous. If debris can be kept out of the pipe, the maintenance is easier and problems can be spotted by personnel driving by the culvert.

Look for debris in the pipe or at the upper end. Also look for large amounts of sediment in the pipe or just downstream.

Corrective action includes: Placing a rebar grate to catch debris at the upper end, placing a debris catcher or check dam upstream of the pipe, or cleaning out material in the stream bed. Take care to avoid causing additional problems when working in a stream.

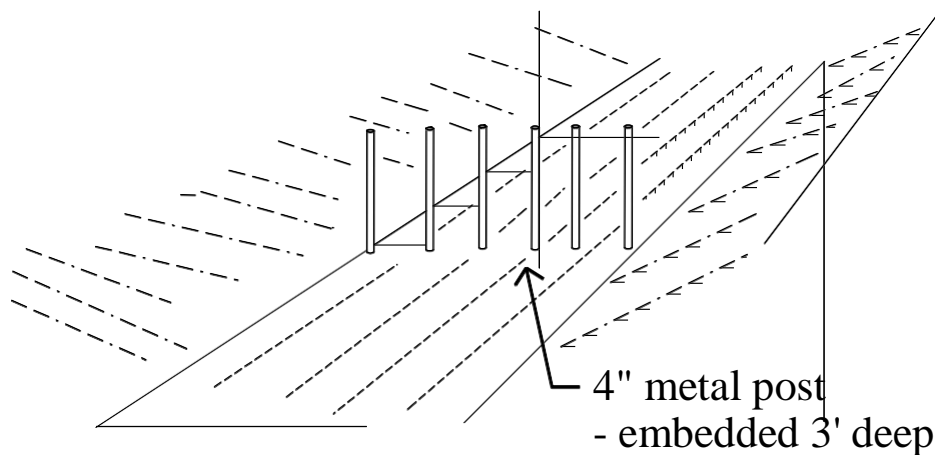


Figure 45 - Debris catcher

7.8.5 Floating

Floating is a condition where the pipe floats away when the water rises up. Also, the end of the pipe may be raised by water forcing the opening too high. Pipes are especially susceptible to this action during construction and shortly after. Plastic pipes are also susceptible to end floating.

Look for evidence of change of the alignment at the upstream end. Also look for evidence of siltation under the pipe or the pipe being higher than the bed of the channel.

Corrective action includes: Installing a headwall, placing anchor blocks, using a heavier pipe, or having more cover over a smaller pipe to put more weight on the pipe.

7.8.6 Corrosion and abrasion

Metal pipes are prone to corrosion. Corrosion is a sign of failure of the coating in a pipe. Once the corrosion has completely eaten through the metal, the pipe is susceptible to complete failure, piping, and other problems. Abrasion is damage of the pipe due to rocks and other stream material scraping and damaging the pipe.

Look for rust and evidence of loss of coating in metal pipe. Look for damage to the surface of concrete and plastic pipes. Also, look for large amounts of large rocks and debris downstream.

Corrective action includes: Paving the bottom of the pipe with concrete, lining the pipe with a small pipe, or replacement of the pipe. Abrasion may be reduced by installation of a debris catcher or check dam. Care should be taken to insure a lined pipe will have adequate flow capacity.

7.8.7 End crushing

The ends of flexible pipes are prone to crushing due to maintenance activities or debris flows. This will reduce capacity and can lead to other problems such as plugging.

Look for bent ends and evidence of large debris near the inlet. Advise crews to be very careful around the ends and mark the ends with signs or markers.

Corrective action includes: Cutting off bent material, rebending ends to original shape, replacing end section of the pipe.

7.8.8 Other

Other special concerns include freezing of the pipe, joint failures, and damage by maintenance forces.

Frozen pipes need to be thawed by steam or nature and are most common when the ends are damaged or in very flat-sloped corrugated pipes.

Joint failures can lead to piping, complete failure, and settlement at the surface of the roadway.

Damage by maintenance crews should be fixed as soon as possible.

7.9 MAINTENANCE

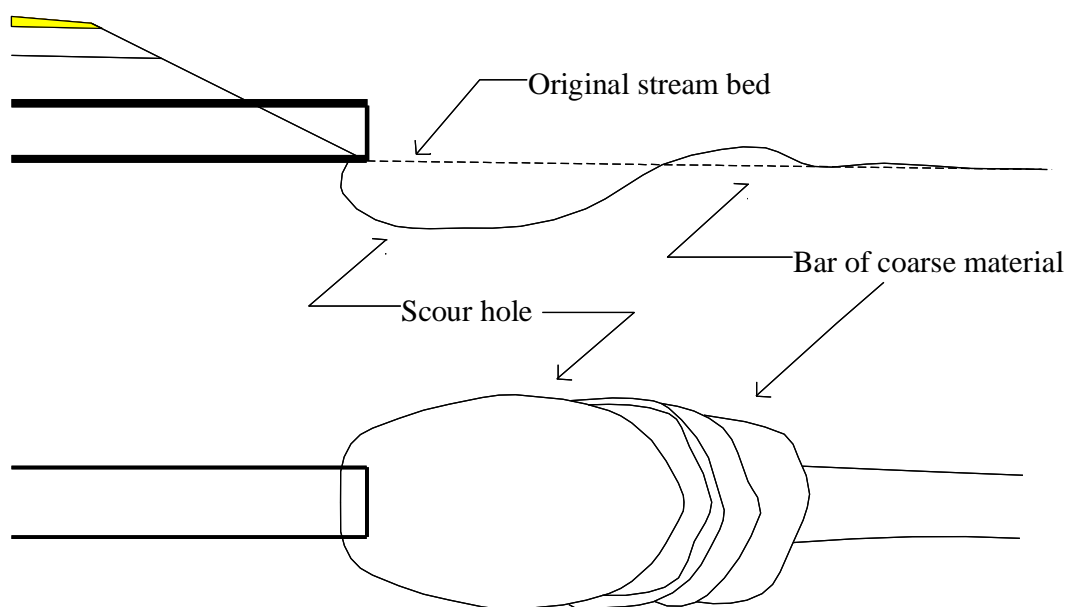
Many maintenance activities can be done to extend the life of a culvert. Some of the common maintenance tasks are flushing, lining, cleaning debris, and extending ends.

7.9.1 Clearing debris from ends

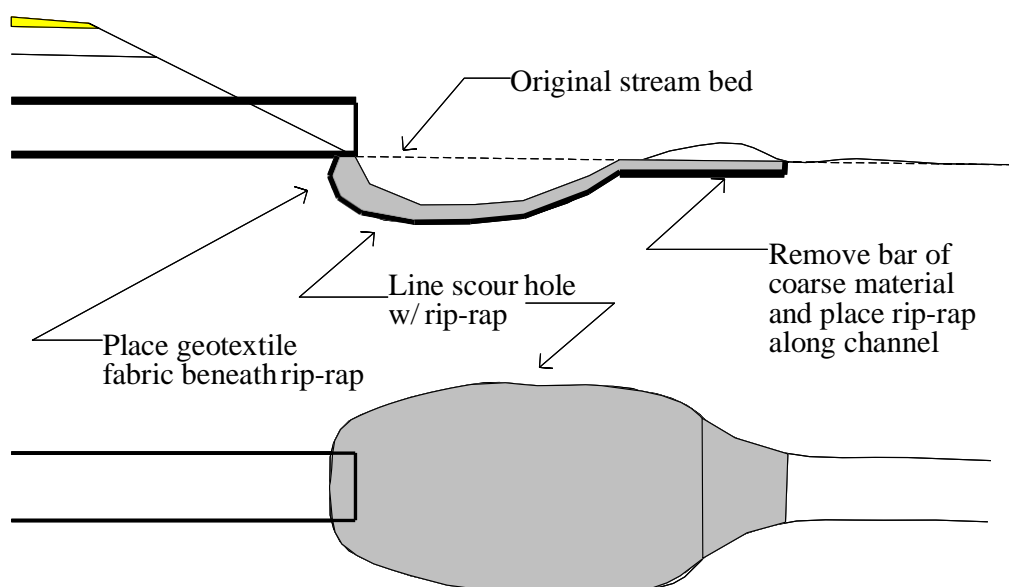
Each spring a crew should check each culvert and clean any trees and debris from the inlets and outlets, debris racks, and check dams. Pipes without debris protection should be checked for debris in the pipe during the winter *BEFORE* the spring thaw.

7.9.2 Erosion control

Repairs to erosion control devices such as gabions, fabrics and rip-rap should be done on an as-needed basis. Stopping erosion before it gets started is the most effective way to minimize problems.



Before



Don't fill scour hole completely or erosion problem will reoccur

After

Figure 47 - Scour hole repair

7.9.3 Flushing

Flushing pipe with a pressure hose should be a scheduled activity. Many agencies perform the work in the spring to clean up after the winter. Some do it in the late fall before winter. Remember, the most likely time of the year for heavy flows is during the spring thaw. Pipes should be flushed prior to that period if possible. However, a good maintenance schedule to keep pipe relatively clean all year-round is the most effective way to maintain pipes.

7.9.4 Minor repairs

Minor repairs to bent metal ends, spalled concrete, or other problems can be done at any time. They should be scheduled with other activities.

7.9.5 Lining

Lining of pipes can be done when a pipe is near the end of its effective life but the capacity is adequate to allow lining. Lining is usually done on pipes with a fairly high cover that would be expensive to replace and time consuming to repair. Lining is an effective option, but if you have any questions, GET HELP.

7.9.6 Extending

Extending pipes is done to reduce steepness of slopes, reduce scour, or when a road is widened. Two general rules should be kept in mind before extending is done. One, the joints between the old and new pipe must be of high quality. Two, the capacity of the pipe to handle flows must be checked.

8 - DITCHES

8.1 PURPOSES

Ditches serve several needs at the same time. We need to understand the reasons for ditches so we can understand how to maintain and construct them. Ditches carry collected surface water. They are used to help keep roads, fields, and all kinds of developments dry by moving water from one location to another. For roads and streets, three main purposes are found.

8.1.1 Roadside

A roadside ditch collects surface runoff from the pavement and carries it parallel to the road to a channel or culvert where the water can be taken away from the road. It also intercepts surface water before it gets to the road surface.

8.1.2 Diversion

Diversion ditches can be parallel to the roadway, but do not have to be. They divert excess water before it gets to the roads, a slope, or other feature of the road. They differ from roadside ditches in two ways. One, they do not collect roadway runoff. Two, they are only in place to divert excess water.

8.1.3 Lower water table

Both kinds of ditches can be used to lower the water table. In addition, they can be used to allow free water to drain from an open base under the roadway. However, that should not be the primary function. They will not dry out a base material with too many fines.

8.1.4 Farm vs. highway needs

One of the problems faced in rural New York is the large number of ditches built for farmers and not for highways. Highway ditches are relatively shallow and should have flat slopes. If the ditch is too deep, it can trap vehicles and cause instability problems for the roadway. Work with farmers and others to make sure they understand the reasons for highway ditches. Help the farmer where possible, but remember lowering the ditches and failure to keep slopes flat, can increase liability.

8.2 SHAPES

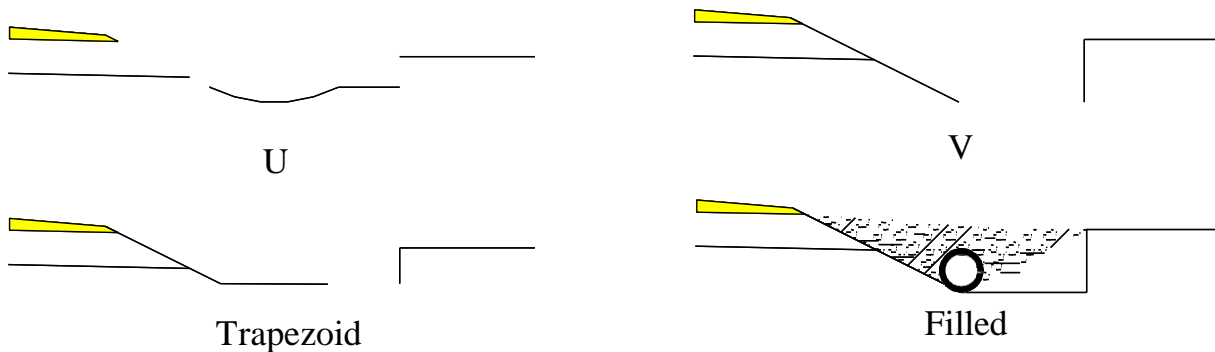


Figure 48 - Ditch shapes

Ditches come in three basic shapes, U, V, and trapezoidal. Each has its own good and bad points. There is no one best ditch shape. All three shapes may be filled if necessary.

8.2.1 V

A V-shaped ditch is easy to construct, especially with a grader. However, the bottom of the V is prone to erosion and can be difficult to maintain.

8.2.2 U (rounded)

A U-shaped ditch is more efficient hydraulically and a good shape for erosion control. It can be built with an excavating machine and is easy to maintain. However, most U-shaped ditches in New York State are too steep on the road side of the ditch. Two ways to solve the problem are to cuff the break of the ditch and the shoulder with a grader or the excavator bucket, or curl the bucket back during the final pass to make a rounded shape.

8.2.3 Trapezoid (flat-bottomed)

A trapezoidal ditch is the most efficient hydraulically and should be used for ditches carrying a large amount of water. The flat bottom spreads out the flow and helps reduce erosion problems. They are more difficult to construct, but the Soil and Water Conservation District and Natural Conservation Service can provide assistance.

8.2.4 Filled ditches

Sometimes ditches are filled in with large stone to make them safer for traffic when there is limited room to widen a ditch. These ditches act very similarly to trench drains. The flow is carried in the voids between the stone fill. A perforated pipe should be placed at the bottom to ensure the ditch lasts as long as possible before silting occurs between the stones. This concentrates the flow and reduces the amount of siltation in the stones. A fabric should be placed on the road side of the ditch as a minimum to keep material from the roadway from washing into the ditch.

8.3 SIDE SLOPES

Side slopes should be as flat as possible for the traveling public. Slopes steeper than 1:2 to vertical horizontal may be unstable and require guiderail to keep errant vehicles out of them. Slopes of 1:3 are considered good. See *Chapter 9, Erosion and Slopes* for more on slopes themselves.

8.3.1 Maintenance

Maintenance of ditch sides is much easier when the slopes are 1:2 or flatter. They can be mowed and maintained very easily. A properly built ditch will help keep itself clean and will only need mowing and some minor cleaning on a routine basis.

8.3.2 Stability

Unstable ditches may be stabilized by filling the ditch with stone as above or lining the sides with stabilizing materials. See below for a discussion of the pros and cons of each material.

8.3.3 Offset

The offset to the bottom of a ditch should be determined by the depth needed in the ditch and the side slope. Too many ditches are deepened in place without regard to the changes in slope of the roadside slope. Ditches need to get wider as they get deeper, and the backside of the ditch should be stable. Difficulty with a narrow Right-of-way may force a ditch to be filled with stone or lined for stability.

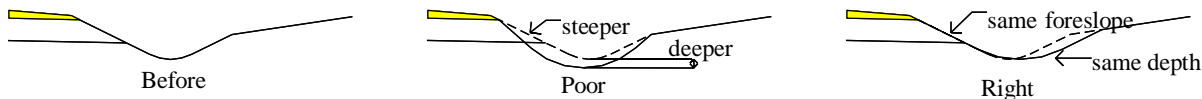


Figure 49 - Changes in slope in a ditch cleaned at the same offset

8.4 FALL

Typically, ditches will follow the natural contours of the land. If the fall is less than one percent the flow of water in the ditch may be too slow and it may fill with sediment. If the fall is too great, erosion may destroy any lining material. A maximum of five percent is generally used. If the slope is too great, check dams may be used to help reduce velocities and control erosion.

8.4.1 Velocity

The steeper the ditch, the faster the velocity. The maximum allowable velocity of water over most soils in New York State is less than that of both vegetative cover and man-made cover, such as rip-rap.

8.4.2 Check dams

If the ditch is too deep, a series of check dams can be placed to reduce the velocity of the water flow. Check dams can be made of gabions, wood, concrete, or steel. The two major problems with most check dams are failure to allow for dissipation of the flow as it drops over the dam, and failure to bed the dam deep enough to keep it from being eroded in a severe storm.

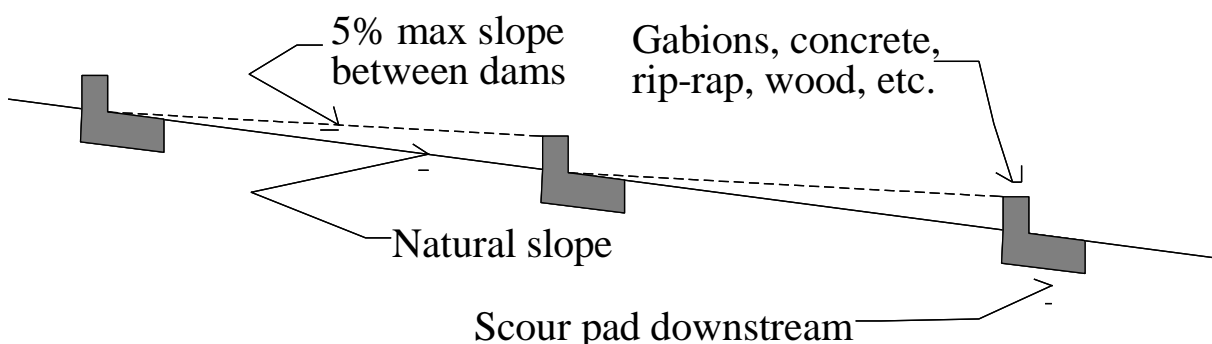


Figure 50 - Good check dam showing deep bedding and downstream pad

8.5 LINING MATERIALS

Before we clean or construct a ditch we need to decide what the ditch will be lined with when we are done. *Table 12* shows various lining possibilities and discusses the pros and cons of each.

Erosion resistance and water retardance are the two main factors that affect ditch performance. The less erodible a material is, the less maintenance needed and the greater the allowable fall. Water retardance should be kept low to improve flow capacity and reduce sedimentation problems. Remember that a material with a low-water retardance will have greater velocity of flow and may be more prone to erosion problems. The table lists the relative erodibility of common ditch lining materials. Choice of materials is based upon cost and maintenance factors.

Table 12 - Ditch lining materials

	Erodibility	Water retardance	
high ↑	Earth	Concrete	low ↓
	Earth bottom/grassed sides	Fabric	
	Grassed (mowed)	Earth	
	Weeds & grass (unmowed)	Stone bottom & sides	
	Stone bottom/grassed sides	Earth bottom/grassed sides	
	Fabric	Stone bottom/grassed sides	
	Stone bottom & sides	Grass (mowed)	
low	Concrete	Weeds & grass (unmowed)	high

Notes:

- **Earth**
Severe erosion problems can occur. Also, the ditch will eventually fill with weeds and grass if not seeded or stabilized.
- **Earth bottom**
Condition of ditch after cleaning. Needs to be seeded to keep weeds from growing and causing a retardance problem.
- **Fabric**
Only certain special fabrics (geotextiles) can be used in this application. Contact CLRP or SWCD for advice.
- **Concrete**
Concrete and asphalt ditches are prone to heaving and undermining. They require vigilant maintenance as well as quality construction.

8.6 CAPACITY AND DEPTH

Most ditches have more capacity than they need. The needed capacity of most roadside ditches is very small. Only when the ditch is carrying a diversion flow or is very long between culvert pipes do you need to be concerned about capacity. In such cases, GET HELP. Typically, historical perspective is enough to determine if the ditch is large enough. As a rule of thumb, the ditch should be 12 inches below the bottom of the subgrade.

8.6.1 Volume

The volume of water to be carried is usually controlled by the upstream culvert. The SWCD or whomever designs a new pipe can determine the ditch size needed. Most ditches have a much larger area than the culvert just upstream. The velocity is usually the major concern. Too much velocity can cause erosion.

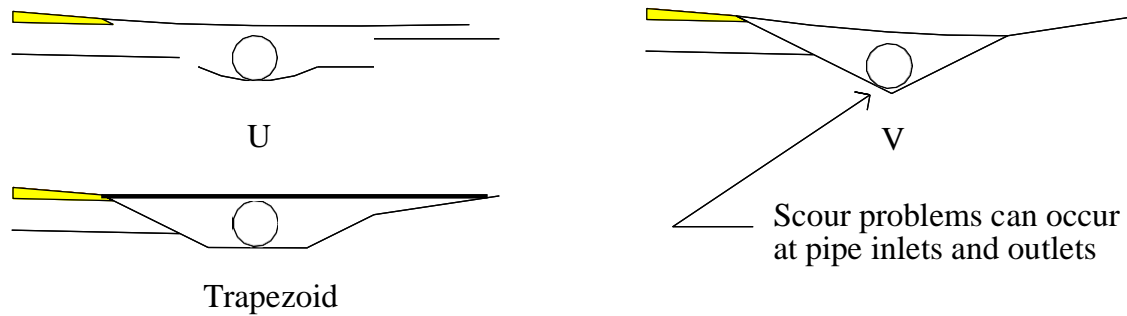


Figure 51 - Ditch versus pipe area

8.6.2 Daylight base

The ditch also helps drain the base of the roadway. The bottom of the ditch should be below the base of the roadway.

8.7 MAINTENANCE

Maintenance of ditches needs to be done on a regular basis. Two very different items are the most common maintenance techniques, cleaning and reshaping. Be sure to do the right maintenance. Any ditch work does two undesirable things if not managed and repaired. The work exposes the gravel to erosion. Also, it may change the depth of the ditch to an undesirable depth.

8.7.1 Cleaning

Cleaning ditches involves removal of sediment and vegetation from the bottom of the ditch. Very small amounts of material should be removed. Cleaning should be checked by walking the ditch after the cleaning. A small amount of annual and perennial grass seed can be spread ahead of the person checking the work. Their walking will bed the seed into the exposed ground. Cleaning the ditch does not involve changing the width or depth of the ditch. If too deep, the ditch may become a hazard to motorists.

8.7.2 Reshaping

Removing large amounts of material and widening or deepening the ditch is reshaping. Reshaping is often referred to as cleaning. Reshaping should be laid out prior to beginning work, and should be checked by the foreman with a hand level to make sure too much material is not removed. The depth should be a constant fall with the bottom of the ditch on the flow line between culverts. If no culvert is at either end the ditch should have a constant fall of approximately 1–2 percent. The depth cannot be lower than the flow line between culverts at the upper and lower end of the ditch. If it is, the ditch will fill in rapidly with undesirable material.

8.8 GENERAL TIPS

- Always clean ditches uphill
- Place erosion protection or seeding every day and before any rain
- Have erosion material ready before starting job (in case of rain)
- When in doubt, GET HELP

9 - SLOPES AND EROSION CONTROL

9.1 HOW TO STOP EROSION

Stopping erosion is difficult. Keeping erosion from occurring in the first place is usually more successful. Many of the maintenance activities performed on roads and streets would be unnecessary if erosion was controlled. As an example, stopping erosion from occurring at the top of a hill will reduce the ditching at the bottom of the hill. Approximately 30 tons of material can be eroded from a mile of ditches before you can see the damage! To remove and replace 30 tons of material is a lot of work.

Also, you need to be concerned about erosion during construction and maintenance work. The work can cause additional erosion.

9.2 TYPES OF EROSION

Three types of erosion are common: surface, rill, and galley. Different soils erode differently. For most highway materials you can be sure of two things. One, unprotected materials will erode and cause sedimentation. Two, the flatter the slope the fewer erosion problems occur.

- **Surface**
Surface or sheet erosion occurs when rainfall dislodges soil on the surface of material, and the water plus soil flows in sheets. The washing of shoulders is often started by this process.
- **Rill**
Rill erosion occurs when the velocity of the flow is great enough to dislodge soil in addition to that dislodged by rainfall. Rill erosion is typified by the narrow little channels that form in banks and slopes that are not protected from erosion.
- **Gully**
Gully erosion occurs when rill erosion combines and concentrates the flow of runoff into gullies. Washouts between pavement and shoulders are usually gully erosion.

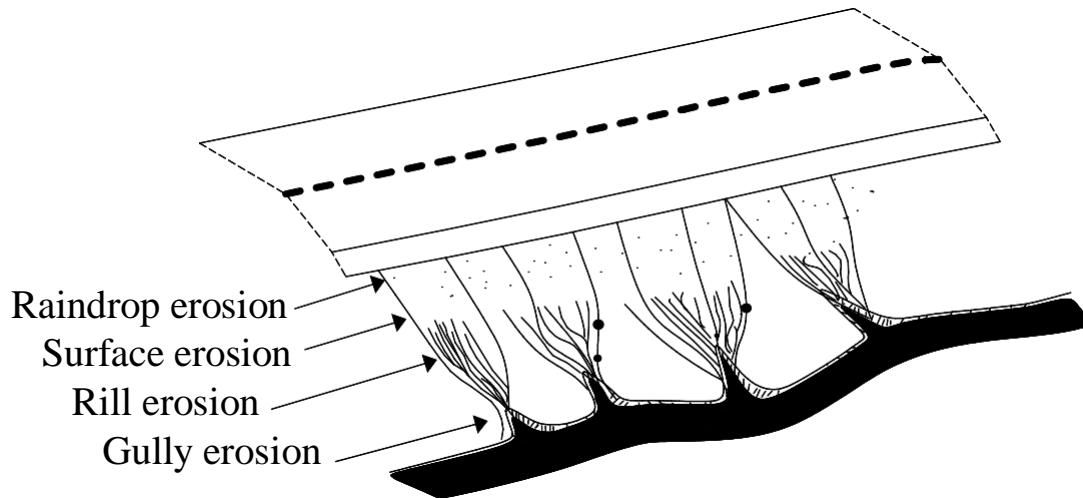


Figure 52 - Types of erosion

9.3 SEDIMENTATION

All of the material removed by erosion is deposited at some location downstream from the erosion. This process of sedimentation usually occurs where a change in the speed of the flow occurs. Filling of culverts, ditches, streambeds, and even lakes is a result of sedimentation. Stopping erosion will eliminate or reduce many of the problems associated with poor drainage.

9.4 SLOPES

Even very flat ground erodes. The reason you do not notice the erosion is that sedimentation occurs at the same location as the erosion. Steep terrain erodes very quickly. You need to reduce erosion problems. In addition, for slopes you have to be concerned about three factors: stability, safety, and maintenance.

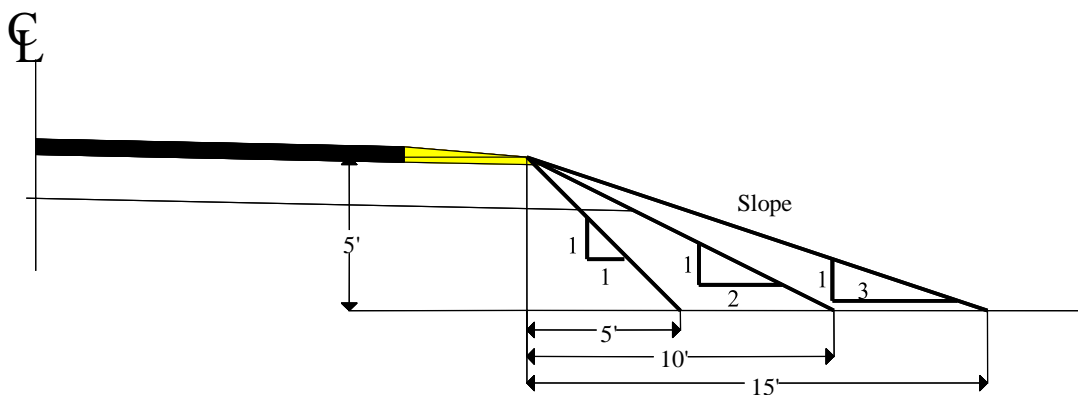


Figure 5 - Slopes

9.4.1 Stability

Most highway materials are stable at slopes of 1:2 or flatter. Slopes steeper than 1:2 are more prone to erosion and washouts. If saturated, the entire slope may fail.

9.4.2 Safety

Slopes along the edge of roads, including ditches and banks, need to be kept fairly flat to allow errant vehicles a safe place to drive. Slopes of 1:3 or flatter are considered safe. If the slope is less than 3 feet high a 1:2 slope is acceptable. More information on roadside safety can be found in the Cornell Local Roads Program's manual, *Road Safety Fundamentals*.

9.4.3 Maintenance

Mowing slopes is the most common maintenance technique. If slopes are 1:2 or flatter, the mowing crews can easily mow the slope. Minor repairs may be needed to fix small washouts and erosion.

9.4.4 Options

If a slope is too steep, several items need to be examined to repair the problem:

- **Stabilize**
Unstable slopes can be stabilized by use of geotextiles or other earth reinforcement materials. If you have a high steep slope that is showing signs of distress, GET HELP.
- **Retaining walls**
Use of gabions, concrete, and block retaining walls may be needed on very steep slopes or to help stabilize the toe of an existing slope. If a slope is so steep the erosion mitigations listed below will not work, a retaining wall may be needed. GET HELP to determine the best course of action.
- **Signing**
Slopes steeper than 1:3 (1:2 for 3 or fewer feet in height) need to be protected. As a minimum, signs should be used to delineate the slope and warn motorists of the hazard. See *Chapter 17B New York Code of Rules and Regulations* (NYCRR) for future information.
- **Guiderail**
Guiderail should be used on steep slopes. It needs to be installed and used correctly as part of an overall plan to upgrade the roads. The NYSDOT publication, *Guiderail III*, has valuable information about the use of guiderail to protect slopes.

9.5 EROSION MITIGATION

To protect the exposed surfaces after construction or due to minor failures, mitigation should be performed. The objective of the repairs is to eliminate the start of erosion caused by rainfall and melting snow.

Several different materials can be used to reduce or eliminate erosion problems. The most common are discussed below. The erosion material works by absorbing the energy of a falling drop of water. Erosion due to steep slopes (steeper than 1:2) is difficult to stop. The velocity of the water flowing over the protective material can start erosion.

9.5.1 Earth

Earth erodes easily and is not stable. It should not be left exposed for even a short period of time.

9.5.2 Vegetation

Vegetation including grass, bushes, and trees can be planted to reduce erosion. The Soil and Water Conservation District (SWCD) and Natural Resources Conservation Service (NRCS) have information and can provide assistance to place the best vegetation for a given problem. A general rule of thumb is use vegetation if possible. It is cheaper than other methods and is more pleasing to the eye.

9.5.3 Stones/rip-rap

Fairly common to protect high and steep banks, stones, or rip-rap can eliminate many erosion problems. A separation geotextile should be installed on the slope prior to placing of the stone or the stone will shift and settle and eventually fail to protect the slope. The size of the material does not have to be large (angular gabion stone is very effective) unless a large volume of water is expected. Then the blanket of stones should be made with larger size rock.

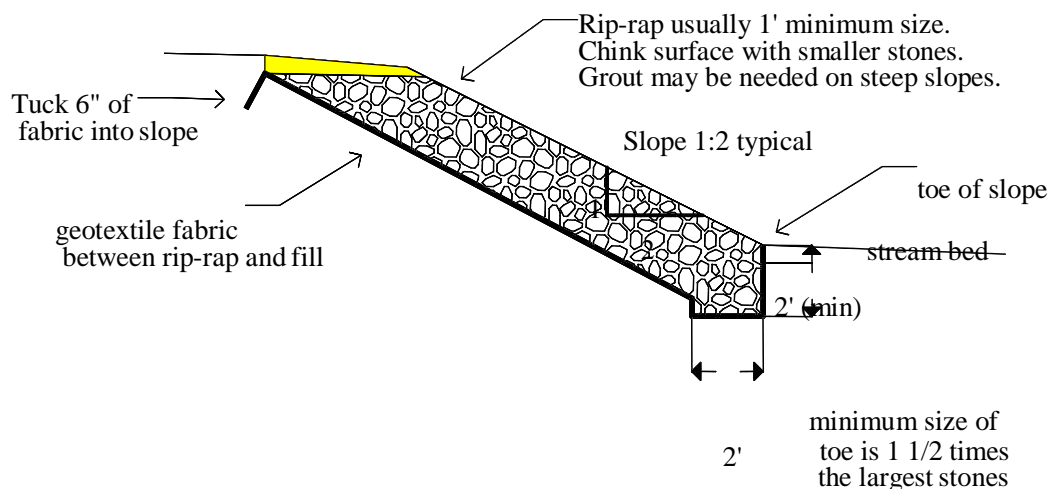


Figure 54 - Placement of rip-rap on a slope
Cornell Local Roads Program

9.5.4 Fabrics

Use of special fabrics to protect slopes has become more popular in recent years. They are easy to place in difficult to reach locations and can handle more water runoff than some stone blankets. The slope needs to be prepared, seeded, and the fabric placed over the seed. Some fabrics come with seeds already in the mat. The fabrics are made of various materials including jute, straw, coconut fibers, and plastic. Most are biodegradable. The two most critical steps are stapling the fabric, and placement of the upper end of the fabric in a trench to keep surface water on the top of the fabric. Consult the manufacturer of the product for information about stapling patterns and construction techniques.

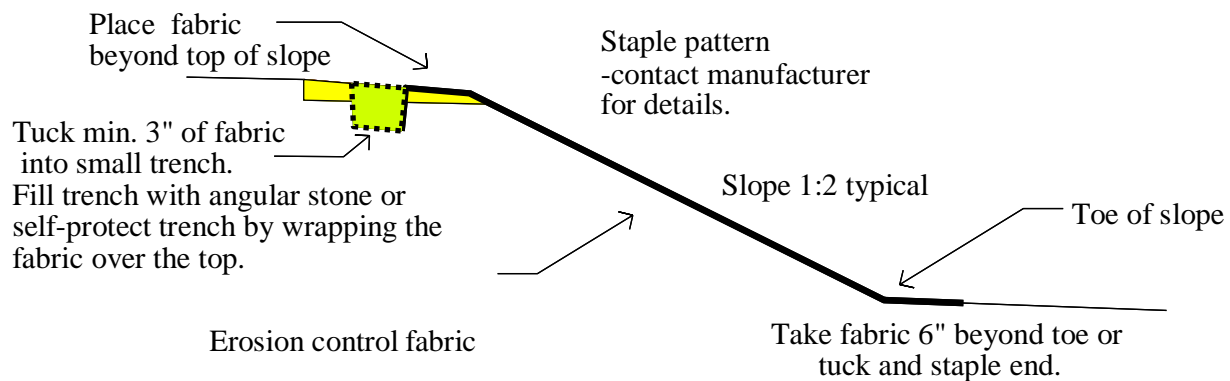


Figure 55 - Placement of an erosion fabric to protect a slope

9.6 MAINTENANCE

When maintenance or construction work is done to protect slopes or reduce erosion several things should be kept in mind:

- Keep disturbed areas small
- Stabilize or protect disturbed areas as soon as possible
- Keep water velocities low, especially on unprotected areas
- Keep sediment in the work area
- Follow-up and inspect all work
- Fix damaged areas as soon as possible
- Silt fences and straw bales are *temporary* measures only

Appendix A - Culvert Inspection

Culvert Inventory & Inspection

Municipality: _____ Date of inspection: _____

Weather: _____ Who did inspection: _____

Route #: _____ Name: _____

at milepost: _____ or miles from: _____

Inventory

sketch

Culvert #: _____

Stream Name: _____

Shape of pipe: _____

Material: _____

Size: _____

of pipes: _____

Inspection

condition

Channel: Scour & erosion _____

: Debris & plugging _____

Culvert: Pipe _____

: Inlet _____

: Outlet _____

: Cover _____

Roadway: Pavement _____

: Shoulders _____

: Embankment _____

Recommendations and notes: _____

Appendix B - Temporary Easement

TEMPORARY EASEMENT CONSENT TO ENTER AND DO WORK

I/We, _____ [Name(s) of property owner(s)],
for the consideration of \$1 (payment waived) grant to TOWN OF ANYTOWN, the right to
enter my/our property at _____ [Location of property] to do
the following work in connection with the TOWN OF ANYTOWN highway system:

The _____ [Name of municipality] may enter upon the property described above
within _____ [Number of] days/weeks/months (circle one) of the date of this temporary
easement, after which this easement shall automatically terminate.

The _____ [Name of municipality] will cause no unreasonable damage to the land
during the work and will restore the land to substantially the same condition as it was before
such work to the extent practical in keeping with the purpose of the work.

PROPERTY OWNER(S)

Date: _____ / _____ / _____ _____ / _____ / _____
Owner's signature(s) _____
Property owner's name(s) _____
Address _____

Phone (____) _____ (____) _____

_____ [NAME OF MUNICIPALITY REPRESENTATIVE]

Date: _____ / _____ / _____
Signature _____
Municipal representative name _____
Title _____

Appendix C - Bibliography

AASHTO Maintenance Manual, American Association of State Highway and Transportation Officials, 1987

Asphalt Pavement Repair Manual of Practice, SHRP-H-348, 1993

Basics of a Good Road, Cornell Local Roads Program, 1996, CLRP #96-5

Concrete Pipe Design Manual, American Concrete Pipe Association, 1987

Culvert Design, Reagan Engineering Associates, 1996

Culvert Inspection Manual, FHWA-IP-86-2

Culvert Repair and Rehabilitation, Reagan Engineering Associates, 2002

Culvert Repair Practices Manual, FHWA-RD-94-096

Drainage, National Association of County Engineers, Volume XIV, 1972

Drainage Design Manual for New York State, Cornell University Department of Agricultural Engineering, 1974

Drainage, Drainage, Drainage, Maine Local Roads Center, 1993

Drainage of Surface Waters, Darrell Harp, New York State Department of Transportation, 1996

Effects of Drainage Design on Road Performance, Vermont Local Roads Program, 1984

Erosion and Sediment Control Field Notebook, New York Contractors—Soil and Water Conservation Society

A Guide to: Conservation Plantings on Critical Areas for New York State, USDA, Soil Conservation Service, Syracuse, NY, June 1991

Geotextile Selection and Installation Manual for Rural and Unpaved Roads, FHWA-RT-89-050

Gravel Quick Bite, Cornell Local Roads Program, Technical assistance on-line, www.clrp.cornell.edu/TechAssistance/tipSheets.htm

Gravel Roads Maintenance and Design Manual, South Dakota LTAP Center, 2000

Guidelines for Geometric Design of Very Low-Volume Local Roads, AASHTO, 2001

Guiderail III, New York State Department of Transportation, Albany, 1990

Handbook of Culvert and Drainage Practice, The Lakeside Press, R. R. Donnelley & Sons Co., 1937

Highway Drainage Guidelines, American Association of State Highway and Transportation Officials, 1992

Highway Superintendents Roads and Water Quality Handbook, Cornell Cooperative Extension, 1996

Hydraulic Design of Highway Culverts, FHWA-IP-85-15

Managing Nuisance Beavers Along Roadsides: A Guide for Highway Departments, Cornell Local Roads Program, 2000

New York Guidelines for Urban Erosion and Sediment Control, Soil and Water Conservation Society, 1991

Nuggets and Nibbles, Cornell Local Roads Program, Volume XV #3, 1996

Road Design and Maintenance Handbook: Techniques for Reducing Flood Damage to Local Roads, Vermont Local Roads Program, 1995

Road Drainage, Transportation Information Center, UW-Madison, Department of Engineering Professional Development, 432 N. Lake St., Madison, WI 53706

Road Safety Fundamentals, Cornell Local Roads Program, 2002, CLRP #02-7

Roadway and Right-of-Way Maintenance, New York State Department of Environmental Conservation-Division of Water, 1994

Soil Erosion: The Work of Uncontrolled Water, U. S. Department of Agriculture Soil Conservation Service, 1971

Standard Specifications: Construction and Materials, New York State Department of Transportation, 2001

Summary of New York State Drainage Law, Cornell Cooperative Extension Information Bulletin 195, 1983

Surveying Methods for Local Highway Departments, Cornell Local Roads Program, CLRP #94-5

Upgrading Your Roads, Cornell Local Roads Program, Report #92-6

VIDEOS (contact the Cornell Local Roads Program to borrow the following videotapes)

Basic Principles for Proper Installation of Corrugated Steel Drainage Structures, NCSPA

Frost Action in Soils, CRREL

Weather and Loads: The Effect They Have on Roads, Minnesota LRRB/Minnesota DOT

Appendix D - Resources

**American Association of State
Highway and Transportation Officials**
(AASHTO)
444 N. Capital Street, NW (Suite 225)
Washington, D. C. 20001
(202) 624-5800

American Concrete Pipe Association
222 W. Las Calinas Blvd.
Suite 641
Irving, TX 75062
(972) 506-7216

American Public Works Association
(APWA)
Kansas City, MO
(816) 472-6100

**American Road and Transportation
Builders Association (ARTBA)**
The ARTBA Building
1010 Massachusetts Ave., NW
Washington, DC 20001
(202) 289-4434

Association of Towns
146 State Street
Albany, NY 12207
(518) 465-7933

Better Roads Magazine
(subscription free to public works officials)
PO Box 558
Park Ridge, IL 60068
(312) 693-7710

Cornell Local Roads Program
416 Riley-Robb Hall
Cornell University
Ithaca, NY 14853-5701
(607) 255-8033

Corrugated Polyethylene Pipe Association
1446 Durham St.
Oakville, Ontario, Canada L6J2P3
(800) 510-CPPA

Department of Environmental Conservation
625 Broadway
Albany, NY 12233-3508
(518) 402-9167

Dig Safely New York
3650 James Street
Syracuse, NY 13206
(see page 33 for phone numbers)

National Association of County Engineers
(NACE)
440 First Street, NW
Washington, D.C. 20001
(202) 393-5041

**New York State Association of Town
Superintendents of Highways, Inc.**
4294 Crains Mills Road
Truxton, NY 13158
(607) 842-6458

**New York State Conference of Mayors and
other Municipal Officials (NYCOM)**
119 Washington Avenue
Albany, NY 12210
(518) 463-1185

**New York State County Highway
Superintendents' Association**
29 Elk Street, Suite 200
Albany, NY 12207
(518) 465-1694

Public Works Magazine
(free to public works officials)
Box 688
Ridgewood, NJ 07451
(201) 445-5800

Roads and Bridges Magazine
(subscription free to public works officials)
380 E. Northwest Highway
Des Plaines, IL 60016-2282
(708) 298-6622

Appendix E - NYSDOT Regional Offices

Region 1

84 Holland Avenue
Albany, NY 12208
(518) 474-6178

Region 2

207 Genesee Street
Utica, NY 13501
(315) 793-2447

Region 3

333 E. Washington Street
Syracuse, NY 13202
(315) 428-4351

Region 4

1530 Jefferson Road
Rochester, NY 14623
(716) 272-3300

Region 5

125 Main Street
Buffalo, NY 14203
(716) 847-3238

Region 6

107 Broadway
Hornell, NY 14843
(607) 324-8404
30 West Main Street

Region 7

317 Washington Street
Watertown, NY 13601
(315) 785-2333

Region 8

4 Burnett Boulevard
Poughkeepsie, NY 12603
(914) 431-5750

Region 9

State Office Building
44 Hawley Street
Binghamton, NY 13901
(607) 721-8116

Region 10

State Office Building
Veterans Highway
Hauppauge, NY 11788
(516) 952-6632

Region 11

Hunters Point Plaza
47-40 21st Street
Long Island City, NY 11101
(718) 482-4526
Hunters Point Plaza
Long Island City, NY 11101
(718) 482-4533

Main office information:

New York State Department of Transportation
5-504 Harriman State Office Campus
1220 Washington Avenue
Albany, New York 12232
(518) 457-4422
Web page: <http://www.dot.state.ny.us/info/info.html#org>

NYSDOT Plan Sales Office:

For contract specifications contact (518) 457-2124, or visit the Web site:
www.dot.state.ny.us/pubs/publist.html

Appendix F - NYS Soil and Water Conservation Districts

NYS Soil and Water Conservation Committee

(518) 457-7923

Albany	(518) 765-7923	Niagara	(716) 434-4949/0359
Allegany	(716) 268-7831 ext. 102	Oneida	(315) 736-3334/3335
Broome	(607) 724-9268	Onondaga	(315) 677-3851/3853
Cattaraugus	(716) 699-2326/2327	Ontario	(716) 396-1450/1455
Cayuga	(315) 252-4171/0793	Orange	(914) 343-1873/3811
Chautauqua	(716) 664-2355	Orleans	(716) 589-5959/6504
Chemung	(607) 739-4392/2009	Oswego	(315) 343-0040
Chenango	(607) 334-4632/8634	Otsego	(607) 547-8337
Clinton	(518) 561-4616	Putnam	(914) 878-7918
Columbia	(518) 828-4386/4441	Rensselaer	(518) 271-1740/1764
Cortland	(607) 753-0851	Rockland	(914) 364-2667
Delaware	(607) 865-7161/7090	St. Lawrence	(315) 386-3582/4465
Dutchess	(914) 677-8011/8199	Saratoga	(518) 885-6900/6300
Erie	(716) 652-8480/8830	Schenectady	(518) 399-6980/5040
Essex	(518) 962-8225	Schoharie	(518) 234-4092
Franklin	(518) 483-4061/1132	Schuyler	(607) 535-9650/7596
Fulton	(518) 762-0077	Seneca	(315) 568-4366/2585
Genesee	(716) 343-2362	Steuben	(607) 776-7398 ext. 202
Greene	(518) 622-3620	Suffolk	(516) 727-2315
Hamilton	(518) 548-3991	Sullivan	(914) 292-6552
Herkimer	(315) 866-2520	Tioga	(607) 687-3553/2240
Jefferson	(315) 782-2749/2671	Tompkins	(607) 257-2737
Lewis	(315) 376-6122	Ulster	(914) 883-7162 ext. 202
Livingston	(716) 382-3214/3215	Warren	(518) 623-3119
Madison	(315) 684-9577	Washington	(518) 692-9940
Monroe	(716) 473-2120	Wayne	(315) 946-4136/4137
Montgomery	(518) 853-4015	Westchester	(914) 285-4422/4412
Nassau	(516) 454-4872/0900	Wyoming	(716) 786-5070
New York City	(212) 637-3877	Yates	(315) 536-5188

Appendix G - Glossary

AASHTO — American Association of State Highway Transportation Officials

Acre-Foot — The quantity of water required to cover 1 acre to a depth of 1 foot and is equal to 43,560 cubic feet or about 326,000 gallons.

Allowable Headwater Depth — The maximum depth of water impoundment for a drainage facility above which damage, some other unfavorable result, or a significant flood hazard could occur.

Apron — Protective material laid on a streambed to prevent scour commonly caused by a culvert or other drainage facility. More specifically, a floor lining of such things as concrete or rip-rap to protect a surface from erosion, such as the pavement below chutes, spillways, at the toes of dams, or at the outlet of culverts.

Backfill — The material used to refill a ditch or other excavation, material placed adjacent to, or around a drainage structure, or the process of doing so.

Bank — The side slopes of a channel between which the stream or river is normally confined.
Basin, detention — A basin or reservoir incorporated into the watershed whereby runoff is temporarily stored, thus lowering the maximum flow of a watershed.

Bedding — Soil or materials used to support the bottom of a culvert pipe and spread the load into the surrounding ground.

Berm — A narrow shelf or ledge; also a form of dike.

Buoyancy — Upward force exerted on a pipe by water which may cause pipes to float.

Capacity — A measure of the ability of a channel or conduit to convey water.

Catch basin — A structure, sometimes with a sump, for inletting drainage from such places as a gutter or median and discharging the water through a culvert. Also referred to as a “drop inlet”.

Channel — The bed and banks that confine the flow of surface water in a natural stream or ditch

Channel lining — The material applied to the bottom and/or sides of a natural or man-made channel. Material may be concrete, sod, grass, rock, or any of several other types of commercial linings.

Check dam — A low structure, dam or weir, across a channel for the control of water velocity.

Civil Law Doctrine or Rule — A rule of law pertaining to the disposal of drainage waters, under which the owner of higher land has the right or easement to dispose of the surplus or excess waters from his lands to lower lands. Compare with Common Law.

Clay — Material passing the No. 200 (0.074 mm) U.S. Standard Sieve that exhibits plasticity (putty-like properties) within a range of water contents and has considerable strength when air-dry (Unified Soil Classification System)

Common Law — As distinguished from “Roman” or “Civil” law, the body of unwritten law based on long-standing usages and customs and the court decisions and decrees recognizing, affirming, and enforcing such usages and customs. Compare with Civil Law.

Corrosion — The deterioration of pipe or structure by chemical action.

Cover — The depth of backfill above the top of a culvert.

Culvert — A structure used to convey surface runoff under such things as a highway or driveway. By definition, a structure of less than 20-foot span as measured along the road centerline is classified as a culvert. Typically prefabricated and available in standard sizes.

Cutoff wall — A wall, collar, or other structure intended to reduce percolation of water along culvert sides.

Debris — Any material transported by the stream, either floating or submerged, such as logs, brush, suspended sediment, bed load, or trash that may lodge against a structure.

Design discharge — The maximum rate of flow (or discharge) for which a drainage facility is designed and thus expected to accommodate.

End section — A structure, commonly made of concrete or metal, that is attached to the end of a culvert spilling into the waterway, improving the appearance, providing anchorage, improving the discharge coefficient, and limiting some scour.

Erosion — Displacement of soil particles on the land surface due to water or wind action.

FEMA — Federal Emergency Management Agency

Fines — Silts and clays. Material which pass through a #200 sieve.

Flood — An event that overflows the normal flow banks or runoff that has escaped from a channel or other surface waters. An overflow or inundation that comes from a river or other body of water and causes or threatens damage.

Flow line — Line connecting the invert of the inlets and outlets of pipes.

Groundwater — Subsurface water from which wells and springs are fed.

Headwall — The structure usually applied to the end of a culvert inlet and outlet or storm drain outlet to retain an adjacent highway embankment and protect the culvert ends and highway embankment from erosion and scour.

Headwater depth — Depth of water above the inlet flow line at the entrance of a culvert or similar structure. Natural flow depth plus backwater caused by a drainage structure

Highwater mark — A mark left as evidence of the height to which a flood reached; usually in the form of such things as deposited sediment, debris, and detritus.

Hydraulics — In highway drainage, the science addressing the characteristics of the flow of water in or through drainage facilities.

Hydrograph — A graph showing, the discharge, velocity or other property of water with respect to time.

Hydrology — The science and study concerned with the occurrence, circulation, distribution, and properties of the waters of the earth and its atmosphere, including precipitation, runoff, and groundwater.

Inlet control — A condition where the relation between headwater elevation and discharge is controlled by the upstream end of any structure through which water may flow.

Inlet, flared — A specially fabricated culvert end appurtenance at the inlet and outlet, or a special end feature of box culverts where the walls flare outward from the culvert sides at the culvert inlet and outlet. It serves to retain the roadway embankment.

Invert — The flow line in a channel cross section, pipe, or culvert.

Land use — A term which relates to both the physical characteristics of the land surface and the human activities associated with the land surface.

Outlet control — A condition where the relation between headwater elevation and discharge is controlled by the conduit, outlet, or downstream conditions of any structure through which water may flow.

Peak discharge — The highest value of the stage or discharge attained by a flood; thus, peak stage or peak discharge. Maximum discharge of a particular flood at a given point along a stream.

Permeability — The property of a material that measures the movement of water through it when it is saturated.

Piping — The action of water passing through or under an embankment and carrying some of the finer material with it to the surface at the downstream face. Removal of soil material through subsurface flow or seepage water that develops channels or “pipes” within the soil bank.

Precipitation — The total measurable supply of water received directly from clouds, as rain, snow, and hail.

Rational Formula — An empirical equation for estimating the flood discharge given as $Q = C \cdot I \cdot A$, where Q = peak discharge, C = a runoff coefficient, I = rainfall intensity in inches per hour for a duration equal to the concentration time of the basin, and A = area of basin in acres. This formula is based on approximation that one in/hr/acre equals one cubic feet per second (cfs).

Revetment — Rigid or flexible armor placed on a bank or embankment as protection against scour and lateral erosion.

Riparian rights — The right of the owners of lands along a watercourse, relating to such things as water, its use, and ownership of soil under the stream or river. The legal right of a riparian owner to use the water on his riparian land originated in the common law, which permitted him to require that the waters of a stream or river reach his land undiminished in quantity and unaffected in quality except for minor domestic uses.

Rip-rap — Stones, masonry, or similar man-made material such as broken concrete placed in a loose assemblage along the banks and bed of a channel to inhibit erosion and scour.

River — Natural stream of water of considerable volume.

Roadside — A general term denoting the area adjoining the outer edge of the roadway.

Roughness coefficient — Numerical measure of the frictional resistance to flow in a channel.

Runoff — The portion of precipitation that appears as flow in streams; total volume of flow of a stream during a specified time.

Runoff coefficient — A factor representing that percentage of rainfall which reaches a drainage location. Dependent on terrain and topography.

Sand — Soil material that can pass the No.4 (4.76mm) U.S. Standard Sieve and be retained on the No.200 (0.074 mm) sieve.

Scour — The displacement and removal of channel bed or other material due to flowing water, usually considered as being localized.

Sedimentation — The process involving the deposition of soil particles which have been carried by flood waters.

Shoulder — The portion of the roadway contiguous with the traveled way for accommodating stopped vehicles, for emergency use, and for lateral support of the road's base and surface courses.

Silt — Material passing the No. 200 (0.074 mm) U.S. Standard Sieve that is nonplastic or very slightly plastic and exhibits little or no strength when air-dried (unified Soil Classification System).

Slope — A measure of the steepness of a bank or terrain. Usually expressed as a ratio of one unit of rise to a given number of units of run or horizontal distance. As an example, a 1:2 slope rises 1 foot for every 2 feet of run.

Soil — Finely divided material composed of disintegrated rock mixed with organic matter; the loose surface material in which plants grow.

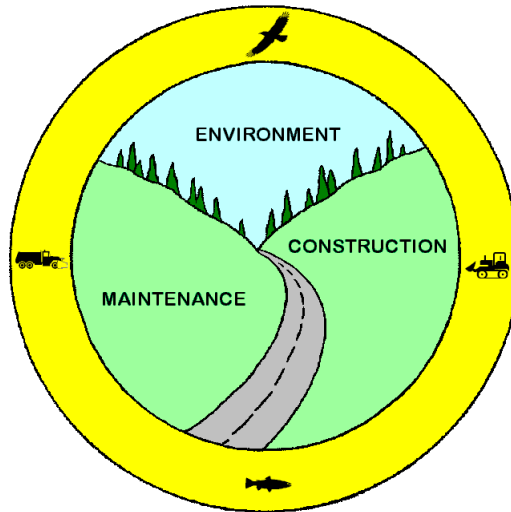
Stream — A general term for a body of flowing water.

Swale — A wide, shallow ditch usually grassed or paved and without well-defined bed and banks. A slight depression in the ground surface where water collects, and which may be transported as a stream.

Time of concentration — The estimated time required for runoff to flow from the most remote section of the drainage area to the point at which the discharge is to be determined. Stated another way, the time it takes water from the most distant point (hydraulically) to reach a watershed outlet.

Velocity, permissible — The highest velocity at which water may be carried safely in a channel or other conduit without channel bed scour or bank erosion.

Watershed — The contributing drainage area for runoff to a point.



Environmental Handbook for Transportation Operations

**A Summary of the Environmental Requirements and
Best Practices for Maintaining and Constructing
Highways and Transportation Systems
June 2011**

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



Prepared by: NYSDOT Environmental Science Bureau (ESB)

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NYSDOT Environmental "Yellow Page"

Points of contact within the region and main office to assist with environmental issues.

Fill in the names and phone numbers of the Regional Landscape Architecture/Environmental Services Unit (RLA/ESU) and other environmental staff. The regional contact lists are maintained on the Intradot ESB site under regional contacts.

Regional Environmental Contact (REC):

Regional Cultural Resource Coordinator (CRC):

Regional Landscape Architect (RLA):

Regional Maintenance Environmental Coordinator (MEC):

Regional Hazardous Waste Contact:

Regional Construction Environmental Coordinator (CEC):

Regional Health and Safety Representative:

Regional Scenic Byway Coordinator (SBC):

Other NYSDOT Phone Numbers

Employee Safety and Health (Main Office)	(518) 457-2420
Environmental Science Bureau (ESB) (Main Office)	(518) 457-5672
Landscape Architecture Bureau (LAB) (Main Office)	(518) 457-5672
Facilities Engineer – Main Office Trans. Maintenance	(518) 457-6435
Petroleum Bulk Storage Manager – Rick McKeon	(518) 457-6912
Maintenance Env. Program Manager – John Rowen	(518) 457-4469

Other Phone Numbers

NYSDEC Spill Hotline – within NYS	(800) 457-7362
– outside NYS	(518) 457-7362

RESOURCE/REGULATORY AGENCIES AND TERMS ACRONYMS/ABBREVIATIONS

APA: Adirondack Park Agency

BMP: Best Management Practice

C&D Waste: Construction and Demolition Waste

CEC: Construction Environmental Coordinator

CFR: Code of Federal Regulation

CMP: Corridor Management Plan

CRC: Regional Cultural Resource Coordinator

ESB: NYSDOT Environmental Science Bureau

ECL: Environmental Conservation Law

EPA: United States Environmental Protection Agency

FHWA: Federal Highway Administration

HDDV: Heavy Duty Diesel Vehicle

Kg: Kilogram (2.2 pounds)

MEC: Maintenance Environmental Coordinator

MOU: Memorandum of Understanding

M&PT: Maintenance and Protection of Traffic

MSDS: Material Safety Data Sheet

NYCDEP: New York City Department of Environmental Protection

NYCMA: New York City Metropolitan Area (Includes all of New York City and Nassau, Suffolk, Westchester, Rockland Counties, and lower Orange County for air regulatory issues)

NYCRR: Official Compilation of Codes, Rules and Regulations of the State of New York

NYS: New York State

NYSDEC: New York State Department of Environmental Conservation

NYSDOL: New York State Department of Labor

NYSDOT: New York State Department of Transportation

NYSSBAB: New York State Scenic Byways Advisory Board

OPRHP: New York State Office of Parks, Recreation and Historic Preservation

OSHA: U. S. Occupational Safety and Health Agency

PBS: Petroleum Bulk Storage

RSBC: Regional Scenic Byways Coordinators

RLA/ESU: Regional Landscape Architecture/Environmental Services Unit

ROW: Right-of-Way

SHPO: State Historic Preservation Office

SEQR: State Environmental Quality Review

SPDES: State Pollutant Discharge Elimination System

TCLP: Toxicity Characteristic Leaching Procedure

TEM: The Environmental Manual

USACE: United States Army Corps of Engineers

USC: United States Code

VOC: Volatile Organic Chemical

1 INTRODUCTION

The New York State Department of Transportation (NYSDOT) is firmly committed to environmental excellence in providing a safe, efficient, balanced, and environmentally sound transportation system in the State of New York. Achieving this mission requires NYSDOT to conduct maintenance, manage equipment, and perform construction activities appropriately to prevent and/or minimize adverse impacts to the environment.

1.1 Use of This Guidance by NYSDOT

The NYSDOT must ensure compliance with various and complex federal and state environmental regulations covering all aspects of the environment. This handbook is intended to provide NYSDOT personnel with general awareness and guidance of the primary requirements that apply to the types of activities conducted by NYSDOT Operations. It is not intended to substitute for the actual regulations and interpretations by the environmental units that may be required for specific issues but, rather to serve as a summary of typical issues and as a flag for certain issues that may require more assistance from the Maintenance or Construction Environmental Coordinator (MEC and CEC, respectively), Regional Landscape Architecture/Environmental Services Unit (RLA/ESU) and/or other appropriate resource personnel.

NYSDOT Operations activities are typically associated either with work conducted along the right-of-way (ROW) or as facility-based activities conducted at a residency or shop. In general, the environmental requirements are described in the context of the operation or type of facility or equipment most affected by the issue. The requirements, however, may affect multiple activities and operations and cross reference may be required. Since regulations and activities are frequently changing, this handbook is intended to be a working document that is updated periodically.

1.2 Use of This Guidance by Entities other than NYSDOT

This guidance has been developed based on the typical activities, experiences and procedures of the NYSDOT. It includes specific internal procedures of the NYSDOT and does not include requirements for activities and facilities not typically present within the NYSDOT.

Although this is a NYSDOT guidance document, other transportation agencies including county and town highway departments, other maintenance operations and entities may find the information helpful and useful. Users should consider the applicability of the cited regulatory requirements and procedures that were developed based on NYSDOT experiences and adapt them to their own specific operations.

For instance, interagency MOUs or other agreements referenced in the guidance have been negotiated between NYSDOT and the regulatory agencies. These MOUs are specific to NYSDOT and may not apply to other entities. Likewise, NYSDOT established its own implementing regulations for SEQR; other state actions must comply with statewide SEQR requirements. Specific characteristics of wastes must be considered, as waste classifications discussed in this guidance are based on experience specific to the products and processes of the NYSDOT.

NYSDOT internal resource personnel are referenced where applicable within the guidance. Non-NYSDOT entities should consult the appropriate regulatory/resource agency personnel for further information and specific questions on their specific activities.

2 GENERAL WORK ON THE RIGHT-OF-WAY (ROW)

This section addresses general work typically conducted on the ROW, including excavation, filling, de-icing, snow removal, clearing vegetation, and storing/using materials.

2.1 Work In or Near Wetlands

Work in or near wetlands in New York State is regulated by the NYSDEC, the U.S. Army Corps of Engineers (USACE), and if inside the Adirondack Park, the Adirondack Park Agency (APA). There are many different types of wetlands. Wetlands may not always appear to be wet, may hold ponded water only for brief periods in the spring and appear dry during other times. If work needs to be performed in or adjacent to potential wetland areas, contact the MEC to review maps that show the approximate locations of all state-regulated wetlands and some federally-regulated wetlands. However, these maps are not always accurate or up-to-date and must be verified in the field. Contact the MEC for assistance.

2.1.1 State wetlands

A permit is required from the NYSDEC, or APA inside the Adirondack Park, for certain activities. State-regulated freshwater wetlands are generally 12.4 acres (5 hectares) or larger; inside the Adirondack Park, however, there is no minimum size limit. Tidal wetlands, found in NYSDOT Regions 10, 11 and south of the Tappan Zee Bridge (Reg. 8), also have no minimum size limit. State-regulated wetlands are mapped by NYSDEC (or APA inside Adirondack Park).

Contact the MEC for assistance in determining state permit requirements if conducting any of the following activities in or within 30 meters (legally 100 feet) of a state-regulated freshwater wetland, or in or within 90 meters (legally 300 feet) of a state-regulated tidal wetland:

- Draining, filling, excavating, or grading;
- Constructing new structures or modifying or expanding existing structures;
- Clear-cutting vegetation;
- Stockpiling or staging material;
- Building access roads;
- Storing chemicals; or
- Applying pesticides.

Normal maintenance activities are exempt if the action does not involve any of the above activities. For example, repairing an existing ROW fence in a state-regulated wetland is exempt from a permit but, constructing a new fence is not. Another example: cleaning a ditch that is within 30 meters (100 feet) of a state-regulated wetland to previous elevation and alignment is exempt from a permit, but disposing of the excavated material within 30 meters (100 feet) of a state-regulated wetland is not.

ECL Article 24 regulates activities in and within 100 feet of state-regulated freshwater wetlands. ECL Article 25 regulates activities in and within 300 feet of state-regulated tidal wetlands.

2.1.2 Federal wetlands

A USACE permit is required for the discharge of dredged or fill material into all freshwater and tidal wetlands, regardless of size. Contact the MEC for assistance in determining federal permits requirements if conducting any of the following activities in any wetland, regardless of size:

- Filling, excavating, or grading;
- Dredging;
- Storing, stockpiling, or staging material; or

- Constructing new structures or access roads, or modifying or expanding existing structures.

Many normal maintenance activities can be covered under USACE Nationwide Permits, if NYSDOT fully complies with all general and regional permit conditions. Specifically, maintenance activities often comply with the terms and conditions of USACE Section 404 Nationwide Permit Number 3 - Maintenance. Refer to Appendix A for guidance regarding maintenance ditch cleaning, culvert cleaning, bank stabilization/scour protection activities and associated cofferdam use pursuant to Nationwide Permit Number 3 - Maintenance (Note: The guidance reflects specific agreements to NYSDOT that may not be applicable to other entities). Consult with the MEC to ensure that the activity complies with all permit conditions.

Section 404 (33USC 1244) of the Clean Water Act regulates filling and excavation in federal-jurisdictional wetlands which must be evaluated in accordance with the 404(b)(1) guidelines.

2.2 Work In or Near Streams and Waterbodies

The USACE regulates filling or excavating in any water of the United States, including creeks, streams, rivers, ponds and lakes. NYSDEC regulates the disturbance of the "bed or banks" of any stream that is capable of supporting trout. These streams will be classified by NYSDEC as C(T) or higher (AA, AA(T), A, A(T), B, B(T) and C(T)). "Banks" can include all landward areas within 15 meters (legally 50 feet) of the mean high water line. NYSDEC also regulates the excavation or placement of fill in any NYSDEC navigable water or adjacent wetlands. Waters are considered navigable by NYSDEC if they are "navigable by a vessel with a capacity of one person," even if only seasonally (these streams can have very low flows). Consult with the MEC or contact NYSDEC to determine the stream classification.

In addition, NYSDEC regulations include state Water Quality Standards for turbidity, oil and other substances that apply to all surface waters. For example, the standard for turbidity is "No increase that will cause a substantial visible contrast to natural conditions".

Although NYSDOT is not required to obtain Article 15 permits from NYSDEC, a long-standing MOU between NYSDOT and NYSDEC requires that all NYSDOT construction and maintenance activities in or adjacent to streams be coordinated with NYSDEC to protect water quality, fish and wildlife and aquatic habitat (this MOU applies to NYSDOT projects only; all non-NYSDOT construction and maintenance activities in or adjacent to protected streams require an Article 15 permit from NYSDEC). In addition, the removal of accumulated sediment from streams may be regulated by the USACE. Contact the MEC, at least 3 months in advance, if planning or conducting work in or adjacent to streams or other water bodies.

Section 404 of the federal Clean Water Act regulates filling and excavation in any water of the United States. Section 10 of the Rivers and Harbors Act, 1899, regulates filling in federally designated navigable waters. Article 15-0501 and 6 NYCRR Part 608.2 regulate disturbance of the bed and banks of state-protected streams. Article 15-0505 and 6 NYCRR Part 608.5 regulate activities in state designated navigable waters or adjacent wetlands; 6 NYCRR Part 703.2 sets the state Water Quality Standards for turbidity, oil and other substances.

2.3 Work At or Adjacent to Cultural Resources

Maintenance activities have the potential to affect cultural resources when they involve ground disturbance in previously undisturbed soils; repair, removal, replacement or relocation of objects within the right-of-way; or work on or adjacent to culverts and streams. These types of activities may be subject to compliance with Federal and State historic preservation regulations that require the

Department to take into account the effect of its actions on both known and as yet unidentified cultural resources.

Contact the Regional MEC or CRC for assistance. The CRC may need to screen for cultural resources, assess measures to avoid or minimize impacts, and determine appropriate treatment.

Examples of maintenance activities that may affect cultural resources include but are not limited to:

- Slope stabilization;
- Shoulder & pavement widening;
- Repair or relocation of retaining walls;
- Scour protection;
- Dredging;
- Work to drainage channels and ditches;
- Replacing or extending culverts;
- Waste material and staging area sites;
- Earthwork occurring in undisturbed soils;
- Mature tree or vegetation removal;
- Repair, restoration or removal of sidewalks, lights, guide rails, signs, fences or stone walls; or
- Cut and fill activities.

Cultural resources include a variety of historic properties, at least 50 years old, meeting the criteria for listing on the National Register of Historic Places. Historic property types include:

Building - Constructed for human activity (house, school, church). The historic property may include the historic building and associated landscape features within a designed or legally defined parcel of land.

Structure - Functional construction for purpose other than human shelter (bridge, culvert, barn, dam, earthworks).

Object - Primarily artistic in nature, small in scale or simply constructed (mile markers, historic markers, signs, fountains, statuary, sculpture). Although objects may be moveable, they are associated with a specific setting or environment.

Site - Location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, which may be standing, ruined, or vanished (battlefield, cemetery site, mill site, prehistoric village). Archaeological sites often are not marked by physical remains visible on the ground surface.

District – A concentration of buildings, structures, objects, and/or sites united by plan or physical development. The relationship of buildings to each other, setbacks, fence patterns, views, driveways and walkways, and street trees together may contribute to the historic significance of a district. (Residential areas, industrial complexes, rural historic districts, historic transportation networks including railroads, canals, roads, and parkways).

Parkways - New York State has many historic parkways, eligible for or listed in the National Register of Historic Places.

Canals - The New York State Canal System has been determined eligible for listing on the National

Register.

Maintenance activities have the potential to affect the setting or landscape elements associated with historic properties. The setting as a whole, or individual components, may contribute to the significance of historic properties. The CRC should be consulted when activities involve work on or adjacent to contributing structures, objects and landscape elements associated with the setting of historic properties. Examples include:

- Fences
- Walls
- Sidewalks
- Mature Trees
- Light Posts

The Regional CRC should be consulted when repair of historic structures or objects is needed.

2.3.1 Recommended Treatments at Historic Properties

Work at or adjacent to historic properties should strive to retain and preserve the historic character that contributes to the significance of the resource. In general, the likelihood of impacting historic properties can be minimized by the following practices:

- Erosion prevention;
- Protection of fragile soils, slopes and land forms;
- Limits on encroachment by vehicles and equipment;
- Limits on grading, cut and fill; and
- Limits on removal of mature trees or vegetation associated with designed landscapes, unless the tree or trees are hazardous or pose sight distance concerns.

When necessary, limited replacement in-kind is recommended for repair of structures and objects with deteriorated or missing features or parts, based on the original. Although using the same kind of material is preferred, substitute material may be acceptable if the form, design, and material itself convey the visual appearance of the remaining parts of the feature and finish.

If historic objects must be temporarily moved or permanently relocated, the recommended treatment is to reset the object as close as possible to its original location. For additional guidance on the maintenance of NYS Historic Markers, refer to the NYS Museum web site:

<http://www.nysm.nysed.gov/services/marker/srvmarker.html>

2.3.2 Routine Maintenance for Historic Bridges

Maintenance work on bridges and culverts built after 1961 do not require review unless these activities will disturb the adjacent ground or stream bank. For highway bridges built prior to 1961, contact the MEC or CRC to determine if the bridge is historic. Preventative or routine maintenance activities on historic bridges are generally exempt from further review.

Routine bridge maintenance and repair actions include:

- Repair or replacement of bridge decking and bridge expansion joints with the same or similar materials;
- Cleaning scuppers or other drainage conveyances;
- Modifications of expansion joints;
- Maintenance and repair of pedestrian railing when the existing rail is a contributing element;
- Maintenance of bridge bearings, including lubrication;

- Repair or replacement of steel beam plates and/or bridge bearings with the same or similar materials;
- Repair of cracks in superstructure and substructure with the same or similar materials;
- Replacement of steel caps, protective jackets, and dolphins;
- Repairs to abutments using the same or similar materials, where no excavation is proposed;
- Replacement of truss members using new members of the same size, profile, and appearance as the original members. The method for attaching the new members will retain the appearance of the original attachment system (e.g., rivets may be replaced with button-headed or dome-headed bolts);
- Repainting of metal structure or components of either superstructure or substructure to match existing color;
- Tightening of loose diagonals and lateral bracing on metal truss bridges;
- Pressure washing and cleaning of structure. Removal of debris from channels around piers and abutments; or
- Repair of damage to substructure due to scour.

For historic bridges, replacement of structural members or repairs, other than those listed above, may require review. The Regional Bridge Maintenance Engineer may determine that coordination with the CRC is needed if proposed work has the potential to affect the historic significance of the bridge.

For canal bridges, Appendix C of the Programmatic Agreement for Canal Bridges of the New York State Canal System provides guidance on the Historic Bridge Preventative Maintenance Program. This program applies to NYSDOT owned historic bridges on the historic canal system as long as the bridge remains in state ownership. Proposed treatments include cyclical actions, non-intrusive actions to enhance safety, and corrective repairs. Contact the Regional Bridge Maintenance Engineer or CRC for additional information.

2.3.3 If Cultural Resources or Human Remains are Discovered

In the event that potential grave sites, human remains, buried walls, or suspected artifacts are encountered during maintenance activities, suspend work immediately, protect the location from further disturbance, and contact the MEC. In coordination with the CRC, a decision will be made for appropriate action.

Projects which have federal involvement (i.e. funding, permit, license, approval) and the potential to affect cultural resources must comply with Section 106 of the National Historic Preservation Act of 1966. Section 14.09 of the NYS Historic Preservation Act applies to activities with state funding and no federal involvement.

2.4 Soil, Rock and Other Mineral Removal

A mined land permit from NYSDEC is required if more than 1,000 tons or 575 cubic meters (legally 750 cubic yards), whichever is less, of mineral material is “mined” within twelve consecutive months from a single source. Removal of any quantity of gravel or sand from streams, however, requires a Section 404 permit from the USACE and approval from the NYSDEC fisheries staff and therefore should be coordinated with the MEC (See 2.2 - *Work In Or Near Streams or Waterbodies*).

Excavations, grading, or moving of earth materials integral to the direct construction of a project are excluded from the definition of “mining” and do not require a mined land permit. A mined land-use plan including a reclamation plan is required for a permit application. For contractor-constructed projects, the NYSDOT contract documents and specifications can satisfy the requirements of the mined land-use plan. NYSDOT is responsible for ensuring that the sources are reclaimed in

conformance with mined-land use reclamation requirements.

The Mined Land Reclamation requirements are at 6 NYCRR Parts 420-426. Sections 107-10 and 11 of the Contract Administration Manual outline procedures for restoration of disturbed areas.

2.5 Diesel Vehicle Operation

Exhaust gases from diesel-engine trucks contain air pollutants. Diesel-engine trucks are not allowed to idle for more than five (5) minutes except when:

- The vehicle is forced to remain motionless due to traffic conditions that the operator has no control over;
- The vehicle is forced to remain motionless as part of a State authorized periodic or roadside diesel emissions inspection;
- The vehicle or piece of equipment is being used to provide power for an auxiliary purpose. Auxiliary purposes may include loading or unloading cargo, processing or mixing cargo, running secondary construction and maintenance equipment, etc.;
- Operation of the engine is necessary for maintenance of the vehicle or piece of equipment;
- Operation of the engine of the vehicle or piece of equipment is necessary as part of some emergency situation; or
- The vehicle or piece of equipment is to remain motionless for a period exceeding two hours, and during which period the ambient temperature remains below 25°F.

On-road heavy duty diesel vehicles (HDDVs) powered by diesel engines with gross vehicle weight ratings exceeding 8,500 pounds designed primarily for moving people or goods must meet exhaust clarity standards. Random inspections or roadside pullover emissions tests of HDDVs operating on highways may occur anywhere within the state. In addition, HDDVs registered in the NYC Metropolitan Area must undergo annual exhaust emission inspections.

NYSDEC's Air Quality Regulation, "Vehicles Propelled by Diesel Engines Regulation," 6 NYCRR Subpart 217-3, states that diesel-engine trucks are not allowed to idle for more than five minutes when the truck is not in motion except for noted exceptions, subpart 217-5, "Heavy Duty Inspection and Maintenance Program" includes HDDV exhaust inspection requirements.

2.6 Loud Operations

Very loud noise from NYSDOT maintenance operations may contribute to temporary or permanent hearing loss for the NYSDOT employees doing the work. For information regarding this occupational exposure to very loud noises, contact the Regional Employee Safety and Health Representative or NYSDOT's Employee Safety and Health Unit, and refer to NYSDOT Safety Bulletin, SB-96-A, Hearing Conservation.

Pile drivers, rock drills, jackhammers, air compressors as well as vehicle engine noise, can create a noisy or annoying environment for nearby residents and activities. NYSDOT tries to minimize these noise levels and annoyance to the public as much as possible. Before beginning a scheduled operation that is particularly noisy, consider a public relations effort to notify the community in advance, indicate the duration of the operation, and apologize in advance for any inconvenience.

In populated areas, also consider potential noise impacts when planning the work schedule. The timing of especially noisy activities can sometimes be adjusted to take the affected residents and other particularly noise sensitive activities into account. In most cases, complaints can be reduced or eliminated by prior notification, schedule adjustment and equipment assessment in consultation with

the effected public.

In general, equipment with internal combustion engines must have a properly designed and well maintained muffler. Noise can also be reduced by operating equipment at lower speeds, increasing the spacing between pieces of equipment and minimizing the need to back-up. Noise barriers or plywood enclosures around the noise source can further be used for very noisy operations near particularly sensitive receptors. The MEC and the ESB Noise Analysis Section can help answer questions about potential noise impacts to neighbors. FHWA Regulation 23 CFR 772 applies to highway traffic and construction noise analysis.

2.7 Dust/Particulate Generating Operations

Activities that generate elevated airborne particulates (dust) can contribute to nuisance and respiratory illness concerns of the public and the employees conducting the work, as well as contribute to violations of air quality standards for particulates. Operations such as blast cleaning, jackhammering, saw cutting, scarifying, or equipment movement require the incorporation of dust suppressant measures, engineering controls, and personnel protection to prevent unhealthy localized environments for workers and the public. All abrasive blasting operations associated with bridge painting work should use Class A Containment to prevent particulate releases. Soil or debris should only be moved in vehicles with covers in good working order and whose wheels have been brushed or washed to remove excess soil. Information on employee exposure to airborne particulate can be obtained from the Regional Employee Safety and Health Representative or NYSDOT's Employee Safety and Health Unit.

2.8 Highway Work Permits

Requests are made to NYSDOT for Highway Work Permits for proposed work to be conducted on NYSDOT ROW. In reviewing permit applications, the NYSDOT must comply with SEQR (See 6 - *State Environmental Quality Review* and *TEM Chapter 4.1.2* regarding Involved Agency Responsibilities) and consider the potential impacts to environmental resources such as impacts to wetlands, surface waters, endangered species, ambient air quality standards, archeological, and historical resources as outlined in this handbook. The applicant is responsible for providing environmental assessment information and should be encouraged to develop needed information as early as possible during project development. If there are environmental questions associated with the project, contact the MEC for assistance.

2.9 Stormwater Management Related to Maintenance Activities

NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity, Permit No. GP-0-10-001

Land development projects, including transportation improvement projects, and associated increases in impervious cover can alter the hydrologic response of local watersheds and increase stormwater runoff rates and volumes, contribute to flooding, stream channel erosion, sediment transport, and deposition. This runoff contributes to increased quantities of water-borne pollutants, but can be controlled and minimized through the effective use of BMPs to mitigate the adverse impacts of stormwater runoff.

On January 28th, 2010 the NYSDEC issued the State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity, Permit Number GP-0-10-001. This document is available on the Department's Environmental Science Bureau website at:

http://axim22.nysdot.private:7779/portal/page?_pageid=39,1893018&_dad=portal&_schema=PORTAL or:
<http://www.dot.ny.gov/portal/page/portal/divisions/engineering/environmental-analysis/water-ecology/stormwater-management>

Routine Maintenance Activities

Under the SPDES General Permit GP-0-10-001, the Department is required to assess the requirements for stormwater management practices for any project that exceeds 0.4045 Ha (1 acre) of soil disturbance. Soil disturbance also includes the removal of existing paved areas (such as travel lanes, shoulders, sidewalks, driveways, or parking areas) that disturbs the bottom 150 mm (6") of subbase material, unless the work in these areas is considered routine maintenance. Routine maintenance activities, such as pavement milling and filling, placing shoulder backup material, and ditch cleaning, are not included in the disturbance calculations.

In the SPDES General Permit, "Routine Maintenance Activity" is defined as an "activity that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the facility." This includes traditional maintenance activities, such as ditch cleaning and shoulder reshaping, but also activities that meet the definition of routine maintenance that may be part of a larger construction project. Refer to Table 1 for a list of routine maintenance activities. There is currently no limit on the amount of disturbed area for maintenance activities.

Table 1 Examples of Routine Maintenance

1	Cleaning and shaping of existing ditches that maintain the approximate original line and grade, and hydraulic capacity of the ditch.
2	Cleaning and shaping of existing ditches that does not maintain the approximate original line and grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls
3	Placing of aggregate shoulder backing that makes the transition between the shoulder and the ditch or embankment.
4	Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom 150 mm (6") of subbase material.
5	Long-term use of equipment storage areas at or near NYSDOT maintenance facilities.
6	Removal of sediment at the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or embankment.
7	Existing use of Canal Corp owned upland disposal sites for the canal.
8	Replacement of curbs, gutters, sidewalks, and guide rail posts.
9	Regrading of gravel roads and parking lots.
10	Streambank restoration projects (does not include the placement of spoil material).

In addition, designers should be aware that activities done by maintenance contracts can not categorically be considered SPDES "Routine Maintenance Activities". Projects should be reviewed for SPDES permit requirements independent of NYSDOT project type classification. Those activities that are not SPDES routine maintenance activities and have soil disturbances in excess of

0.4045 Ha (1 acre) may require coverage under the SPDES General Permit.

NYSDEC SPDES General Permit for Municipal Separate Storm Sewer Systems (MS4), Permit No. GP-0-10-002

This general permit was also issued by NYSDEC on April 29, 2010 and went into effect on May 1, 2010. This document is available on the Department's Environmental Science Bureau website at:

http://axim22.nysdot.private:7779/portal/page?_pageid=39,1893018&_dad=portal&_schema=PORTAL, or:

<http://www.dot.ny.gov/portal/page/portal/divisions/engineering/environmental-analysis/water-ecology/stormwater-management>

Small MS4s are defined as separate storm sewers that are “owned or operated by the United States, a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of sewage, industrial, wastes, storm water, or other wastes...that discharges to Waters of the United States” (40 CFR 122.26(b)(16)).

Accordingly, the Department has been designated an MS4 in New York State.

Illicit Discharge Detection and Elimination

An illicit discharge is generally any discharge to a stormwater system that is not entirely composed of stormwater. Illicit discharges are considered "illicit" because stormwater systems are not designed to accommodate or treat non-stormwater wastes. Examples of illicit discharges include sanitary sewage, septic system effluent, industrial process wastewater, laundry wastewater, commercial carwash wastewater, and auto and household toxics improperly dumped into storm drains.

Illicit discharges can enter a stormwater system through:

- **Direct connections**, such as wastewater pipes either mistakenly or deliberately connected to a storm drain or outletting into a ditch; or
- **Indirect connections**, such as infiltration into the stormwater system through cracks in a sanitary sewer or substances dumped directly into a storm drain.

Either connection results in untreated discharges releasing high levels of pollutants that degrade water quality and threaten aquatic, wildlife and human health.

Discharges or connections that are discovered during construction or reconstruction of a highway facility or appurtenance should be examined and allowed only upon application for, and approval of, a Highway Work Permit. Upon completion of construction or reconstruction, the Highway Work Permit may be converted into a Use and Occupancy Permit. If there is no construction or reconstruction of a highway facility or appurtenance, the discharges or connections should be examined and allowed only upon application for, and approval of, a Use and Occupancy Permit.

Overland flow or artificially collected (e.g., in a pipe) discharges that are not stormwater or groundwater which result in flow to the state highway right of way are unacceptable because an adjacent landowner's act of creating or allowing discharges of materials onto the state's land may, among other things and without limitation, constitute a nuisance and/or trespass. See *Highway Design Manual* Chapter 8, Highway Drainage, for additional information.

One of the requirements of the NYSDEC SPDES General Permit is for the Department to document its policies regarding illicit discharge detection and elimination.

As an MS4, the Department must at a minimum comply with the following:

- a) Develop, implement and enforce a program to detect and eliminate illicit discharges (as defined at Section 122.26(b)(2)) into the MS4;
- b) Develop and maintain a map, showing the location of all outfalls and the names and location of all waters of the United States that receive discharges from those outfalls;
- c) Conduct an outfall reconnaissance inventory of every outfall once every five years;
- d) Map new outfalls as they are constructed or discovered (see Engineering Instruction 07-033 *Stormwater Outfall Mapping Inventory Guidance For Regional Data Exchange*, for additional information);
- e) Prohibit illicit discharges into the storm sewer system and implement appropriate enforcement procedures and actions;
- f) Develop and implement a program to detect and address non-stormwater discharges, including illegal dumping, to the system;
- g) Inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste;
- f) Address the following categories of non-stormwater discharges or flows as necessary:
 - Water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20), uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space and basement sump pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, street wash water, and fire fighting activities;
 - As the above listed discharges have been deemed normally acceptable under the MS4 permit, the Department concurs that the discharges listed in h) above are acceptable as it relates to the MS4 permit.*
- g) Develop measurable goals and select appropriate management practices to ensure the reduction of all pollutants of concern from illicit discharges to the stormwater system to the maximum extent practicable.

Maintenance staff should look for evidence of private connections and illicit discharges while performing their regular maintenance activities within the right-of-way. While illicit discharges can occur at any point in the stormwater system, NYSDOT staff should be especially conscious of illicit discharges when cleaning and repairing drainage structures, cleaning ditches, performing work near drainage outlets or when exposing underground piping systems. Properties adjacent to the highway right-of-way should also be periodically examined for illicit material which could enter or flow into the right-of-way.

If an illicit discharge or connection is discovered or suspected, maintenance staff must report the finding to their Highway Maintenance Supervisor. The Highway Maintenance Supervisor will immediately report the discovery to the Resident Engineer (RE), who should document the finding and arrange for a site investigation by the appropriate agency. It is important that the location of the illicit discharge be accurately reported (use street address, station, mile marker, landmark or intersection), so the investigation team can readily locate the discharge. Maintenance personnel are not responsible for investigating or cleaning up illicit discharges, illicit connections or illegal dumping not generated by the crew.

2.10 Work Within a Designated Scenic Byway Corridor

There are currently over 2,600 miles of State and Nationally designated Scenic Byways in New York State. Scenic Byway guidelines are flexible. Local, county and state roads are eligible, and each scenic byway involves multiple communities. A scenic byway is organized around at least one theme or intrinsic quality such as scenic, natural, recreational, cultural or historical.

Prior to initiating work within a designated Scenic Byway corridor, contact the Regional Scenic Byway Coordinator to determine if the Byway Management Organization should be contacted for input. Opportunities may exist to partner with the Byway Management Organization for operational activities due to their access to a variety of funding sources.

2.10.1 Corridor Management Plan

Many of the Byways have approved Corridor Management Plans (CMP) that outline strategies to balance the interests of the byway communities and its resources with the interests of visitors and their experiences. The CMP includes discussions on byway specific visions, goals and themes; public participation; stewardship; tourism development; marketing and promotion; resource interpretation; financial resources; support and implementation; and transportation safety. The CMP is developed with input from the Regional Offices among numerous other stakeholders, including municipalities and the Public.

2.10.2 Designated State and National Scenic Byways

New York State's three nationally designated America's Byways include the Lakes to Locks Passage, All-American Road; the Great Lakes Seaway Trail National Scenic Byway; and the Mohawk Towpath National Scenic Byway. There are over 70 New York State designated byways, including various touring routes in the Adirondack North Country Region such as the Adirondack Trail and the Olympic Trail; all New York State Parkways; all Scenic Roads as designated by the former NYSDEC Scenic Roads Program, and numerous scenic byways that have gone through the formal nomination and designation process of preparing a Corridor Management Plan for approval by the Advisory Board, such as the North Fork Trail, Scenic Route 90, the Upper Delaware Scenic Byway, Cayuga Lake Scenic Byway, etc.

2.10.3 New York State Scenic Byways Program

The New York State Scenic Byways Program was created in 1992 by the State Legislature. The Program is administered by the NYS Department of Transportation and managed by staff of the Department's Environmental Analysis Bureau. Each Region has an identified Scenic Byway Coordinator. A New York State Scenic Byways Advisory Board guides the Statewide Program. Various State agencies are represented on the Board, as are private organizations with specific interests, such as tourism, the motoring public and preservation of scenic quality.

For additional information on the New York State Scenic Byways Program, please contact Mark Woods at (518) 457-6277, or ScenicByways@dot.state.ny.us. The New York State Scenic Byways Program website is: www.nybyways.com and the National Scenic Byways Program websites are: www.byways.org (for travelers) and www.bywaysonline.org (for byway organizations.)

3 HIGHWAY MAINTENANCE AND OPERATIONS

This section includes specific activities typically conducted on the ROW.

3.1 Road and Roadside Maintenance

Road and roadside maintenance activities should be planned well in advance and conducted in a way that avoids or minimizes any effects to environmental resources.

3.1.1 Pavement and concrete maintenance

Asphalt applications

Asphalt cutback and dilution - The use of cutback asphalt in paving activities is prohibited except in the following circumstances:

- When the asphalt is used in the production of long-life stockpile material for pavement patching and repair; or
- When the asphalt is used as a penetrating prime coat for the purpose of preparing a surface to receive asphalt pavement.

Asphalt cleaning - Use good practices when using petroleum products such as diesel fuel to clean asphalt tools and equipment to prevent contamination to any waters or soil. Don't clean equipment or tools near streams, ponds, or drainage structures. Solid pieces of asphalt must be removed by scraping or other mechanical means if possible before applying a cleaning agent. Asphalt removed solely by mechanical methods, using no cleaning solvents may be disposed of as C&D (See *Pavement disposal* below). If a petroleum product such as diesel fuel is used for cleaning, a minimal amount of petroleum product should be used to accomplish the cleaning because all spent cleaning product must be recovered. Use hand sprayers or other similar devices to minimize the amount of petroleum-based cleaner applied. Contain all products (including the cleaning product and the contaminated asphalt residue cleaned from the equipment) during cleaning using tarps, sand pads, pails or other collection methods to avoid spillage or accidental release of cleaning products. Contaminated sand, soil, asphalt pavement residue, and other debris containing petroleum products resulting from activities such as paver cleaning with petroleum products should be handled as petroleum contaminated soil/debris and must be disposed at an authorized disposal (i.e., a lined municipal solid waste landfill) or treatment facility. See 5.4- *Waste Management - Specific Items (Petroleum Contaminated Soil)*. Report releases of petroleum products to the NYSDEC Spills Hotline (1-800-457-7362).

Pavement disposal - Recognizable uncontaminated broken concrete and asphalt from demolition activities or excess material from a project are construction and demolition (C&D) waste. Pavement containing routine intact traffic markings (i.e. paint) or which has come into contact with petroleum products such as lubricants through normal vehicle use of the roadway are considered uncontaminated and can be handled as C&D debris.

Except for in Nassau or Suffolk Counties and within the APA (a permit is required within the APA), these materials can be disposed of at suitable locations on NYSDOT property ("spoiled onsite"), or taken to an off-site disposal facility that charges no fees and operates only during daylight hours (i.e., facilities requesting fill at no charge). Do not place this material within 30 meters (100 feet) of wetlands, archeological sites, or other sensitive environmental areas. See 3.5- *Waste and Spoil (Excavated Material) Disposal* and 5.1.4- *C&D Debris* for additional information. If disposed of within Nassau and Suffolk Counties, C&D debris including uncontaminated pavement debris must be disposed of at an authorized lined disposal facility or taken to an authorized C&D debris processing facility.

3.1.2 Pavement marking

Traffic marking activities use paints/coatings that may contain hazardous ingredients and must not be conducted in the rain. EPA and NYSDEC regulate coatings including traffic paint to limit the release of volatile organic compounds (VOCs) which help form the air pollutant, ozone. Current paint specifications which NYSDOT has adopted state-wide meet all the above requirements. NYSDOT has replaced solvent-based alkyd traffic paints with waterborne paints that contain 80% less organic solvents, and with epoxy paints that release no solvent vapors.

Yellow traffic marking paints in years past contained lead chromate in the pigment. NYSDOT has been phasing out the use of lead chromate in yellow pigments. Beginning with the 2004 marking season, non-lead based pigments were used in waterborne paints by NYSDOT Maintenance staff. NYSDOT Engineering Instruction 06-002 issued in January 2006 announced that all marking paints used on construction contracts must be free of lead chromate. As additional specification and procedures are developed and existing stocks of pavement marking paints are replaced, we expect that all markings in future years will be lead-free.

For older markings that contain lead, however, NYSDOT testing determined that typical dried yellow markings/chips do not “leach” lead and chromium at levels that would require paint waste to be classified as hazardous wastes. Therefore, dried paint marking chips/millings (yellow and white) are non-hazardous industrial wastes. See 5.4 - *Waste Management - Specific Items (Paint and Dried Paint Chips and Flakes)* for further discussion on disposal of traffic paints or of chips/markings milled or removed from the road surface. Some of the constituents in paints have reporting requirements for spills and releases and for use above certain thresholds. See 4.4 - *Spills of Fuels, Chemicals and Hazardous Products* and 4.5 - *Emergency Planning and Community Right-to-Know*.

3.1.3 Shoulder maintenance

Cleaning/sweeping: Cleaning/sweeping of shoulders can generate large amounts of dust. Care should be taken to minimize dust as much as possible. Equipment should be in good working order and contain filters and/or other controls as feasible. See 5.4 - *Waste Management - Specific Items (Street Sweepings)* for disposal information.

Widening/filling: In certain instances, NYSDOT designs and builds roads with narrow shoulders or steep slopes to avoid or minimize impacts to wetlands, waterbodies, floodplains, or sensitive cultural resources. When conducting shoulder maintenance activities in areas with narrow shoulders or steep slopes, inspect the area and/or consult with the MEC to determine if there are wetlands, waterbodies, or sensitive cultural resources (such as historic buildings or parkways) in the area. If there are such resources, contact the MEC before placing excess material to widen the shoulders or smooth out the slopes, as this activity may require a permit or consultation with NYSDEC, USACE, APA, and/or OPRHP.

3.1.4 Vegetation management

NYSDOT manages vegetation on State highway rights-of-way (ROW) for the following safety, environmental, and infrastructure management objectives:

1. Provide motorists with adequate sight distances;
2. Control visibility of signs and guiderails;
3. Prevent the presence of deadly fixed objects (usually trees that may impact cars that leave the roadway);
4. Control the introduction and spread of invasive plant species and noxious plants;
5. Maintain pavement by controlling drainage problems; and
6. Prevent pavement breakage by plants.

To meet this goal, NYSDOT and its contractors use an Integrated Vegetation Management (IVM) Program. IVM is a process that staff uses to strengthen vegetation management work by adding results-oriented planning before the work is started and evaluating the results afterwards. The process components include: prevention; monitoring; establishing action thresholds for when control is needed; selecting and undertaking control methods; and evaluation. Depending on which vegetation management tasks a NYSDOT employee performs, he or she uses some or all IVM components.

IVM helps NYSDOT select the best vegetation management and control methods, given safety, operational, environmental and community concerns. Sometimes, the best method is to leave a natural setting undisturbed, or to combine several control methods. NYSDOT's IVM program uses the following control methods, and each has particular environmental challenges and opportunities:

- Mechanical:
 - Mowing;
 - Weeding/string trimming; and
 - Tree and brush cutting;
- Selective use of herbicides and growth regulators;
- Cultural and biological controls;
- Alternatives to herbicides; and
- Close coordination of maintenance, design and construction on capital projects.

IVM includes the division of the roadside into management zones. The character of these zones dictates the level of management needed and control techniques.

- **Zone 1: High Management Zone-** an intensely managed area immediately adjacent to shoulder, curb, or guiderail where no or minimal vegetation is desired
- **Zone 2: Moderate Management Zone-** includes the clear zone (which can be as wide as 30 feet), drainage ditches, and other operational features where mowing is primary control method.
- **Zone 3: Natural Zone-** the area from the edge of Zone 2 to the right-of-way line that receives minimal management, if any; for example, removal of hazardous trees.

Vegetation management is a balancing act for all involved. Vegetation control must protect highway user safety and the operability of the transportation system. At the same time, it must minimize, or avoid, impacts to water quality, soil stability, habitat for ground-nesting migratory birds and other wildlife, farms next to the roadside, private property and settings of historic buildings or parkways (See 2.3 - *Operations That Could Impact Archeological or Historic Sites*).

NYSDOT offers its staff tools and resources to strengthen vegetation management and environmental stewardship:

- The budget process includes a vegetation and environmental variable to help Regions fund the tasks in this section of the *Handbook*;
- Each Region is encouraged to participate in the Green and Blue Highways initiative, which allows orderly planning and delivery of stewardship activities; and
- All Regions have at least one GPS unit, to ease collection of field conditions and information.

Mowing:

(For more information on any of the topics in this section, see the *Mowing Limits Manual* and related mowing guidance at:

http://axim22.nysdot.private:7779/pls/portal/docs/PAGE/WCC_PG/OFFICE_OF_OPERATIONS/TRANSPORTATION_MAINTENANCE_INSTRUCTIONS/TMI-10-03.PDF)

Management of undesirable species in roadside turf is primarily accomplished by a regular mowing program. Healthy roadside turf is an asset as it is resistant to weeds, woody vegetation, and invasive and noxious species. A well-planned mowing program helps curtail the growth of undesirable species and protect grass cover. Further, mowing helps suppress most woody species which need large leaf systems to support their roots.

By helping maintain good quality turf, mowing can reduce erosion and protect water quality. However, in developing a mowing plan, a Residency can also help protect wildlife habitat by designating areas for less frequent or no mowing.

Following are some specific environmental considerations related to mowing:

- Do not mow wetland mitigation areas; the MEC can help identify these areas before mowing season. If mowing markers were not installed during construction, consider installing permanent markers;
- Try to avoid mowing when turf is saturated or significantly wet. When soil is rutted, weeds and invasive species are more likely overtake preferred grasses and native species;
- Environmental agencies prefer that the NYSDOT control ditch vegetation with mowing, rather than cleaning ditches with heavy equipment. Mowing causes less erosion of exposed soil and can result in improved water quality;
- Whenever possible, vary the mowing limit lines for a more natural appearance;
- Do not mow areas managed for wildflowers more than once a year, after the first hard frost or in the late fall;
- A suggested BMP is to leave an unmowed buffer strip at least 10 feet (3 meters) at the edge of all streams and wetlands. Such strips should be monitored to ensure brush does not become a fixed object or limit sight distances;
- On Air Quality Action Days, NYSDOT's has a policy to curtail roadside mowing and similar activities by NYSDOT employees or contractors, consistent with safety, operational needs or contractual requirements;
- Special mowing restrictions apply in the Capital District: In portions of Albany, Saratoga, and Warren Counties, some areas of the ROW provide habitat for Karner blue butterflies, a federally and state protected Endangered Species. Karner blue butterflies lay their eggs on, and their caterpillars feed exclusively on, the blue lupine plant. Mowing blue lupine plants before September 1st violates state and federal law. Consult the MEC to identify areas with blue lupine to properly schedule mowing activities; and
- NYSDOT is gaining experience with grasses that require little or no mowing. For example, Little Bluestem grass is a native species that grows 20-40 inches high. It is suitable for planting in Roadside Zones 2 and 3. See the Alternatives to Herbicides section for more information.

Conservation Alternative Mowing Plans (CAMPs)

CAMPs is NYSDOT's statewide program of mowing its 1 million roadside acres in an environmentally sensitive manner. It is directed towards Interstate, Expressway, and Parkway systems outside urbanized or gateway areas. CAMPs includes recommendations for mowing frequencies in Roadside Management Zone 2, where the majority of mowing work is required. Mowing in Zone 2 should be managed by section, as follows:

- a) Frequently Mowed Section- includes an area adjacent to the road (typically 8-10 feet wide) and drainage ditches-- mowed several times a year; and
- b) Annually Mowed Section- a transition between areas of frequent mowing and natural regeneration-- mowed once a year or less. Such a reduction in mowing frequency may result in denser grasses, perennials and brush. This vegetation may require acquisition or rental of heavier or special mowing equipment.

CAMPs protects grassland habitat for ground nesting migratory songbirds, such as the Eastern Meadowlark and the Bobolink, by delaying mowing in Roadside Zone 2 until after August 1st to avoid disturbance during nesting season. This is in compliance with the Migratory Bird Treaty Act, by which it is unlawful to intentionally or unintentionally take, capture or kill any migratory bird or disturb their nests or eggs without a permit.

CAMPs encourages changes in mowing practices that may conserve funds for staff hours and fuel usage, improve air quality through reduced fuel emissions, reduce required equipment maintenance, and reduce habitat fragmentation without impacting the safety or functionality of the roadsides.

Herbicides:

Herbicides are a significant component of NYSDOT's IVM program. Their use is generally restricted to the following circumstances:

- Controlling vegetation in places that cannot be mowed, such as around guiderail and sign posts;
- Controlling vegetation that can cause physical harm to workers and travelers, such as poison ivy, poison oak, Giant Hogweed or Wild Parsnip;
- Targeted applications to remove invasive or noxious species that are causing safety, operational or environmental problems; or
- Treating remaining stumps after hazardous tree or brush removal to prevent resprouting.

Herbicide application by NYSDOT employees is considered a "commercial pesticide business" activity. Staff applying herbicides must keep daily records for all herbicide applications. In addition to complying with regulations, accurate and timely record-keeping is key to protecting the environment, addressing public inquiries and helping NYSDOT plan the most effective vegetation management program for succeeding years. Certified Commercial Pesticide Applicators and Technicians must submit annual reports (even if they had no applications).

Application requirements and restrictions apply regardless of whether herbicides are applied by NYSDOT staff or contractors. Some key guidance is as follows:

- a) The following levels of training are required for the following applications:

Level of training	Application
Certified Commercial Pesticide Applicator	Any herbicide, including restricted use
Certified Commercial Pesticide Technician	Any general use herbicide typically used by NYSDOT or any application while under the direction of a Certified Applicator
Certified apprentice	Any application under the direct supervision of a Certified Applicator

- b) Apprentices must receive 40 hours of on-the-job herbicide training and 8 hours of core training before they may apply general use herbicide with off-site supervision;
- c) Herbicide labels:
- i. All herbicides must be applied according to the manufacturer's label instructions. Staff applying herbicides is responsible for reading and knowing the entire label.
 - ii. A label may also include 2ee "unlabeled pest" designations issued by the New York State Department of Environmental Conservation. These 2ee designations are useful to NYSDOT and its contractors as they provide more herbicide options for controlling invasive and noxious species. Information on 2ee designations may be found at: <http://pmep.cce.cornell.edu/regulation/2ee/index.html>
 - iii. The applicator must have a copy of the label in their possession during applications.

- d) Herbicides may not be applied into or over water unless the label instructions specifically state they may be applied in water and NYSDEC has approved the application. To avoid accidental water applications, inspect the route ahead of time and "flag" all cross culverts, streams and wetlands so that the sprayer can be shut off 20 feet (6 meters) before entering the sensitive area and its required buffer area. Some regions have identified these locations with permanent identification markers;
- e) Applying herbicides within 100 feet (30 meters) of a state-regulated wetland requires an Article 24 wetland permit from the NYSDEC or, in the Adirondack Park, from the APA (6 NYCRR Part 663.4.d.40). Some NYSDEC Regional Offices have issued General Permits to NYSDOT for herbicide applications in regulated wetland-adjacent areas (within 100 feet) where NYSDOT had submitted a permit application that included an approved Integrated Vegetation Management Plan. Residencies can obtain maps, paper or GIS (Geographic Information System) documents that show the approximate locations of state-regulated wetlands from the MEC;
- f) NYSDEC regulations require placing visual notification signs during and for at least 24 hours subsequent to show that herbicides have been applied within 100 feet (30 meters) of a dwelling, public building, or public park;
- g) When herbicides are applied to right-of-way not owned in fee by NYSDOT and a dwelling is anywhere on the property, advance notification - - in writing - - is required to the dwelling's occupants. NYSDOT regions and residencies may not apply to right of way not owned in fee, unless they receive prior approval from the Office of Transportation Maintenance in the Main Office;
- h) Herbicides should only be applied when the wind is calm, generally during early morning, late afternoon or evening. This reduces herbicide "drift" onto sensitive non-target surfaces, such as adjacent streams, wetlands or desirable vegetation;
- i) Typically, rain diminishes the effectiveness of herbicides or causes them to run off the target. Unless the label allows, do not apply herbicides when rain is imminent, during rain or when the ground is saturated;
- j) Many herbicides are available in returnable containers. Regions and Residencies are encouraged to investigate if such containers are appropriate for use, given the price, expected amount of herbicides used at a location and the minimum size and number of containers that must be purchased;
- k) Do not wash herbicide application equipment or empty containers in ditches, streams, ponds or wetlands, or allow the wash water to flow into any surface waters, including wetlands; and
- l) Most herbicide spills are not generally reportable to NYSDEC (i.e. Krenite, Escort, Roundup, Rodeo and Oust do not need to be reported). Clean up any spills as quickly as possible; if herbicides spill into a water body, notify the MEC and the local NYSDEC regional water program engineer (See 4.4.20.8.10 - *Spills of Fuels, Chemicals, and Hazardous Products*).

Pesticide applicator regulations are in 6NYCRR Parts 325-327. Other regulations for specific natural resources may also apply.

Alternatives to Herbicides:

NYSDOT continues to investigate methods and practices to control vegetation around guiderail and signposts without using synthetic herbicides. A few methods with particular promise are:

- Non-woven, porous matting, such as *U-Teck Weed Ender*, which is installed around guiderail posts and covers vegetation growth on each side of guiderail;
- Traffic tape, which can seal cracks in shoulders and curves, reducing the likelihood of "Mohawks," tufts of grass growing in joints between pavement sections;
- Various hard materials, including asphalt, concrete, *PolyPavement*, concrete pavers, crushed stone,

and mulch; and

- Low/no-mow vegetation, such as Little Bluestem grass, Lady's Mantle, Creeping Phlox, Ornamental Goldenrod, and Wild Thyme. For more information, consult your MEC.

When considering options for roadside vegetation management, balance the environmental benefit, reliability, effectiveness, and unit cost of each product or process, as well as the staff time required to install/implement. With vegetation barriers, for example, the benefit of reduced herbicide use might be offset by increased stormwater runoff. In certain locations (e.g. in significant coastal fish and wildlife habitats, wetlands, etc.), an increased environmental benefit may be more worth an extra cost than in others.

Cultural/ Biological:

NYSDOT implements cultural and biological methods to help control and enhance roadside vegetation. These practices include:

- Planting desirable species, such as native vegetation or dense ground cover, which in turn reduce the opportunities for unwanted vegetation to grow;
- Using living organisms to control pests or weeds, such as the use of two species of beetles to control purple loosestrife, an invasive species; and
- Planting trees and bushes for enhancing aesthetics and screening buildings from the roadside.

Close Coordination of Maintenance, Design and Construction on Capital Projects:

A key vegetation management policy is the proactive/preventive establishment of grass on all new projects within a few days of completion. This practice prevents erosion and sediment accumulation, as well as establishing a desired species (e.g. a species of grass) before unwanted vegetation takes over.

Another example of a design/construction control method is the placement of a hard surface underneath guiderail along new highway shoulders. Paving prevents the need for herbicides in the future to control vegetation under and behind the guiderail. However, it is much more difficult to install on older roads where guiderail is already in place.

Hazardous Trees:

The NYSDOT cuts and prunes trees along State highways with its staff and with contractors, to address the following concerns:

- Remove dead or dying trees that could fall on the highway or private property;
- Maintain sight distance at intersections or along the road;
- Maintain clear zones by removing trees/brush that could become deadly fixed objects;
- Prevent growth from shading road in winter and requiring higher levels of chemical deicers and sand, or remove growth resulting in snow drifts on the right-of-way;
- Improve the roadside appearance, or open vistas, to the surrounding landscape; and
- Remove trees/brush that are invasive species.

There are several aspects to hazardous tree management:

a) Tree Definition

For regulatory, operational and safety concerns, it is important to define when vegetation is a tree and when it is brush. For the purpose of protecting the Indiana Bat, the United States Fish and Wildlife Service defines a tree as having a diameter of five inches or greater. For the purpose of granting Forest Preserve permits, the Adirondack Park Agency defines a tree as having a diameter of three inches or more.

For safety and operational purposes, NYSDOT considers any woody vegetation less than six inches in diameter as “brush” and any vegetation greater than six inches in diameter as a “tree.” Residency Personnel with basic chainsaw safety awareness should normally be capable of brush removal operations, and possibly smaller trees that fall outside the limits of overriding hazards, such as energized wires and targets within the felling zone (such as buildings, vehicles etc). If the crew supervisor has any doubt regarding the appropriateness of felling such smaller trees, he or she should consult their supervisor to determine if the operation should be handled by a NYSDOT tree crew, or outside contractor.

b) Prevention

NYSDOT should work to reduce the chance that projects or activities create future hazardous trees. NYSDOT employees and contractors should take care to minimize:

- Soil compaction over tree roots;
- Cutting tree roots for highways, sidewalks, drainage, traffic control or ITS devices;
- Damage to lower trunks with mowers or string trimmers; and
- If a tree is significantly damaged from any of these activities, NYSDOT employees or contractors should consult with the MEC to determine if removal is appropriate at the time of work rather than letting the tree decline and pose a future hazard.

c) Removal

NYSDOT employees and contractors should choose equipment, removal methods, and work zone traffic control patterns that provide the highest level of safety.

Trees and brush should be cut flush to the ground so stumps do not remain. Stumps can cause safety problems and obstacles, and can be unsightly. In addition, some tree and brush species will resprout after they are cut, creating new and often more hazardous woody growth. Methods to control the likelihood that cut trees or brush will grow new stems/offshoots include immediate treatment of cut stumps with herbicides, seasonal timing of cutting, and stump grinding.

If removal will disturb soil, erosion control should be provided. Ruts, or stump holes, should be filled and seeded. Tree trunks and branches should be removed or disposed of as soon as possible to avoid an unsightly appearance and to reduce fire hazard.

d) Pruning of Trees and Shrubs

The most common reasons for pruning are safety, plant health, appearance, structural integrity, storm or physical damage, and maintenance of views or vistas. In some cases, pruning can remove hazards to transportation users - - and safely allow a tree to remain.

Do not prune unless there is a good reason to do so. Random pruning cuts can lead to the injury or death, rather than encouraging the intended growth or healing, and create future hazardous trees.

The best time to prune is usually early spring, just before bud break. However, tree species that “bleed”, such as maple, ash, and birch, are best pruned after June 1st. Time bush/shrub pruning before the flower blooms or after the plant goes dormant in the fall, so that new growth will not develop that could be susceptible to winter injury.

Because of safety concerns, NYSDOT’s policy is that its tree staff is not certified for cutting or pruning trees or brush near any lines carrying electricity.

e) Coordination and Outreach

NYSDOT's first concern with hazardous trees is the safety of travelers, workers and landowners. A hazardous tree can be on a State right-of-way or on adjoining property. NYSDOT policy is to contact landowners and other agencies before tree removal whenever possible without compromising safety.

If you see a hazardous tree in any of the following situations, you or someone in your chain of command should contact a landowner or agency if the removal will occur:

- In or near the yard of a landowner;
- On or near a historic property or cultural resource;
- On an Indian reservation;
- On Forest Preserve land in the Adirondacks or Catskills;
- On local, State or National Park land; or
- In an area identified as habitat of the endangered Indiana bat (*Myotis sodalis*).

If you are uncertain about whether a tree falls into one of these categories, consult your supervisor. MECs or Regional Crew Coordinators are also available to help.

f) Invasive insects

The appearance of invasive insects, such as the Asian Longhorn Beetle (ALB) and Emerald Ash Borer (EAB) is becoming an increasing concern in planning and undertaking tree work on the right of way. See Appendix C of the *Handbook* for more information on guidance and best practices for addressing invasive insect infestation.

Responding to the Public when Vegetation Management Work is Underway:

Vegetation management work can become controversial. Members of the public can become concerned about tree removals, use of herbicides, frequency of mowing or litter pick-up. There are situations where vegetation management workers will need to provide information to members of the general public. These situations include:

- **General request for herbicide information from the public or adjoining landowner:** If a person asks about the application, please explain, in as simple language as possible, the type of application you are making and the reason for the application;
- **Herbicide applications made on right of way not owned in fee:** State regulations require that when NYSDOT applies on rights of way not owned in fee that we must provide, in advance of the application, a copy of the label or labels for materials to be used to each occupant in each dwelling on the property not owned in fee. If a dwelling has three or more families, staff should provide the information to the owner or owner's representative - instead of the occupant;
- **Herbicide applications made within 100 feet of a dwelling, multiple dwelling, public building or public park:** When applications are made in these situations, you must post signs notifying landowners and users. The format and spacing of signs is described in Part 325 of the NYSDEC regulations of herbicides; and
- **Removal of hazardous trees on or near private property:** NYSDOT has a right and duty to remove trees on the right of way or on private property that can threaten transportation users. However, it is strongly advised to contact the landowner before making such removals. If trees on NYSDOT right of way are being removed that are near houses, it is also strongly advised to contact nearby landowners before making a removal. However, if there is an emergency or a tree has become an immediate hazard, you must proceed with a removal - regardless of whether neighbors are nearby.

If the person is not satisfied with your explanation in any of these situations, please provide them with your supervisor's name and number, let your supervisor know to expect a call and please provide as much information about the concern as you can. If a concern is passed up the chain of command, it is good for the vegetation worker to document any information about the conversation while the experience is fresh in the mind.

Care of Vegetation:

The maintenance program does not typically undertake extensive landscape maintenance. However, in some cases, maintenance forces must care for vegetation. In these circumstances, use the following practices to promote the establishment of newly planted vegetation and to maintain its health and vigor:

- a) Watering- This is crucial for newly planted vegetation, particularly in June, July, and August, so the root system gets moisture to sustain healthy plant growth. However, excessive soil moisture can also be harmful to plants; therefore, proper drainage is essential.
The most common watering method is use of a watering truck. For certain highway plantings, however, a drip irrigation system may be preferable. Water newly planted trees at 5 to 20 gallons per tree and shrubs at 5 to 10 gallons each, ideally every other week. Frequent light waterings are often more effective than several heavy watering;
- b) Weeding- Existing tree pits and plant beds often require periodic removal of weeds, which rob nutrients and moisture that would otherwise be absorbed by the plant. Weeds can be controlled through selective herbicides or by physically removing them by the root, which is labor intensive. Merely trimming weeds will not eradicate them. Following removal, weed regrowth can be controlled by synthetic weed-barrier matting material in combination with mulch;
- c) Mulching- Mulch is good for weed control and plant health. It conserves soil moisture, allows the penetration of water, aids in the proper exchange of oxygen in the soil, reduces or controls weed growth, and is aesthetically pleasing. Mulch can be a natural product, such as wood chips, shredded bark, coco chips, or pea gravel, or it can be a manufactured product such as shredded tires;
- d) Cultivating- Cultivating soil around a plant or in a plant bed breaks up soil, promoting the penetration of oxygen and water to the plant's roots. Cultivating is only needed when soil around plants is particularly dry, hardened, crusty or cracked. Care should always be taken to avoid harming the desired plant's roots during cultivation;
- e) Remedial Measures- Damage resulting from insects or diseases can often be remedied by the application of insecticides, fungicides, or soil fumigants. However, accurate identification of the problem, knowledge about the needs of the plant of concern, and life cycles of the insect or disease are required before treatment.

When trees are planted with support stakes, remove the stakes as soon as the tree is stable. This prevents the tree from being killed by the wires attached to the stakes;

- f) Fertilizers- Use fertilizer to help establish new vegetation or to correct a nutritional deficiency in existing vegetation that is evident from observation, testing or analysis. Before making a decision to apply fertilizer, consider whether other organic alternatives are available.

Consider vegetation type, the condition to be addressed and environmental considerations in determining a fertilizer application rate. Over-application of fertilizer can burn or damage existing

vegetation. In many parts of the State, rights of way are near sensitive watersheds. Staff should make sure application rates do not result in run-off from the fertilized area causing increased algae or aquatic plant growth in the adjoining waterway. Fertilizer run-off can clog waterways with increased aquatic vegetation and such vegetation can rob waters of dissolved oxygen needed for fish survival.

Apply fertilizer evenly over an area. Spreading fertilizer by hand is typically practical for areas less than a half acre in size. For larger areas, consider using equipment appropriate to the location and the area to be covered.

The best times to apply fertilizer are in the spring, between April 1st and June 1st and in fall from August 15th to October 1st.

Invasive Species Policy:

See also *The Environmental Manual* (TEM), Chapter 4.4.9.4, available at:

<http://www.dot.ny.gov/divisions/engineering/environmental-analysis/manuals-and-guidance/epm>

Federal and State mandates require NYSDOT to consider impacts of invasive species in all maintenance and construction activities. As part of this process, NYSDOT is developing a roadside inventory of priority invasive species and taking measures to control invasive species and prevent their introduction and spread.

Recent amendments to the Environmental Conservation Law have created Partnerships in Regional Invasive Species Management, or PRISMs, to develop partnerships and Regional approaches to controlling invasives. Regional Maintenance Groups are encouraged to support PRISMs in their Regions when resources permit.

In general, the NYSDOT's approach to managing invasive species statewide is to focus on four priority species:

- Japanese knotweed (*Polygonum cuspidatum*);
- Common reed or phragmites (*Phragmites australis*);
- Purple loosestrife (*Lythrum salicaria*); and
- Giant hogweed (*Heracleum mantegazzianum*).

Using its employees, volunteers and cooperating with PRISMs, the NYSDOT is inventorying these species along all major highway corridors such as interstates, expressways, parkways. Once an infestation is identified, appropriate action is taken based on available resources and local management priorities. See *The Environmental Manual*, referenced above, for details on sample inventory methods and BMPs regarding mowing, soil disposal, hand controls, biological controls, herbicide application, and site restoration to prevent the spread of invasive species.

Other locally significant invasive species, such as Oriental bittersweet in the Hudson Valley, may be inventoried and managed consistent with existing watershed plans, Area Management Plans, etc.

Invasive insects, such as the Asian long-horn beetle and Emerald ash borer, can kill trees in large quantities. NYSDOT forces are assisting in monitoring rights-of-ways and rest areas for signs of insect infestation. If infestations are found and trees must be removed, NYSDOT will coordinate its efforts with regulatory agencies and other forest land owners.

Noxious Species:

See Dangerous Roadside Plants at: <http://www.dot.ny.gov/dangerous-plants>

In recent years, there has been a noticeable increase in the variety and quantity of noxious species in New York State. NYSDOT strives to protect the public and Highway Maintenance Workers from noxious roadside vegetation. Educational initiatives are underway to increase recognition and avoidance of the most common noxious plants:

- Stinging nettle;
- Poison ivy and Poison oak;
- Giant hogweed;
- Wild parsnip and Cow parsnip; and
- Poison sumac.

When growth is identified where roadwork is to take place, treat the area with herbicide to eradicate the noxious vegetation before work commences. Samples of barrier salves and information on treatment have also been distributed by NYSDOT.

3.1.5 Roadside Environmental Issues

Wildlife:

Activities to enhance wildlife protection and traffic safety have included installation of:

- Cameras that monitor wildlife activity to supplement research on methods to reduce animal-vehicle accidents; and
- Fencing to keep small animals, such as turtles and salamanders, off the road.

Other recent wildlife management activities have included:

- Adding birdhouses to fences and walls within the right-of-way;
- Providing material to educate citizens about local wildlife; and
- Installing signing and parking areas to help citizens safely view wildlife near the roadside.

If a deer is hit and killed on a State right-of-way, NYSDOT must remove it in a timely manner for health and safety reasons. A Residency may remove a deer with its own forces or by retaining a contractor on the Deer Removal Work Order Contract.

When removing deer, State or contractor forces must do so in a manner that protects them and the traveling public from deer-borne ticks or diseases. Deer must be disposed of in a manner that does not affect health, safety or environmental quality.

Deer composting is a method of disposing of deer in a safe, sanitary manner. Several residencies are already using this method, and further research/experimentation is being conducted in conjunction with Cornell Cooperative Extension. For more information, see the Composting Road Kill fact sheet at: <http://cwmi.css.cornell.edu/roadkillfs.pdf> and NYSDOT Road Kill Composting Operation & Maintenance Manual at:

http://www.dot.ny.gov/portal/page/portal/divisions/engineering/environmental-analysis/repository/deer_c_manual.pdf.

See also 5.4- *Waste Management- Specific Items and Topics- ANIMAL CARCASSES*

Litter Control:

Litter can be harmful to the environment and wildlife, pollute streams and wetlands, break mowing equipment, and depreciate aesthetics. NYSDOT uses various techniques to minimize litter along the

roadside, including:

- Removal of significant objects before mowing, such as tires;
- Installation of signs stating that littering is illegal, and the associated penalty;
- Placement of large rocks on the borders of rest areas to discourage littering; and
- Coordination of litter control work with local government agencies and the public.

To mobilize citizens concerned about litter, NYSDOT has an Adopt-a-Highway (AAH) and a Sponsor-a-Highway (SAH) program.

- In AAH, a person, business or group may choose a highway segment and remove litter at designated intervals each year. The person or group is recognized with a sign and may also undertake beautification or stewardship as part of their efforts.
- In SAH, litter control companies enter into a contract with NYSDOT to remove litter on a segment of one or more highways. The companies contact local businesses, individuals or organizations and ask them to sponsor a highway segment. For a fee, the company removes litter and the sponsor receives a sign recognizing the sponsor. SAH presently exists only in Regions 8, 10 and 11.

3.1.6 Environmental Stewardship

NYSDOT employees have unique opportunities to improve the NYSDOT's environmental stewardship of the transportation system. Many employees take personal interests in recreation, fish, wildlife, or nature study. Employees are also on the ROW regularly and are able to readily identify difficulties and opportunities.

The NYSDOT's Environmental Ethic encourages employees to suggest environmental projects and activities. To help deliver such projects and activities, the Office of Transportation Maintenance has developed the Green and Blue Highways Initiative.

Under this initiative, regional employees identify environmentally significant highway or transportation corridors. They survey the corridors to identify stewardship opportunities. Regional and residency staff develops a work plan to advance opportunities. On a follow up basis, Main Office, regional residency employees monitor work plans to determine progress.

This process offers the opportunity to plan, finance and measure environmental effort. It allows employees and managers to better identify and match environmental resources and needs.

3.2 Drainage and Stream Channel Maintenance

Discuss all planned culvert cleaning, scour protection, bank stabilization and clearing/snagging of stream channel maintenance projects with the MEC. Depending on the scope, discuss the projects with the MEC up to 6 months in advance so that permitting and/or other environmental issues can be addressed.

For emergency situations, contact MEC immediately. If the MEC is not available, contact the Regional Environmental Unit for assistance. Appropriate agency coordination will be conducted as the emergency response is in progress. There is no situation where agency coordination is not required.

In addition to this guidance, Chapter 6 of the *Highway Maintenance Guidelines* has been updated and will provide more details on some of the items which follow. The update is available at:

<http://www.dot.ny.gov/divisions/operating/oom/transportation-maintenance/repository/HMG%20Section6.pdf>

To avoid or minimize environmental impacts, particularly to water quality and fisheries habitat, incorporate appropriate BMPs, including seeding/mulching, soil bioengineering and minimizing tree removal.

3.2.1 Erosion and sediment control BMPs

Effective erosion and sediment control measures must be used for all areas where maintenance activities involve clearing, grubbing, grading or excavating. These measures may include vegetative controls, such as seeding and mulching, and/or structural controls such as check dams, silt fence and sediment basins:

- Re-seed and mulch any disturbed areas at the end of the day. To reduce erosion, re-seed all exposed soil using a hand-held or shoulder-mounted cyclone spreader, or hydroseeder. Apply straw mulch (50-pound bale will cover approximately 45 square meters (500 square feet)) over the seeded areas to help the grass seed germinate and grow, and reduce erosion until the new vegetation is established. All other "positive" sediment control measures (such as silt fence, check dam, etc.) should be installed prior to commencing work and left in place and maintained until the site is stabilized. All areas vary in micro climate, soils condition and available water. A seed mix must be varied to take into account changing environments. Timely application is the single biggest factor in success. Same day seeding and mulching is the recommended approach. The following mixture will reduce erosion, establish quickly and not require care after application:

Recommended Grass Seed Mix			
% Seed	Common Name	Scientific Name	Per Manufacturer's Recommendation
35	Creeping Red Fescue	<i>Festuca rubra</i>	65 lbs. / acre 1 lb. / 650 sq. ft. Based on: 8'for slope 4' bottom; 8'back slope Apply 3 lbs. / 100 lf.
25	Tall Fescue	<i>Festuca arundinacea</i>	
15	Annual Ryegrass	<i>Lolium multiflorum</i>	
12	Perennial Ryegrass	<i>Lolium perenne</i>	
10	Kentucky Bluegrass	<i>Poa pratensis</i>	
3	White Clover	<i>Trifolium repens</i>	

- To reduce sedimentation in receiving waters, install temporary structural sediment control measures when cleaning culverts or cleaning ditches that discharge into streams, wetlands, lakes or ponds. See Section 209 of the NYSDOT Standard Specifications and the *New York Standards and Specifications for Erosion and Sediment Control* (the "Blue Book") for additional guidance regarding proper erosion and sediment control;
- When cleaning ditches, temporary check dams consisting of stone or pre-manufactured synthetics should be used wherever they are necessary and placed so that the crest of the downhill dam is at the same elevation of the toe of the uphill dam. In vegetated ditches, a simplified check dam can be created by leaving a 1 meter (3 foot) section of the ditch "uncleaned". All check dams should be left in place until the ditch is re-vegetated;
- Temporary sediment traps should be placed at the inlet of a culvert that drains into a stream, wetland or other water body. The sediment trap should be constructed by excavating an additional 0.3 meters (1 foot) below the ditch invert for a distance of 6 meters (20 feet);
- Turbidity curtains should be installed parallel to the shoreline where appropriate and should not be placed across streams. For additional protection at, or close to, very sensitive sites (eg: drinking water supplies, angler parking areas, swimming facilities, etc.), turbidity curtains can be temporarily placed at culvert outlets if water velocity is very low. Turbidity curtains are more effective with lower flow and deeper water applications;
- After the project site is stabilized, any accumulated sediment should be removed before

removing check dams or turbidity curtains; and

- To improve habitat and reduce erosion, consult with the MEC regarding incorporation of appropriate soil bioengineering practices, such as live willow cuttings/ stakes/posts and live willow wattles to stabilize disturbed and/or eroding stream banks.

3.2.2 Restrictive dates for drainage/stream work

In general, culverts and ditches should be cleaned, repaired or replaced only during periods of low water flow. Coordinate appropriate projects with the MEC:

- Work associated with Protected Streams is to be coordinated with the NYSDEC Bureau of Fisheries: www.dec.ny.gov/about/32834.html
- General period allowed for working in Protected Streams: May 15 – Sept. 30.
- General period the NYSDEC stocks Protected Streams: March 15 – May 15.
NYSDEC Stocking Information by County:
www.dec.ny.gov/outdoor/7739.html

General Work Restriction Dates Due to Fish Spawning Periods

Coldwater Species	Spawning Dates	Warmwater Species	Spawning Dates
Rainbow/Steelhead Trout	Jan. 1 – May 30	Smallmouth Bass	May 15 – June 30
Brown Trout	Oct. 1 – Dec. 15	Largemouth Bass	May 15 – June 30
Atlantic Salmon	Oct. 1 – Nov. 30	Walleye	March 15 – April 30
Brook & Lake Trout	Oct. 1 – Dec. 15	Northern Pike	March 15 – April 30
Coho Salmon	Sept. 1 – Oct. 30	Muskellunge	April 15 – June 30
Chinook Salmon	Aug. 1 – Sept. 30	Yellow Perch	April 15 – June 30
Kokanee (Sockeye) Salmon	Aug 1 – Feb. 30		
Pink Salmon	Sept. 1 – Oct. 30		

3.2.3 Drainage structures maintenance (Also refer to Appendix A for further guidance

Ditch Cleaning

Vegetated ditches help improve the quality of stormwater that runs off a highway by slowing water velocities and trapping sediment, metals, nutrients, petroleum products, pesticides, bacteria and other contaminants:

- Maintenance ditch cleaning should be scheduled and conducted between June and October and should only be done in areas where the ditch's function is impaired. Avoid needless and repeated “overscraping” beyond the required capacity of the ditch. Ditch cleaning should be done to maintain original lines and grades as much as possible. Avoid making the ditch deeper than necessary;
- Avoid cleaning ditches during or immediately before rainfall events;
- When cleaning ditches, begin cleaning the ditch at the lowest elevation point and work "up hill" to the point of highest elevation, to reduce erosion and flooding;
- Limit disturbances to the bottom of the ditch, where the sediment has accumulated, with minor sideslope regrading as necessary;
- Clean, seed and mulch the ditch in one continuous operation to simplify maintenance and protection of traffic (M&PT);
- Dispose of removed sediment in an appropriate upland site. Do not sidecast the sediment beside the work area;
- For ditches on steep slopes, install check dams, as necessary, to slow water velocity and reduce erosion and sedimentation;
- All ditches cleaned should be seeded and mulched at the end of each work day;
- Laser levels should be used to minimize the quantity of soil disturbed and therefore reduce

erosion; and

- A Residency may use EN or DR moneys to acquire or rent hydroseeding equipment or supplies, so seeding and mulching occurs in a timely manner.

Culvert cleaning

- Remove sediment, stones, trees and other material from culverts and near culverts in a manner to ensure that the water does not become excessively turbid (cloudy with silt), harm fish, or interfere with recreation. The cleaned area should be no more than 15 meters (50 feet) from either side of the structure, though this may vary in extreme situations. In addition, the removal of accumulated sediment from streams may be regulated by the USACE and/or NYSDEC.
- In streams where fisheries habitat is a concern, leave some accumulated natural stream bed material inside culverts to allow fish to swim through the culvert during high and low water flow periods. Some culvert inverts are designed to be recessed in order to provide natural stream bottom habitat. Before cleaning, maintenance staff should be aware of those culverts which were embedded by design. You should check with your MEC before cleaning culverts in fish streams.
- Any removal of sediment from a stream in excess of 15 meters (50 feet) from a structure requires a pre-construction notification (PCN) sent to the USACE (for more information, see ***Machinery in streams*** section below). Coordinate all planned culvert cleaning projects with the MEC up to 6 months in advance.

3.2.4 Stream channel maintenance (Also refer to Appendix A for further guidance)

Scour protection

- All work in streams should be coordinated with the NYSDEC in accordance with the Memorandum of Understanding between NYSDOT and NYSDEC;
- Replacement of stone scour protection and bank stabilization is covered under USACE Nationwide Permit #3. Placement of new or additional stone requires a PCN sent to the USACE and must be coordinated through the MEC;
- At culvert outlets, stones placed for scour protection in the stream bed below the mean high water line should be limited to within 3 meters (10 feet) of the culvert's outlet (this does not apply to stone placed on the stream bank). Temporarily isolate the work area using gravel bags, pumps, geotextile fabric bags (dirt bags), turbidity curtains, or similar material;
- Scour protection should be placed so that it does not impede fish movement, stream flows or cause sediments to accumulate;
- Sediment must be removed from any water pumped from behind a cofferdam before the water is returned to the stream. To accomplish this, use temporary dewatering basins or dirt bags, or allow the water to flow slowly across a vegetated filter strip (minimum 30 meters (100 feet) width if less than 10 percent slope, 60 meters (200 feet) if greater than 10 percent slope). Pump outlet lines should be secured and baffled to reduce scour and erosion; and
- To avoid accidental stream disturbances, be familiar with protected streams in the work area. Some of these streams may appear to be ditches.

Removing in-stream bars, islands, and dead trees

- Removal of bars, islands and snags in excess of 15 meters (50 feet) from a structure requires a PCN sent to the USACE, with in-stream work date restrictions and erosion and sediment control conditions. Work must be coordinated through the MEC up to 6 months in advance;
- Removing in-stream bars, islands, and dead trees should only be done immediately upstream and downstream from bridges and culverts (no more than 15 meters (50 feet) in any direction), and only when they threaten the capacity or integrity of the structure or highway foundation. Whenever possible, work should be done from above the structure and comply with all of the Nationwide Permit General and Regional Conditions; and

- Removing islands with established woody vegetation will require an individual permit from the USACE and approvals from the NYSDEC and if within the Adirondack Park, APA. These projects should be coordinated with the MEC up to 6 months in advance to allow for environmental review.

Regarding stream widening or straightening

- All stream channel widening and/or straightening (channelizing) activities require individual permits from the USACE and approvals from the NYSDEC. Coordination with the MEC for these activities should occur up to 6 months in advance;
- In most cases, do not widen stream channels because this reduces the streams ability to transport its bedload material (sand, gravel or cobbles) by reducing water velocity. This causes more sediment (gravel, cobbles, etc.) to be deposited in the altered area, thus requiring more frequent maintenance. Conversely, in most cases, do not straighten stream channels as this will increase water velocity and cause additional erosion and scour; and
- All channel maintenance activities should strive to return the stream to its natural plan, profile and cross section dimensions. These dimensions can be approximated by looking for stable stream sections upstream and downstream from the structure. Record Plans may provide information for historic stream corridor alignment.

Machinery in streams

- Do not use any machinery in the stream channel unless absolutely necessary. Whenever possible, work should be done from above the structure and machinery should be kept out of streams. In-stream machinery work in excess of 15 meters (50 feet) from a structure requires PCN sent to the USACE Buffalo District (New York District requires a PCN for any in-stream machinery activities). NYSDEC may also require in-stream work date restrictions. Therefore, coordinate with the MEC any machinery use within streams up to 6 months in advance;
- If machinery must be operated in the stream, install temporary access pads composed of clean, washed stone fill that are fitted with turbidity curtains and remove after the work is completed. To support the pad base and assist with removal and to protect archeological sites that may be present along the access area, install geotextile fabric on the ground surface under the access pad and remove the pad after use without disturbing the original ground surface;
- If use of machinery in streams is necessary, to reduce damage to the stream bottom and mortality of aquatic life, conduct the work during low flow periods and use equipment that will minimize soil and sediment disturbance including rubber-tired equipment wherever possible; and
- If use of machinery in streams is necessary, avoid pushing gravel, soil or other debris within the stream as to cause unnecessary turbidity or down stream sedimentation. Make every effort to avoid unnecessary disturbance to the stream bed or banks while using machinery within the stream. Carry gravel and other material rather than pushing it through flowing water.

Stream bank (riparian) vegetation

Stream bank vegetation is very important in preventing erosion, protecting water quality, shading and cooling water temperatures, and providing valuable habitat. It will take at least 15 years for the riparian vegetation to recover if removed or destroyed:

- Do not remove vegetation from the stream bank unless it is absolutely necessary;
- Especially avoid removing large trees and undercut banks. If large, undercut trees must be removed, cut the trunks and leave the stumps and root systems in place;
- Reseed and mulch all disturbed areas and implement erosion and sediment control BMPs to protect the stream bank;
- Consult with MEC to incorporate soil bioengineering practices, such as live willow

- cuttings/stakes/posts and live willow wattles, to stabilize disturbed stream banks; and
- Consult with MEC to incorporate rock vanes and other water current deflecting devices into bank stabilization projects.

3.2.5 Beaver dams - removing or modifying

It may become necessary to remove a beaver dam when impounded water from the dam threatens to flood highways, bridges or railroads, or interferes with proper drainage or maintenance activities. A permit is required from the NYSDEC Regional Wildlife manager for any disturbance to a beaver dam or lodge. A permit is also required for the taking (trapping or shooting) of any beaver outside of the regular trapping season. Permission from affected landowners should be obtained (permission is not required, however, under Section 45 of the state Highway Law) before removing a beaver dam located outside the ROW. Whenever a beaver dam is removed, water levels should be lowered gradually to prevent downstream flooding, plugging of culverts, or habitat damage from siltation. In addition, dam removal should be started early in the morning to allow the impoundment to drain throughout the day, and all dam material should be removed from the site since the beaver will likely return that night and reuse the material to repair the dam. When possible, it is recommended that dam removal occurs during late summer when water levels and potential to disturb other wildlife are low. Consult the MEC prior to any dam removal or modification.

Recent beaver dams: If the beaver dam was recently built (no vegetation is growing on it, no dead trees in the impoundment), an Article 11-0521 permit is required from the NYSDEC Regional Wildlife Manager to remove it for routine maintenance. If it is a new nuisance beaver complaint site, NYSDEC staff may want to visit the location, but a permit to remove a dam at a previously reported nuisance site can usually be obtained over the telephone. Since nuisance beaver often rebuild their dam, it may also be necessary to obtain an Article 11-0505 permit to trap the nuisance beaver (although it is preferable to have the beaver trapped during the regular trapping season when the pelt will be marketable and trappers are most likely to be interested). The NYSDEC Regional Wildlife Manager can also assist by providing lists of beaver trappers and issuing Article 11-0505 permits, if necessary. In most parts of the state, NYSDEC staff rarely denies requests for Article 11 permits and upon request, may issue an annual permit to remove nuisance beaver dams and destroy nuisance beaver to NYSDOT on a county-wide basis. If NYSDEC decides to issue a county-wide nuisance beaver permit, NYSDOT would still be required, at a minimum, to keep a record of the location of all nuisance sites, including any action taken (e.g., dam removed, beaver destroyed), and file an annual report as directed by the NYSDEC Regional Wildlife Manager.

Established beaver dams: Routine maintenance should not normally involve removing long-established beaver dams. However, if water levels become too high in long-established beaver impoundments, then an Article 11-0521 permit can be obtained and the dam can be removed or modified by removing the new material. Installing a practice, such as a trapezoidal-shaped fence (a.k.a. "beaver deceiver") and/or water level control structure upstream may be needed as well. See NYSDEC Nuisance Beaver Control Techniques Manual available at:
<http://www.dec.ny.gov/animals/6992.html>

Managing Nuisance Beavers Along Roadsides- A Guide for Highway Departments (Cornell University) is available at:
http://www.dec.ny.gov/docs/wildlife_pdf/beaver3.pdf

Special restrictions inside the Adirondack Park boundaries: In addition to the Article 11-0521 permit needed state-wide to remove a beaver dam for routine maintenance, inside the Adirondack Park, an APA Article 24 Wetland (General or Individual) permit is required if the dam is in, or within

30 meters (legally 100 feet) of a wetland. An APA General (Project 96G-1) permit may apply if the dam is recently constructed and lies within the ROW or within 15 meters (50 feet) of the highway, whichever is greater. If the general permit applies, notification to the APA is not required; all permit conditions, however, must be followed. Typical permit conditions include:

- No dynamite can be used;
- No machinery can be used in the wetland or stream;
- Any material removed must be placed in an upland location; and
- The water level behind the dam must be lowered gradually.

An individual Article 24 permit is required from the APA to remove a long-established dam.

Article 11-0505.6 of the ECL prohibits the disturbance of a beaver dam or lodge without a permit from the NYSDEC Regional Wildlife Manager. Article 11-0521.3 prohibits the taking of a beaver, outside the regular trapping season, without a permit. APA Article 24 requires a permit for disturbance to a beaver dam within or adjacent to wetlands.

3.2.6 Recharge basins

Certain recharge basins on Long Island are inhabited by Tiger salamanders, an endangered species. Contact the MEC to determine which recharge basins have restrictions on maintenance activities.

3.2.7 Disposal (excavated material)

See 3.5 - *Waste and Spoil (excavated material) disposal* for information on placement of excavated material (spoil) from ditch and culvert cleaning and other maintenance activities on the ROW.

3.3 Maintenance and Repair of Highway Structures

3.3.1 Bridge washing over water

Maintenance washing of bridges is scheduled once every two years or so to extend the bridge's life, allow for easier detection of defects during inspections, and improve the appearance of the bridge (See NYSDOT Engineering Instruction EI 07-032). Streams classified as AA, AA(T), A, A(T), B, B(T), or C(T) are Protected Streams. In addition, streams designated (T) (trout) also include those more specifically designated (TS) (trout spawning). Coordinate all scheduled bridge washing activities with the MEC to determine NYSDEC stream classifications and potential work restrictions (See 3.2.2- *Restrictive Dates for Drainage/Stream Work*).

Paint condition is an important factor in determining how, or if, to wash a bridge. A description of the paint rating categories, as taken from Form TP 350, Box 32 is:

<u>Rating</u>	<u>Description</u>
7	Paint is in good condition;
6	Paint generally in good condition, may require some touch-up painting;
5	Paint system generally showing signs of deterioration, but no corrosion is yet present;
4	Paint system in localized areas is in poor condition and minor corrosion is present requiring at least touch-up sandblasting and painting;
3	Paint generally in poor condition and corrosion is present but not yet serious. A 3-Rated bridge needs to be repainted;
2	Paint in poor condition and serious corrosion in localized areas; and
1	Paint in poor condition accompanied by extensive serious corrosion. Besides painting, extensive structural work is required.

Bridges over water with a paint rating of 4 or higher: Clean all loose sand, dirt, cinders and similar

material from the upper surface of the bridge deck by sweeping, vacuuming, etc. before washing. None of the swept material should enter a stream or wetland. If the collected material is less than 1 cubic yard, it can be placed (spoiled) on the road shoulders nearby. If more than a yard of material is collected, or if it contains highway trash, it should be sent to a permitted C&D or municipal landfill. See *5.1 - Waste Management*. Do not scrape off loose paint unless it is collected and disposed as a paint waste. See *5.1.1* and *5.4 - Waste Management (Hazardous Wastes and Specific Items and Topics)*. Do not wash any steel surfaces where the paint is in poor condition and can easily be washed off by the water.

Bridges over water with a paint rating of 3 or lower: Clean the bridge deck as described above. Wash only the concrete surfaces of the bridge. Bridges with a paint rating of 3 or lower need repainting, and washing will only remove more rusted and flaking paint chips.

Special restrictions inside the New York City Watershed: In the NYC Watershed Area, special provisions apply to washing bridges that cross drinking water supply reservoirs or reservoir stems. If bridge washing is planned in this area (portions of Greene, Delaware, Schoharie, Sullivan, Ulster, Dutchess, Putnam and Westchester counties), contact the MEC for assistance.

Protected bird species: Cliff swallows often build mud nests on the superstructure under bridges. These nests are about the size of a football with a 1 inch diameter opening. Cliff swallows are protected by the federal “Migratory Bird Treaty Act”; therefore, their nests cannot be removed during the nesting season (usually May - August).

Nests on bridges that are observed occupied by any bird species (including eggs and chicks) should not be disturbed or removed. Bridges should be surveyed before the nesting season and old nests should be removed (to discourage return nesting) prior to the scheduled bridge washing.

3.3.2 Superstructure and bridge decking maintenance and repair

Painting, paint removal, coating and sealing operations on bridges: EPA and NYSDEC regulate coatings including structural paint to limit the release of volatile organic compounds (VOCs) that contribute to ozone formation. Current bridge paint specifications which NYSDOT has adopted state-wide meet all the VOC requirements. NYSDOT ceased using lead-based paints in the late 1980s and developed comprehensive procedures for the removal of old lead-based paints. All open abrasive blasting paint removal operations require Class A Containment to prevent particulate release. If lead paint is removed from a bridge or structure using the Class A Containment Specification, air quality monitoring is necessary to determine the effectiveness of the containment. Contact the ESB Air Quality Section to schedule monitoring in conjunction with an applicable project.

Some of the constituents (such as xylene, toluene and glycol ethers) in paints have reporting requirements for spills/releases and when used above certain thresholds. See *4.4 - Spills of Fuels, Chemicals and Hazardous Products* and *4.5 - Emergency Planning and Community Right-to-Know*. Concrete sealants and rust coatings may also have constituents (such as methanol and glycol ethers) which also have reporting requirements.

Work over water/wetlands and sensitive areas: To protect aquatic habitat and comply with State and Federal water and waste regulations, concrete and abrasive dusts and wastes must not be enter streams or wetlands. Dusts and abrasives impair aquatic habitat and interfere with aquatic food chains and fish egg development. In addition, C&D disposal regulations require disposal only at locations that are not close to streams and wetlands. Collect waste concrete material, such as dusts and chippings removed from bridge surfaces and sidewalks, and dispose of as waste

pavement/concrete material. See *3.1.1 - Pavement and Concrete Maintenance*. In addition, collect all debris from welding or torch cutting that could generate paint debris from the bridge.

Disposal issues

Structure and pavement material - See *3.1.1 - Pavement and Concrete Maintenance* for discussions on structure and pavement material disposal.

Disposal of paints, coating, and sealant wastes solutions - See *5.4 - Waste Management - Specific Items and Topics (Paint, Unused Products, Paint Thinners* as applicable).

3.4 Temporary Access Roads

Building temporary access roads may be necessary for some maintenance projects such as maintaining scour protection, stabilizing stream banks or cleaning culverts. Temporary access roads should be located to minimize their impact on wetlands, streams, stream banks, protected plants, mature trees and historic properties. Constructing temporary access roads is not an exempt maintenance activity and may require State and Federal permits if located in or near streams or wetlands. A cultural resource survey may also be needed if there are potential historic properties within the area of proposed access road. Try to avoid contaminated areas as well as sensitive air and noise receptors. Discuss the plans, at least 6 months in advance, with the MEC and CRC before constructing temporary access roads, pads, or staging areas.

3.4.1 Erosion and sediment control

If the temporary access road must be placed in or near a wetland or stream:

- Re-seed and mulch all disturbed areas located above the mean high water line;
- Place geotextile fabric under the access road fill;
- Place turbidity curtains and/or cofferdams around the perimeter of the work area before building any access roads into a stream;
- Only clean, washed stone may be placed below the ordinary high water level;
- Sediment must be removed from any water pumped from behind cofferdams before the water can flow back into the stream;
- Utilization of temporary dewatering basins or geotextile fabric bags (dirt bags) may be necessary, or the water may be allowed to flow slowly across a densely vegetated (grassy) filter strip to remove the sediment (minimum 30 meters (100 feet) width if less than 10 percent slope, 60 meters (200 feet) if greater than 10 percent slope);
- Pump outlet lines should be secured and baffled to reduce scour and erosion; and
- When the work is completed, first remove the road material, geotextile and any accumulated sediment and then remove the turbidity curtain or coffer dam.

3.4.2 Dust control

Airborne dust needs to be controlled on temporary access roads to avoid nuisance and respiratory illness concerns of the public and employees and to prevent contributions to air quality standard violations for particulates. During dry weather, dust can be controlled by spraying water, solutions of salt (brine), calcium chloride, or “dust pallative” products (NYSDOT Technical Services maintains an approved list of products) on unpaved ground. Never spray used oil to control dust. Call the MEC with questions about whether specific products can be used.

3.4.3 Tracking of soil

Use temporary pavement or compacted, crushed stone to create stabilized construction access areas at work sites. These measures help to passively remove excess soil from vehicle tires and avoid

tracking soil onto public roads, and help minimize dust generated from work sites.

3.5 Waste and Spoil (excavated material) Disposal

3.5.1 Spoil

Many highway maintenance activities such as cleaning ditches and culverts generate excavated material or other spoil that can be placed on the ROW in an upland (well-drained) area away from wetlands and streams. Spoil material must not be placed:

- Within 30 meters (legally 100 feet) of wetlands, within 15 meters (50 feet) of stream bank or within the floodway, whichever is greater, or in flood plains;
- On forest preserve lands or on prime agricultural land;
- In the vicinity of historic resources or archeological sites;
- In visually-sensitive areas or in other environmentally-sensitive areas; and
- Outside ROW, unless appropriate permits are in place, e.g. APA.

Spoil areas should be graded and shaped to blend with the landscape and then re-seeded and mulched to prevent erosion. Disposing of spoil in or near environmentally-sensitive areas is not an exempt maintenance activity and may violate state and federal regulations:

- Place any spoil material in an upland area (away from streams or wetlands), and then seed and mulch the spoil pile. Sediment from ditches and culverts is considered uncontaminated and does not need to be tested unless it smells like fuel, solvents, or sewage, or is mixed with roadside trash. (See 5.1.4 – *C&D (Construction and Demolition) Debris- Exempt C&D Debris and Spoil* or call the MEC for more guidance).

A good use for spoil is to flatten slopes so that guiderail is no longer required for operational and safety purposes. In planning and undertaking work that will result in fill, designers, traffic engineers and maintenance staff should look in advance for locations to flatten slopes when such work can be accomplished without environmental damage. Check with your Regional Traffic Safety Coordinator to verify safety of intended slopes within the right of way.

3.5.2 Open burning

Burning wood, leaves, rubbish, or garbage in an open fire or in a barrel is **prohibited** in most parts of New York by air quality regulations (6 NYCRR Part 215.2(e)). Sometimes after large, damaging storms, NYSDEC will issue emergency burn permits. Burn permit applications may be obtained from the Air Resources program staff at NYSDEC regional offices. These temporary permits -- usually for less than two weeks -- help speed cleanup by allowing storm debris such as tree limbs to be burned instead of landfilled.

3.5.3 Other wastes and waste issues

For additional disposal procedures for litter, dead animals, C&D, brush, and other materials collected along the ROW, see 5.4 - *Waste Management- Specific Items and Topics*. For spills along the ROW, see 4.4 - *Spills of Fuels, Chemicals, and Hazardous Products*.

3.6 Snow and Ice Control

Snow and ice control is one of NYSDOT's most widespread and visible activities. NYSDOT manages the use of salt and other deicing materials in an efficient manner to provide effective performance while minimizing impacts to the environment.

Pre-season and pre-storm meetings are held to discuss snow & ice control guidelines and residency storm management plans. Additionally, such meetings should be held with municipal contractors

and emphasize the need to consider environmental factors as well as traditional objectives such as safety, service, and budget considerations.

To minimize environmental impacts to water quality and roadside vegetation, NYSDOT employees and contractors incorporate appropriate BMPs outlined below:

3.6.1 Storage and handling of snow & ice control materials BMPs

See 4.3.5 - *Storing and Handling of Products- Salt and De-icers Storage.*

3.6.2 Equipment preparation/maintenance BMPs

Calibrate spreading equipment for both solid (typically salt) and liquids (typically salt brine, calcium chloride, magnesium chloride or other snow and ice control liquid chemical solutions [IceBan/MAGic solutions]) to apply the proper amounts of materials. The equipment that controls the spread pattern must be adjusted to match the required use and ensure proper placement. Critical system components include the automatic ground speed controller, the flight chain or belt, the gate opening, the chute, the liquid nozzles (if applicable), the spinner and the deflectors.

Periodic calibration checks to confirm that these proper settings have not changed must be conducted during the snow and ice season. For details on calibration and spread pattern adjustments, contact the Equipment Operator Instructors.

3.6.3 Plowing and/or spreading operation BMPs

The objective of plowing, spreading, and direct liquid application operations is to maintain an acceptable level of service on the highway while using the minimum amount of materials necessary to achieve this. Several steps to reduce the amount of anti-icer, de-icer and/or traction enhancing materials that are wasted during snow and ice control operations can be taken, including:

- Practice anti-icing by promoting a timely response to snow and ice events to prevent precipitation from bonding to the pavement. Pre-storm direct applications of approved anti-icing liquids in accordance to NYSDOT guidelines should be considered. This strategy will help prevent hard pack formation, and will require far less material and equipment use than trying to “burn through” packed or bonded ice afterwards;
- Do not overload the material spreader to avoid spillage;
- Plow off snow or slush before applying materials to decrease dilution and increase the effectiveness of the materials;
- Control spreading speeds to reduce bounce and scatter;
- Control spread patterns to concentrate material where it is most effective on the road;
- Using sand (abrasives) is not encouraged but may be considered for temporary traction control at limited locations such as steep hills, intersections, etc.;
- Supervisors and operators should become familiar with chemical application rate charts obtained in the *Snow and Ice Control Guidelines* (Chapter 5);
- Evaluate road and weather conditions and trends to ensure that proper type and timing of treatment is used;
- When re-applying material, consider the possibility of partial vs. full and spot vs. blanket treatments where appropriate;
- Consider pavement temperatures as opposed to air temperature when selecting treatment strategies;
- Follow established guidelines and apply the appropriate treatments at the right time;
- Identify locations where snow fence may reduce blowing snow situations along highways. Living snow fence is environmentally sound and should be considered as an alternative to

standard snow fence;

- Return unused materials to stockpiles and avoid heavy “end of beat” applications that empty the load; and
- Keep accurate records of materials usage to allow monitoring and improvement of operations.

For additional operational guidance refer to the most current versions of *NYSDOT Highway Maintenance Guidelines for Snow & Ice Control* and the *NYSDOT Equipment Operator Snow & Ice Manual*.

Complaints about possible salt contamination should be directed to the Regional MEC.

3.6.4 Post storm/post season cleanup BMPs

After a storm, equipment should be cleaned to reduce corrosion damage and prepare for the next storm. Minimize wash water runoff from these activities and do not use detergents or soaps. Where possible, use indoor wash facilities with controlled floor drainage that will direct the wash water into an oil/water separator or sanitary sewer.

If snow must be loaded and hauled, select a pre-approved disposal site to ensure that the environment is protected.

Abrasives should be swept up from the highway environment wherever and whenever possible. Cleanup reduces the amount of abrasives left along the highway and will help prevent sand from clogging drainage systems, reduces air pollution and waterway siltation, and reduces skidding hazards on the highway. A pre-approved site must be used to dispose of spent abrasives.

3.7 Emergency Actions

All emergency actions in or adjacent to streams, wetlands, lakes, ponds or other water bodies, or historic resources require some form of environmental review and notification to regulatory agencies (although in most cases formal permits are not required) and thus should be coordinated through the MEC. To qualify as an emergency, the damage or threat to bridges, roads or other transportation facilities must present an immediate threat to life, health, property or natural resources and must be the result of a single event, not long-term neglect. The NYSDEC's Regional Supervisor of Natural Resources or Regional Permit Administrator (and APA inside the Adirondack Park) must be notified before beginning emergency work, if possible. If prior notification is not possible, NYSDEC (and/or APA) must be informed, first by phone and then in writing, within 48 hours after starting, and must approve all emergency work.

The written notification to NYSDEC should include:

- Description of the proposed action;
- A location map and plan of the proposed project; and
- Reasons why the situation is an emergency.

In addition, many emergency projects require authorization from the USACE and must be coordinated appropriately. Note: For large-scale disasters, batches of emergency projects may be approved with a single authorization at the discretion of the regulatory agencies.

All emergency work should be performed in a way that causes the least modification, disturbance, or damage to the course or bed of a stream and its banks, or any adjacent wetlands. No equipment should be operated in the water unless approved by NYSDEC. Lastly, when conducting emergency work, all general and special permit conditions must be followed, and if significant project modifications occur during construction, these changes should be coordinated with the MEC and/or the permitting agencies.

3.8 Spill Response within the ROW

3.8.1 Assistance to non -NYSDOT spills along the ROW

Anyone who discovers a reportable spill should call the NYSDEC's Spills Hotline at **1-800-457-7362** (See 4.4 - *Spills of Fuels, Chemicals, and Hazardous Products*). Although the NYSDEC staff and their contractors respond to spills in emergencies, if the NYSDOT has facilities and employees nearby may also respond to certain spills along the highway. Appropriate Departmental personnel may provide technical guidance on excavation, backfill, or provide excavation support recommendations required of the NYSDEC's contractor within our ROW. In 1993, NYSDEC and NYSDOT signed a Memorandum of Understanding (MOU) between the two agencies that allow NYSDOT employees to do the following:

- 1) Set up traffic barricades to redirect traffic away from or around a spill site. NYSDEC spill response staff will indicate how far a barricade must safely be placed from a spill of a known or unknown hazardous substance;
- 2) Spread sand on spills of **known** petroleum products on state highways. **NYSDOT employees will not spread sand on spills of unknown materials or spills of known hazardous substances;**
- 3) NYSDEC will call a standby contractor to pick up contaminated sand, but if the amount of sand is small and a DOT facility is nearby, DOT employees may be asked to pick up the contaminated sand; and
- 4) When NYSDOT removes and disposes of petroleum-contaminated sand from a ROW spill event at NYSDEC direction, NYSDEC will assist in expediting any needed NYSDEC permits, locating disposal sites and authorizing reimbursements of NYSDOT disposal costs from the NYSDEC's Spill Compensation Fund.

The spiller is responsible for the cost of any cleanup. Be certain that any paperwork you sign lists the name of the trucking firm or the vehicle operator, not NYSDOT, as the "generator or spiller."

3.8.2 NYSDOT spills

For spills of which NYSDOT is responsible for the spill, see 4.4 - *Spills of Fuels, Chemicals, and Hazardous Products*.

3.9 Additional NYSDEC Guidance

The NYSDEC Nonpoint Source Management Program has developed several Management Practices Catalogs (essentially BMPs) that provide useful information on many of these activities. For these Management Practices Catalogs, the MEC or the NYSDEC Watershed Management Section at 518-402-8250 can be contacted. The Catalogs include:

- Roadway and Right-of-Way Maintenance;
- Urban/Stormwater Runoff Management Practices for Nonpoint Source Pollution Prevention;
- Construction Management Practices Catalogue for Nonpoint Source Pollution Prevention;
- Hydrologic and Habitat Modification; and
- Leaks, Spills, Accidents Management Practices.

4 FACILITY-BASED OPERATIONS

This section discusses activities that typically happen at the NYSDOT Maintenance or Equipment Management facilities rather than highways rights-of-way.

4.1 Vehicle Washing, Floor Drains and SPDES

It is preferred for vehicles to be washed where the wash waters are controlled and treated to remove oils and sediment prior to discharge. Typically this involves washing vehicles inside specified “wash bays” where wash waters are sent through sediment/grit collectors and oil/water separators.

Discharges from floor drains to surface water and groundwater are regulated by the State Pollutant Discharge Elimination System (SPDES). SPDES permits issued by the NYSDEC are required for all discharges to surface waters. Direct discharges from floor drains to groundwater through leach fields, septic systems, or dry wells are not allowed.

NYSDOT handles floor drain discharges in three ways:

- 1) Consider whether a floor drain discharge is really necessary. If not, plug the floor drains with a plumber’s plug or concrete. If the drain is permanently closed and no discharge can occur, a grit collector, oil/water separator, and SPDES permit would not be required;
- 2) Install a grit collector and oil/water separator and connect the discharge line to a municipal sewer system, if possible. This eliminates the need for a SPDES permit; and
- 3) Install a grit collector and oil/water separator and discharge the floor drain waters to surface water; a SPDES permit will be required.

Many NYSDOT facilities have SPDES permits for floor drain discharge to surface waters. These permits may require changes in vehicle parking patterns and restricting vehicle maintenance activities to areas away from the floor drains. To be sure that the SPDES permit conditions are met:

- Quickly clean up any spills of oil, grease or antifreeze with Speedi-dry or other absorbents before the spilled material enters the floor drains;
- Wash vehicles indoors with plain water only. DO NOT USE DETERGENTS which emulsify oil within the water preventing gravity separation and making the separators ineffective. Using detergents may also violate the SPDES permit conditions by introducing new chemicals; and
- Conduct monitoring according to the SPDES permit. SPDES permits typically require monthly or quarterly monitoring for specific parameters such as pH, oil and grease, “BTEX” (benzene, toluene, ethylbenzene and xylene), and MTBE (methyltributylether), a gasoline additive;
- If the facility is required to monitor floor drain discharge quality on a monthly basis and there has been no discharge for a month, check the box on the Discharge Monitoring Report that you have no discharge for that month. DO NOT run water into the drains to “create” a sample! This is unnecessary and also violates the SPDES permit by diluting any pollutants that might be in the oil/water separator, which gives a false picture of performance;
- Monitoring reports should be kept at the facility for three years, and be available for review if a NYSDEC inspector asks to see them; and
- Monthly monitoring is typically required for new SPDES permits, but you can petition the NYSDEC Regional Water Engineer to decrease that frequency to quarterly if you can show that you did not exceed the effluent limits or had no discharges for several months during the previous year. Any changes to the provisions of the SPDES permit require a permit modification from the Regional NYSDEC Permit Administrator.

Any questions about obtaining or complying with SPDES permits should be directed to the Facilities Engineer in the Transportation Maintenance Division.

NYSDOT's Transportation Maintenance Instruction, TMI 09-03, *Operation of Oil/Water Separators (OWS)/ Wastewater Controls from Vehicle Washing and Storage* is available at:

http://axim22.nysdot.private:7779/portal/page?_pageid=39,547946&_dad=portal&_schema=PORTAL

SPDES point source permit requirements are in 6 NYCRR Parts 652 & 750-758.

4.2 Fuel and Petroleum Storage and Handling

Fuel and Petroleum Tank Storage and Management

Fuel is essential for NYSDOT vehicles to accomplish critical missions such as removing snow and ice, performing maintenance, responding to emergencies and other functions. Other State agencies also use NYSDOT fuel facilities to in their fleet vehicles. Other petroleum products at facilities support operations and equipment management.

Improper management can:

- Result in release of petroleum to the environment and pollute waterways and groundwater;
- Impact employee health and safety;
- Disrupt fuel availability; and
- Result in legal actions, fines and penalties.

Significant environmental damage can occur from petroleum spills and leaks in the quantities present at typical facilities. The EPA estimates a single gallon of oil can contaminate 1 million gallons of water. In addition to environmental damage, cleaning up leaks and spills is very costly and time consuming.

Requirements for managing and storing petroleum products result from many different regulatory and operational aspects, but are intended to achieve complimentary objectives. The Office of Operations Management Instruction, titled: ***Fuel and Petroleum Storage: Main Office and Regional Responsibilities*** describes the requirements and responsibilities of operating fuel storage facilities, and includes sample record forms and information. A checklist included as Appendix B of this document offers a quick guide to these regulatory requirements that require NYSDOT staff from different parts of the organization to work cooperatively to safely and efficiently install, operate, maintain and administer fuel storage and dispensing facilities. NYSDOT employees at the facilities handle daily operations, monitor inventory, and perform routine inspections. The Office of Operations Management – Facilities Unit (FACU) builds new bulk storage facilities, arranges for replacement and repair when necessary, and administers the program for tank registrations, periodic testing, and major inspections of system components.

Specific assigned tasks are listed below. For specific questions, see the management instruction, contact the group responsible or contact the regional MEC.

Responsibilities of Operations Management – Facilities Unit

- a) Provide Overall Program Direction, to maximize capital equipment assets and infrastructure investment and provide equipment compliant with regulations;
- b) Tank Systems Installation and Equipment (New and Major Equipment);
- c) Ongoing Equipment: Purchase, repair and installation of durable equipment components;
- d) Periodic Testing required by regulations: Develop policies, procedures and contracts for testing including tightness testing of USTs (that did not require and have not been upgraded to EPA standards), yearly testing of cathodic systems, and testing of vapor recovery systems with Stage II vapor control features;

- e) Tank Registration;
- f) Tank Closures and Remediation Activities as needed from tank closures and past activities;
- g) Storage and Operating Guidance;
- h) Purchase Fuels related to fueling of vehicles and equipment; and
- i) Other administrative, funding, policy and procedures to support these activities.

Responsibilities of the Site/Residency/Regional Fuel Facility

- a) Operate and Undertake Routine Maintenance of the system to include:
 - i. Maintenance and repair of fire suppression and leak detection systems on newer installations;
 - ii. Fire Suppression System Testing – Semi-annual inspection by independent authorized inspector;
 - iii. Installation and repair of pumps, hoses and nozzles;
 - iv. Supply and replacement of expendables (such as filters); and
 - v. Coordination of site personnel for vendor services;
- b) Facility Requirements: Identify facility deficiencies and needs (See Appendix B for checklist of environmental and related requirements) and reporting capital project needs to FACU;
- c) Routine Inspection: Conduct and document ongoing inspections including monthly inspections for environmental regulatory requirements and weekly check of interstitial spaces on USTs;
- d) Records: Maintain records of site inspections, deliveries, manuals, drawings, spills, inventory records and any other documentation of compliance and operation of the site;
- e) Site Plans and Manuals – Maintain as-built plans and manuals for tank equipment at each site;
- f) Inventory reconciliation and associated recordkeeping;
- g) Fuel Delivery and Purchase: Accept, coordinate and monitor deliveries. Purchase heating fuels;
- h) Signs/Communications: Installation of needed hazard communication signs, fire protection signs, product and capacity signs, registration postings and color coding. Maintain current material safety data sheets (MSDSs) within the hazard communication program for all products; and
- i) Spill Prevention, Control and Countermeasures (SPCC), Response and Reporting.

Reporting petroleum products stored on site for emergency plans

See 4.5 - *Emergency Planning and Community Right-to-Know*.

Petroleum spills

See 4.4 - *Spills of Fuels, Chemicals and Hazardous Products*.

Regulations

Handling and storing petroleum in tanks is highly regulated by different, but supporting, areas: The primary areas are listed to assist in identifying where different provisions are located and include:

- *NYS Petroleum Bulk Storage regulations, 6 NYCRR Parts 612-614 for both aboveground and underground storage tanks (ASTs and USTs), respectively, storing any petroleum products. Requires registration; certain operating features and equipment; testing, monitoring and recordkeeping; labeling and color coding; and design installation requirements for new tanks systems.*
- *EPA Standards for USTs (40 CFR Part 280) for all USTs, except for on premises heating fuel. Requires USTs to have leak detection, corrosion protection and spill/overflow protection.*
- *EPA Spill Prevention Control and Countermeasures (SPCC) regulations, 40 CFR Part 112, require advance planning of spill prevention controls (such as secondary containment or other installed or equipment preventives), spill prevention procedures and spill response procedures. SPCC regulations apply to facilities storing more than 1,320 gallons of any oil products in any combination of aboveground tanks and containers of more than 55 gallons (or greater than*

42,000 gallons in UST that do not meet the EPA standards of Part 280) and may reasonably have the potential to discharge oil into waters of the US.

- USDOT Hazardous Material Transportation regulations, 49 CFR Part 171- 180, regulate hazardous material shipping (petroleum products are “combustible or flammable liquids”(49 CFR Part 172.101)) including communication, emergency response information and training provisions. Part 177.834 requires the carrier to attend the unloading of a cargo tank (delivery to our tanks) with a qualified person at all times during unloading (and be alert and within 7.62 m and have an unobstructed view of the tanker and connections).
- OSHA requirements including: HAZCOM and HAZWOPER, and other safety requirements, 29 CFR Part 1910.1200 (HazCom) Part 120 (HAZWOPER), require communication of hazardous material health, safety and handling requirements and the training and procedures required for responding to emergency releases of hazardous materials.
- Fire Code (NFPA) requirements also stipulate design and installation, testing/monitoring and hazard communications regarding storage of flammable/combustible materials and fire suppression systems.

4.3 Storing and Handling Products and Wastes

4.3.1 General principles

Good storage and handling practices can greatly minimize waste quantities and costs for disposal as well as reduce potential for employee exposure or environmental contamination. The following general steps are good practices that can significantly reduce handling, disposal costs, and future liability from NYSDOT activities:

Substitute. Substitute a less hazardous or less waste-producing product or process for those that would otherwise have generated a more hazardous or higher quantity of wastes. As well as potentially resulting in a non-hazardous waste for an indicated activity, such substitution may reduce or eliminate potential employee exposure concerns and additional regulatory burden. An example is substitution of a non-flammable, non-chlorinated cleaning product for a methylene chloride gasket cleaner.

Identify container contents and maintain data on its contents. Keep products in their original containers whenever possible. Otherwise, label containers with permanent markers, include the date when you first began filling it, and keep a record of what is stored in each one. Retain the material safety data sheets (MSDS) for the product. Also record any other information that relates to a waste, such as “also contains some water” or what activity the waste resulted from, such as “Safe-Strip cleaning solvent from epoxy pavement marking activities”.

Whenever possible, return unused products to the supplier. Some suppliers and manufacturers will accept unused, expired products. This eliminates our need to pay for disposal in some cases.

Never mix dissimilar materials and wastes in the same containers. Mixing of different materials will likely require the resulting mixture to be analytically tested and may present increased disposal restrictions. Environmental regulations also place strict limits on the types of wastes that can be mixed together and generally prohibit mixing dissimilar wastes. These regulations do not allow a waste generator to dilute wastes with water in an attempt to make it nonhazardous. For example, if one gallon of a hazardous waste such as used toluene from painting operations is mixed with 54 gallons of rainwater, 55 gallons of hazardous waste for disposal is created!

Store drums in protected (dry) and temperature-compatible manner. Do not store product or empty drums upright and outdoors where they can collect rain or melting snow, allowing for

collection of water (and the potential need for testing of rainwater) in the drums and degradation (even when a lid is originally in place). Rather, store all drums under a roof if possible and store uncovered empty drums on their sides. Do not store materials that can freeze in unheated areas.

Don't let wastes or empty containers accumulate; dispose of them regularly. Dispose of wastes before knowledge of their contents is lost and before deterioration occurs. Keep an inventory of the waste you have on hand and contact the MEC to set up disposal contracts for both hazardous and nonhazardous wastes. Dispose of empty containers promptly before water or other contamination or deterioration occurs. See 5.4 - *Waste Management - Specific Items and Topics (Empty Drums and Containers)* for empty drum disposal.

4.3.2 Waste storage time limits and inspections

Nonhazardous waste (such as roadside trash) and other waste materials at the facility can be stored for up to 18 months. Note: Storage of >1000 tires requires a permit from NYSDEC.

Hazardous waste storage time limits are dependant upon the quantities generated.

- Large Quantity Generators (LQG) of hazardous wastes (generate > 1000 kg/month) can store for only up to 90 days;
- Small Quantity Generators (SQG) (generate ≥ 100 kg and ≤ 1000 kg/month and store less than 6000 kg on site at any one time) of hazardous wastes can store for 180 days (270 days if it must be shipped more than 200 miles);
- Conditionally Exempt Small Quantity Generators (CESQGs) (generate < 100 kg/month and store < 1000 kg on site at any one time) have no time limit for storage and have greatly reduced storage and disposal requirements. See CESQG in Section 5.4.

Hazardous wastes stored at other than CESQG must be inspected at least weekly for any signs of leakage or deterioration and comply with hazardous waste management requirements. A log record of the inspections must be kept. See 5.1.1.4- *Hazardous Waste - Accumulation/Storage*.

When a partly-used product becomes a waste: Partly-used containers of paint and other products may be present at NYSDOT Residencies and facilities. The waste handling requirements and storage time limits begin to apply when the decision is made that these products are not likely to be used and should be disposed. For example, a partly-used drum of pavement-marking paint may be left over from a previous season. If the paint can still be used when the drum is reopened, then the drum contains a product, not a waste; if, however, the paint has become too dry to be useful, the drum then becomes a waste that must be disposed.

Disposal procedures: See 5 - *Waste Management*.

4.3.3 Material Safety Data Sheets (MSDSs)

Suppliers and manufacturers are required to supply MSDSs for all products and they must be retained and available for all materials on site as part of the Hazard Communication (HAZCOM) Program. An unused unmixed product in its original container typically does not need to be tested prior to disposal if you have a MSDS that properly identifies the material.

4.3.4 Chemical tank requirements

Chemical storage tanks holding hazardous substances listed in 6 NYCRR Part 597 such as ethylene glycol (antifreeze), toluene (paint thinner), or hydrochloric acid require registration with NYSDEC. Registration is required for underground storage tanks of any size and stationary aboveground tanks of 185 gallons or more capacity. Operation, equipment and design standards of 6 NYCRR Parts

595-599 apply to covered tanks. Contact the PBS Manager in Operations Management – Facilities Unit for more information on chemical tank requirements.

Petroleum product storage and handling: See 4.2 - *Fuel and Petroleum Storage and Handling*.

4.3.5 Salt and de-icers storage

Salt and other anti-icing/de-icing materials should be handled and stored in a way that minimizes possible contamination of surrounding areas by wind-blown or waterborne “runoff”.

Salt: Piles of salt should not be left exposed to the elements. Good management practices require that salt and mixtures of salt and sand be kept on an impermeable surface like asphalt or concrete and stored in salt storage buildings whenever possible. Under some circumstances, such as storage building maintenance or excess supply, temporary (typically, less than one season) “surge” piles may be utilized if placed on an impermeable surface and covered with adequate (weighted) tarping. For additional details on storage site characteristics, see the most current *NYSDOT Highway Maintenance Guidelines for Snow and Ice Control*.

Liquid anti-icer storage: Liquid Anti-Icer materials (Magnesium Chloride, Calcium Chloride Salt Brine, Liquids with agricultural additives, etc., which are not included under the Chemical Bulk Storage regulations) are stored in above ground storage tanks (typically 3,000 - 5,000 gallon) at many facilities. These should be placed on level, compacted sand bases and protected from traffic by barriers (i.e., bollards, guiderail, etc.). Drainage in that area should be graded so that any spills can be contained on site. Placards or stenciled lettering should be used to identify the tanks contents. Spill containment systems should be considered. For additional handling and spill containment information, refer to the most current *NYSDOT Highway Maintenance Guidelines for Chemical De-Icers*.

4.4 Spills of Fuels, Chemicals, and Hazardous Products

Spillage from NYSDOT operations of petroleum products and other products containing listed chemicals may require reporting if the spill reaches or exceeds reporting criteria. Reportable spills should be reported to the NYSDEC Spills Hotline (1-800-457-7362) within 2 hours of discovery. NYSDOT may also provide some response actions to certain spills that occur along the ROW.

4.4.1 Petroleum spill reporting

Spills of petroleum products (gasoline, fuel, used oil, etc.) are required to be reported to the NYSDEC Spills Hotline unless they meet **all** of the following criteria:

- Less than five (5) gallons is spilled and the spill is contained and under the control of the spiller;
- It is cleaned up within 2 hours of discovery; and
- The spilled material does not reach and contaminate any land, surface or ground water.

Special note: NYSDOT's Transportation Maintenance Safety Manual also lists important safety requirements for transporting gasoline and diesel fuel that will help avoid spills during the work.

Petroleum spill reporting requirements are included in the state's Petroleum Bulk Storage Regulations, 6NYCRR Parts 612-614.

4.4.2 Chemical spill reporting

Spills of regulated chemicals must be reported to the NYSDEC Spills Hotline (1-800-457-7362) and the National Response Center ((800) 424-8802) if the spill reaches or exceeds the listed “reportable quantities”. The reportable quantity (RQ) pertains to the quantity of the specific chemical released;

the quantity of the chemical within a release of a mixture or product should be estimated to determine if the RQ was exceeded. (For example, the quantity of methanol released in a 100 pound release of concrete sealant (approximately 15 gallons) containing 22% methanol is 22 pounds). Many of these RQs are quite large in comparison to the quantities that are typically used in NYSDOT activities, thereby exceeding the federal RQ for those chemicals is unlikely.

NYSDEC also requires reporting (to the NYSDEC Spills Hotline) of releases that could impact land and water at lower reporting thresholds. The following table includes the federal RQs (49 CFR 172.101) and NYSDEC RQs to land/water (6NYCRR Part 597) for chemicals present in appreciable quantity in common products used by NYSDOT:

Chemical/Typical Product where present	Federal RQ (lb)	NYSDEC water/land RQ (lb)
Ethylene Glycol (antifreeze)	5000	1
Hydrochloric Acid (muriatic acid)	5000	100
Lead compounds (Lead paint removal waste from bridge rehabilitation)	10	10
Methanol (paints, sealants)	5000	1
Styrene (polyester paints)	1000	1
Sulfuric Acid (batteries)	1000	100
Toluene	1000	1
Xylene	100	1

Chemicals such as isopropanol, calcium chloride, magnesium chloride, most herbicides (including Escort, Krenite, Oust, Rodeo, and Roundup), propylene glycol, ethanol, and salt present in common products used in NYSDOT activities are not regulated and do not have reportable quantity notification requirements. Many chemicals are not listed, but this does not mean they are harmless and they still require appropriate cleanup.

The federal Chemical Spill Reporting Requirements are listed in EPA regulations, 40 CFR Part 302.4, "Designation, Reportable Quantities and Notification" (the reportable quantities are also included in Appendix A of the USDOT regulation 49 CFR part 172.101 (Hazardous Materials Table)). NYS includes chemical spill reporting requirements in the Chemical Bulk Storage Regulations, 6NYCRR Parts 595-598.

4.4.3 Spill containment and cleanup

Spills have the potential to expose people and contaminate the environment with hazardous materials. The Student Manual for Hazardous Materials Awareness and Communication Training is available from the Employee Health and Safety representative and describes NYSDOT's responsibilities and procedures for incidents involving hazardous materials. The recommended procedures and risks change with the circumstances of each spill. However, the following general procedure can be used for most workplace spills as applicable:

- Inform and remove unnecessary employees from the area;
- Determine the identity and hazards of the material and any personal protective equipment such as impermeable gloves required for handling;
- If the spilled material is flammable, remove any open flames or sources of ignition. Use non-sparking tools and grounding wires if needed;
- Stop additional material from spilling at its source if possible. For example, plug a leaking hole in a barrel or turn the barrel so that hole is on top;
- Plug any drains that may be impacted;
- Contain the spill by placing absorbent "socks" or sand to prevent the spill from running into

storm drains, bare soil, large surface areas, etc.;

- Pump large quantities to an empty drum that will hold the material. Collect smaller quantities and/or remaining liquid by absorbing liquid with absorbents or sand. Gently scoop or sweep up the residue and place in empty container; and
- Label all containers of spill collection and debris as soon as possible.

Note: Always be careful about exposing anyone to hazardous vapors/fumes that can be inhaled or from skin and eye contact. Do not try to clean up spills of unfamiliar materials if you don't have adequate hazard communication information.

Assistance to non-NYSDOT spills along the ROW: See 3.8 - *Spill Response within the ROW.*

4.5 Emergency Planning and Community Right-to-Know

The federal Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 (which is also known as the Superfund Amendments and Reauthorization Act (SARA) Title III) includes several reporting requirements to let members of the local community know what chemicals are stored or used at facilities in their neighborhoods.

4.5.1 Hazardous chemical (including fuels) inventory reporting

Reports are required from facilities that store more than 10,000 pounds at any one time during the year (roughly 1500 gallons for fuels) of any hazardous chemicals for which material safety data sheets (MSDS) are required under the OSHA Hazard Communication Standard. The chemicals/products to be reported are not on a designated list, but are broad chemical categories - fire; sudden release of pressure; reactivity; acute health hazard; and chronic health hazard. Fuels and large quantities of paints and vehicle fluids stored at one location would be the likely products for which a DOT facility could exceed the reporting threshold.

The local fire department, County Local Emergency Planning Committee (LEPC), and NYSDEC must be notified within 90 days if a chemical or product is stored above this threshold (also, provide copies of notifications to the Regional Safety Representative). An inventory form, called a Tier II form, that includes the chemical/product names and maximum amount stored during the previous year must be submitted by March 1, of each year to these organizations. Reporting of petroleum materials stored in tanks has been completed for NYSDOT centrally by the Petroleum Bulk Storage Manager in the Facilities Unit (FACU). Call the Regional Safety Representative if you may have something other than petroleum products in tanks to report.

4.5.2 Toxic Chemical Release Inventory (TRI) reporting

Another community right-to-know regulation requires reporting when a certain chemical is used or generated at a quantity exceeding 5,000 pounds per year at a facility. Reportable chemicals are on a designated "Toxic Chemical List" and reportability considers all products in which they may be present. Several exemptions may apply to chemicals present in products used for certain activities including maintaining motor vehicles operated by the facility; use as a structural component of the facility; and routine janitorial or facility grounds maintenance. Use of the exemptions is discouraged for activities that are a significant part of the facility/agency mission. Annual reports have been completed for all NYSDOT facilities by the Main Office Operations Division and the ESB.

Chemicals requiring reporting have been present in traffic marking paints and have included: methanol, glycol ethers, lead compounds, chromium compounds, styrene, and an epoxy paint hardener compound. Started 2009, NYSDOT claimed an exemption for these activities, since lead and chromium are no longer present in pavement markings. If you have additional questions about these requirements, contact the Hazardous Materials & Asbestos Unit of the ESB.

The federal requirements for hazardous chemical inventory and TRI reporting are in 40 CFR Part 370 and 40 CFR Part 372, respectively. Title 3 of article 37 of the NYS ECL expanded the TRI requirements to apply to NYS facilities and reduced reporting thresholds.

4.6 Environmental Audit

A 1998 amendment to the Environmental Conservation Law requires all State agencies to audit their facilities, operations and projects annually for compliance with environmental requirements. This formal process begins each April for activities that occurred during the previous fiscal year. Users are asked to enter audit information to the Environmental Audit System (EAS). EAS can be accessed through the IntraDOT site under *Applications*. The EAS User Manual and the New York State Environmental Guidance Manual are available on Environmental Science Bureau's IntraDOT site under *Applications* and the Environmental Audit sub-tab. New EAS users are required to submit the "Request for New or Modified Access to Systems and Data" form to Information Security. The form is available on the IntraDOT under the *Forms & Manuals* tab. Technical assistance and compliance information can be obtained from the Environmental Science Bureau or the Regional Environmental Audit Coordinators.

4.7 Ventilation and Exhaust Systems

Some operations and process ventilation that can release contaminants to the air may require an air permit from NYSDEC. Most NYSDOT activities, however, do not require air permits. Examples of activities that do **NOT** need air permits include:

- Parts cleaning stations where non-chlorinated cleaning solvent drains through a hole smaller than 16 square inches (4" by 4") into a keg or reservoir (note: chlorinated solvent use has additional requirements/concerns);
- Hand wiping or hand cleaning of parts or equipment by solvents;
- Hand-held welding, brazing and soldering equipment;
- Acetylene, butane and propane torches;
- Furnaces or space heaters (heat input capacity < 1 million BTU/hr) of the size typically used to heat NYSDOT maintenance facilities including space heaters that burn used oil. *Note: Used oil must be from NYSDOT facilities (See Used oil for space heating in Section 5.4); and*
- Motor vehicle engine exhaust collection ducts to vent vehicle exhaust during maintenance and repair activities outside of the building.

Paint spray booths do require an air quality permit if it meets **any** of the following:

- More than 25 gallons of paint and solvents (combined) are used in a month;
- The paint spray booth is located in parts of New York where air quality is poor for ozone. These areas are: Long Island (Nassau and Suffolk Counties), the five boroughs of New York City, Westchester and Rockland Counties, and the seven southeastern towns in Orange County; or
- Exhaust gases from sanding and painting do not pass through filters or other emission control devices.

Even if a paint spray booth does not need an air permit, you must keep records on site for five years and make them available to NYSDEC if requested to show that spray paint activities do not exceed these limits.

For diesel vehicle exhaust, see 2.5 - *Diesel Vehicle Operations*.

Except for paint spray booths, most activities at NYSDOT facilities are considered exempt or trivial

under NYSDEC's Air Quality Regulation, "Constructing and Operating Permits," 6 NYCRR Part 201 and thus exempt from NYSDEC registration and permitting provisions. Requirements for paint spray booths are given in 6 NYCRR Subpart 201-3.2(c)(17).

4.8 Open Burning and "Burn Barrels"

Open-air burning can release toxic compounds into the air, especially if synthetic materials such as plastics, garbage, or pressure-treated wood are burned. Burning wastes in fire pits or "burn barrels" without a permit is prohibited by the NYSDEC's air quality regulations in 6 NYCRR 215.2(f).

More information about the problems of "backyard burning" can be found at:

<http://www.epa.gov/msw/backyard/> or at: <http://www.dec.ny.gov/chemical/32060.html>

See also 3.5.2 *Waste Disposal (excavated material) Disposal- Open Burning*.

4.9 Green Cleaning Products and Reporting

In January 2005 Gov. Pataki signed Executive Order No. 134 that required all New York State agencies to use the least hazardous cleaning products to reduce worker exposure to irritating or harmful chemicals while maintaining safe and attractive workplaces. E.O. 134 also requires each agency to annually prepare written reports that describe what cleaning products were used, evaluate how well they met the "green cleaning products" order, and document reasons why other products were selected. The Office of General Services (OGS) maintains lists of Green Cleaning Products at <http://www.ogs.state.ny.us/purchase/GreenCleaningProducts.asp> and also compiles individual agency reports each January. For additional information about how this Order applies to State-owned and leased properties, or view the annual reporting form, please check the OGS' website.

5 WASTE MANAGEMENT

This section discusses issues and recommended procedures for waste management and disposal. It applies to wastes from all NYSDOT operations, whether the activities are facility- based or occur along the ROW.

5.1 Waste Management - General Rules

“**Solid Waste**” is a broadly defined term. It includes any garbage, refuse, sludge or any solid, liquid, semi-solid or contained gaseous material which is:

- Discarded;
- Disposed of; or
- Burned or incinerated.

Further, “**solid waste**” includes any substances:

- That are accumulated, stored, or physically, chemically or biological treated in lieu of or before being disposed of, burned or incinerated; or
- Which have served their original intended use and is sometimes discarded.

A “**Generator**” means any person whose act or process produces a solid waste or whose act first causes solid waste to be subject to regulation. NYSDOT is considered the “generator” of wastes that result from its construction, maintenance, and other activities.

NYSDOT generates many categories of wastes. It is NYSDOT’s responsibility to properly categorize the wastes and ensure proper handling and disposal based on the waste. NYSDOT wastes include:

- “**Construction and Demolition (C&D) Debris**” is uncontaminated solid waste from construction, remodeling, repair and demolition of utilities, structures and roads; and uncontaminated solid waste from land clearing. NYSDOT generates C&D debris during many activities including roadway rehabilitation and related activities;
- “**Non-Hazardous Solid Wastes**” includes routine trash and garbage from support and administrative operations including general litter collection from along the roadside (with the separation of specialty wastes);
- “**Non-Hazardous Industrial-Commercial Waste**” is any solid waste which originates at, is generated by, or occurs as a result of any industrial or commercial activity (and does not meet criteria of a hazardous waste. Many NYSDOT specialty wastes such as discarded (non-hazardous waste) chemical products, used vehicular fluids for disposal, and contaminated soil are classified as non-hazardous industrial waste; and
- “**Hazardous wastes**”, are solid wastes that have a “characteristic” or are “listed” in defined criteria of 6 NYCRR Part 371. Criteria are as described in *5.1.1 Hazardous Wastes*. Certain wastes such as lead paint removal waste may be hazardous wastes.

A determination of whether a waste is a hazardous waste as described under the “Hazardous Wastes” subsection should be conducted for all wastes that could possibly be hazardous wastes. The hazardous waste determination may be conducted by using generator’s knowledge of the waste and/or testing. The product’s Material Safety Data Sheet (MSDS) or product label should indicate if an unused product would be a hazardous waste. Information such as ingredients, flash point, pH and disposal requirements are useful in making this determination.

Consideration must also be given to used materials where contaminants and/or changes to the

material could have been introduced during its use. This type of contamination may not be easily predicted by generator's knowledge and may require testing of the typical waste product. Examples could include metal contamination in waste oils, degreasing solvent, or antifreeze that could be added during the vehicle operation that were not present in the original product.

The requirements for handling and disposal vary significantly for the different categories of wastes. The surplus and waste material requirements are outlined in the following subsections in order of decreasing regulation, with hazardous wastes being the most highly regulated disposal category.

5.1.1 Hazardous Wastes

5.1.1.1 Background:

Regulatory Basis - The Resource Conservation and Recovery Act (RCRA) establishes a comprehensive framework to regulate hazardous wastes codified in EPA regulations 40 CFR Part 261-268. In New York State, NYSDEC has authority for the program with the regulations at 6 NYCRR Parts 371-376. The New York State regulatory citations will be used in this document. RCRA regulates hazardous waste from "cradle-to-grave". Generators are responsible from the point of generation through the final disposal. Overall inspection checklists, [*NYSDEC State Inspection Checklist: Large Quantity Generators \(LQG\) and Small Quantity Generators \(SQG\)*](#) are available under the Hazardous Waste Generators heading as self assessment tools at the EPA Web site: <http://www.epa.gov/Region2/capp/cip/rcra.htm>

Generator and Co-Generators of Hazardous Waste – A **generator** is the person whose act or process first causes a hazardous waste to become subject to regulation. Depending on ownership, act or process, a waste may have **co-generators** - - as shown by the following example with a NYSDOT funded bridge rehabilitation contract.

When a contractor removes lead paint from the bridge, he or she becomes a **generator** by creating hazardous waste, lead paint removal debris. NYSDOT, however, as bridge owner/operator is also a **generator**, since initiating the project created the waste.

Where one or more people meet the definition of **generator**, they are jointly and severally liable for compliance with hazardous waste regulations. The parties may, by a mutual decision, have one party assume the duties of generator. If a violation occurs, anyone meeting the definition of generator may be held liable for violations.

Hazardous wastes are tracked on a site-specific basis, with unique EPA numbers issued to the site. Since each facility or contiguous piece of property is viewed as a separate generator, each residency and each bridge in New York are typically considered separate site generators. **Forms/Instructions** for Notification of Regulated Waste Activity [EPA Form 8700] **to request an EPA ID Number** can be obtained at the following EPA links:

Federal site: <http://www.epa.gov/wastes/inforesources/data/form8700/forms.htm>

EPA Region 2 site: (New York State facilities forms get mailed to EPA Region 2):
<http://www.epa.gov/region02/waste/csummary.htm#id>

5.1.1.2 Hazardous Waste Determination: Generators must determine if their wastes are hazardous wastes per Part 371, including the following classifications:

2a. Listed wastes - Commercial products, off-specification products, container residues and spill residues of chemicals that are specifically "listed" are hazardous wastes when discarded. These would include the commercial/technical grade formulation of the product or products for which a

listed chemical is the sole active ingredient. (Note: Products are not listed hazardous wastes merely because they contain a listed ingredient in a mixture). Certain process wastes from certain types of industrial/maintenance activities may also be “listed”. Examples include spent degreasing solutions containing certain components such as chlorinated solvents. Polychlorinated biphenyl (PCB) contaminated articles, liquids, and materials are also regulated hazardous wastes in NYS. Note: Listed hazardous wastes also include acute hazardous wastes which have additional requirements including designation of a generator as large quantity if > 1 kg is generated within any month. Since acute hazardous wastes are not anticipated within NYSDOT activities, the additional requirements are not detailed.

2b. Characteristic wastes - Wastes that have certain “characteristics” (ignitability; corrosivity; reactivity; and/or toxicity) are hazardous wastes regardless of their origin:

- **Ignitable** - Defined for liquids as having a flashpoint below 140° F;
- **Reactive** - Can explode or react violently when exposed to air or water;
- **Corrosive** - Can dissolve steel or harm skin (Defined as pH < 2 or > 12.5); and/or
- **Toxicity** - Does the waste have toxic constituents that can be released upon disposal? This characteristic considers not solely that the constituents are present, but whether they have the tendency to leach out and release into the environment upon disposal as measured by a test termed the *Toxicity Characteristic Leaching Procedure (TCLP)*. The TCLP is an analytical test which determines the potential of a toxic constituent (currently 40 constituents: metal, pesticide, and organic chemicals) to leach and become mobile and contaminate groundwater/waters upon disposal. Metals such as lead and chromium are constituents on the TCLP list.. For example, lead-based bridge paint removal waste is typically a hazardous waste due to lead toxicity characteristic.

5.1.1.3 Accumulation/Storage: Generators may "accumulate" hazardous waste on site without a permit as long as they comply with certain hazardous waste management regulations for their accumulation unit(s) and for their facility (such as a contingency plan and personnel training requirements). The length of time a generator is allowed to accumulate their waste will vary depending on the generator's classification (based on quantity generated). EPA interprets the accumulation provisions as allowing generators to store their waste for the allotted time period and to treat their waste in the accumulation unit, provided the generator complies with the generator requirements of Part 372.2 and the provisions included by reference for personnel training, preparedness and prevention, contingency plans and emergency procedures, and the management of container requirements.

3a. Hazardous waste generator categories and requirements - Generators must determine how much hazardous waste they generate and maintain records to document the amounts. The categories are:

- Large Quantity Generators (LQG) are fully regulated and generate >1,000 kg in any month;
- Small Quantity Generators (SQG) have somewhat reduced requirements and generate between 100 kg and 1,000 kg/month and store less than 6,000 kg on site at any one time; and
- Conditionally Exempt Small Quantity Generators (CESQG) have significantly reduced requirements and generate < 100 kg/month and store < 1,000 kg on site at any one time. For additional information on CESQG requirements, see CESQG item in 5.4 *Waste Management - Specific Items and Topics*.

The hazardous waste management regulation requirements for LQGs and SQGs will be discussed through the remainder of this section. *Note: For rough estimation purposes, 100 kg = approximately 1/2 drum.*

3b. General Storage and Handling - Requirements vary based on the amount of hazardous waste

generated at a facility. For other than CESQG facilities, the following requirements apply:

- **Labels/Markings**(372.2): Any hazardous waste container must be labeled with the following information:
 - The words “Hazardous Waste” and
 - The date the waste in the container was generated. This date is the day when the first wastes are placed in the container;
- **Accumulation Time** (372.2) - Hazardous wastes must be shipped within 90 days for LQGs and 180 days (270 days if it must be shipped more than 200 miles) for SQGs from the date of generation;
- **Containers** (373-3.9) - Containers must be in good condition, not leaking, and must be compatible with the wastes stored within. Containers must be kept closed and stored in a manner to prevent rupture or leaks; and
- **Inspections** (373-3.9) - At least weekly, the containers (and containment systems, if present) must be inspected for any leaks and deterioration. This inspection must be documented with a log of date, inspector, wastes present and condition. Immediate action should be taken on any leaks or deterioration.

Since storing is allowed without a permit only at the site of generation, hazardous wastes can not be moved to other off-site storage locations except for the following exceptions:

- Regulations allow hazardous wastes from CESQGs to be accepted at other locations (i.e., for consolidation);
- Per an agreement with NYSDEC, bridge lead-based protective coating removal wastes may be relocated to the nearest NYSDOT residency if space limits prevent; or
- Storage at the job site.

5.1.1.4 Emergency Preparedness, Prevention and Contingency Plans, Personnel Training and Release Reporting: Generators must document preparedness, prevention and contingency planning for the site addressing plans, responsibilities and emergency response actions. The emergency and contingency planning and training documentation for SQGs are not required to be written in formal plans. Planning and readiness must include:

4a. Preparedness and Prevention (Part 373-3.3 required by reference in Part 372.2) - Preparedness and prevention planning is required to ensure maintenance and operation of the site to minimize the possibility of a fire, explosion or release of hazardous waste constituents to the air, soil or water. Specifically required are:

- Adequate aisle space for emergency personnel and equipment as needed in the event of a fire or spill and to provide for inspection;
- Telephone or other device to summon emergency assistance and internal communications or alarm system. Employees must have access either directly or through visual or voice communications to an alarm or emergency device (i.e., telephone) whenever hazardous waste is being poured, mixed, spread or otherwise handled;
- Fire control equipment and materials (including fire extinguishers and adequate water) and spill control equipment as needed to address the hazards posed by the waste; and
- Arrangements with local authorities including police, fire departments, emergency response teams, and hospitals to familiarize them with the site and develop agreements for assistance.

4b. Contingency Plan and Emergency Procedures (373-3.4) - The facility must have a contingency plan to minimize hazards from any releases of hazardous waste to air, soil, or surface water. The plan must:

- Specify personnel actions to be taken in the event of a release or emergency;

- Describe arrangements with outside authorities;
- List names, addresses, and phone numbers of all persons to act as emergency coordinator;
- List all emergency equipment at the facility; and
- Include an evacuation plan.

At all times, there must be at least one employee either on site or on call who can act as the emergency coordinator.

4c. Personnel Training (373-3.2(g)) - Facility personnel must be trained to perform duties in accordance with hazardous waste regulations. Personnel must also be trained to understand emergency procedures, emergency equipment, and any emergency systems.

4d. Release Reporting - Releases/Spills above the designated reportable quantities for Hazardous Substances under CERCLA (Comprehensive, Environmental Response Compensation and Liability Act) as listed in 40 CFR Part 302 must be reported to the NYSDEC Spills Hotline (800-457-7362) and the National Response Center (800-424-8802). For example, the reportable quantity for hazardous waste solid with the characteristic of lead toxicity, D008, is 10 pounds. See *4.4 - Spills of Fuels, Chemicals and Hazardous Products*. In addition, the carrier must report any release of hazardous waste in any quantity that have been discharged during transportation (including loading, unloading, and temporary storage) to USDOT on Form F 5800.1 within 30 days of the incident.

5.1.1.5 Waste Minimization: LQGs of hazardous wastes must have a program to reduce the volume and toxicity of the waste generated and must certify such on manifest signature. NYSDOT strives to minimize generation of hazardous wastes as a component of its objectives for waste reduction, reuse, recycling and environmental sustainability, summarized in *5.3 Waste Reduction, Recycling, Reuse and Environmental Sustainability*.

5.1.1.6. Shipping, Manifesting, and Notifications: All hazardous waste must be transported from the point of generation to a permitted Treatment, Storage and Disposal (TSD) facility. The following narrative details the requirements for a proper transfer to the selected TSD facility.

6a. Manifesting (372.2) and Shipping Paper Descriptions - Manifests are required to ship hazardous waste for off-site treatment, storage, or disposal. The manifest is a multiple-copy tracking document required by USDOT and EPA/NYSDEC. It tracks the chain of custody for the waste from when it leaves the generator to final disposition at a TSD or recycling facility. Each party involved in any or all aspects of shipping the waste signs the manifest and retains a copy, providing critical continuity between the generator and the TSD facility (Part 372). The manifest provides the communication in lieu of the shipping paper required per USDOT (49 CFR Part 172).

i. Manifest Content - The USDOT information that must be placed in the manifest (shipping paper) is as follows: Proper Shipping name (including technical name in parenthesis for any “not otherwise specified (n.o.s.) names”) [per 49 CFR 172.101]; Hazard classes [49 CFR part 173]; Identification number [49 CFR 172.101]; Packing Group [49 CFR Part 173].

ii. Manifest Tracking and Retention - Once the chain is complete, the TSD facility returns a signed copy of the manifest to the generator. If a generator does not receive a copy of the manifest signed by the TSD facility owner or operator within 45 days of the date the waste was accepted by the initial transporter (60 days for a SQG), an exception report must be prepared. Manifest copies must be retained for a minimum of 3 years.

6b. Reportable Quantity (RQ) - Reportable Quantities above which releases must be reported have

been determined and are listed in 40 CFR Part 302 for materials that have been designated Hazardous Substances under CERCLA (Comprehensive, Environmental Response Compensation and Liability Act). For shipments of such designated hazardous substances in packages exceeding the RQ, the letters RQ must be entered on the shipping paper before or after the basic description. Note: The transporter must provide notifications, however, of releases of hazardous waste in any quantity that occurs during shipment.

6c. Land Disposal Restriction Notification - Hazardous wastes also have treatment standards per Part 376, above which land disposal is not allowed and which must be communicated to the TSD facility. For example, for lead paint waste, this typically requires “stabilization” at the TSD facility before disposal so that the waste is below the treatment standard for the lead and chromium as an underlying constituent of concern. The notification to the TSD Facility that a waste exceeds the treatment standard must accompany the shipment.

6d. Prepare Containers for Shipping and Placarding of the Shipment:

- **Labeling and Marking** - Before shipment, containers must be marked with the following:
 - Proper shipping name and ID Number;
 - “HAZARDOUS WASTE –Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the US Environmental Protection Agency;
 - Generator’s Name;
 - Manifest Document Number;
 - Any hazard labels as required for the USDOT hazard class; and
 - Accumulation Start Date (The date that the waste was first placed in container (required for on-site identification, not shipment);
- **Placards** - Placards indicating the hazards of the cargo are required on each side and each end of a transport vehicle for bulk shipments (exceeding 119 gallon containers); for certain highly dangerous materials in any quantity; and when >454kg/1001 pounds of the aggregate weight of the containers of otherwise regulated hazardous material is present (in multiple containers on the shipment; and
- **Packaging** - All containers used in transporting hazardous wastes must meet the requirements of 49 CFR Parts 173, 178 and 179.

6e. Emergency Response Information and Phone Numbers - Emergency response information and emergency contact phone number must accompany each shipment of hazardous waste and be available to emergency response personnel to mitigate any incidents involving the hazardous waste during transportation. The information must contain the following information:

- The basic description and technical name of the hazardous material;
- Immediate hazards to health;
- Risks of fire or explosion;
- Immediate precautions to be taken in the event of an accident or incident;
- Immediate methods for handling fires;
- Initial methods for handling spills or leaks in the absence of fire; and
- Preliminary first aid measures.

The applicable page from the USDOT Emergency Response Guidebook is typically supplied to satisfy these requirements. In addition, an emergency response phone number that is monitored throughout the transportation process must be supplied for use in the event of an emergency involving the hazardous material during transportation.

6f. Security planning and training are new USDOT requirements (49 CFR 172.800 and 172.704).

These changes require hazardous waste generators and carriers to perform the following:

i. Security - As offerers of hazardous waste for transport, both NYSDOT and the Contractor are required to perform the following:

- **Security awareness training** - Each hazmat employee must receive training about the security risks associated with the hazardous waste transportation, methods designed to enhance security, response to security threats and contents of the site-specific security plan; and
- **Security Plan** - A written security plan must be prepared covering the following:
 - An assessment of the transportation security risks for shipment of the hazardous waste.
 - Personnel security;
 - Prevention of unauthorized access; and
 - Security en route.

ii. Transporters - The transporter (carrier) of hazardous wastes must have:

- Obtained an EPA identification number as a transporter;
- NYS waste transporter permit (Part 364);
- Any other licenses/transporter permits from any other states through which the waste will travel if any other states have requirements;
- Registration with USDOT as a hazardous material carrier if required under the Hazardous Materials Transportation Uniform Safety Act of 1990 (HMTUSA). Government agencies and their employees (but not our contractors) are exempt from this requirement for registration as a shipper of hazardous material. Carriers/persons must be registered if shipment met certain criteria (likely to be impacted in hazardous waste shipments) including:
 - Hazardous materials in bulk packaging/containers exceeding more than 13.24 cubic meters. Roll-offs of lead-based protective coating waste could be expected to exceed this criteria; and/or
 - Shipments in other than bulk packaging of 2,268 kg gross weight or more of a class of a hazardous material for which placarding of the vehicle would be required. A large quantity of drums of lead-based protective coating waste could exceed this criteria; and/or
 - A quantity of hazardous materials that requires placarding. Several drums of lead-based protective coating removal waste could exceed this quantity.

Since hazardous waste transporters typically handle many different types and quantities of hazardous wastes, it would be expected that they would require registration.

- *Security* - As a registered carrier, the permitted waste transporter is required to perform the same security measures as described in 6f.i. above.

5.1.1.7 Annual Reports, Fees, Taxes and Records Retention: The following are reports, fees and related procedures required of generators of hazardous wastes in New York:

7a. Generator Annual Reports - Annual reports are required to NYSDEC for all large quantity generators, due March 1, for the preceding calendar year.

7b. Regulatory and Surcharge Fees (Hazardous Waste) - Hazardous waste program fees (regulatory and surcharge) are assessed upon large quantity generators that generated 15 tons or more of hazardous waste within the calendar year. The surcharge fees (approximately 4 times the original fees) were added to the base regulatory fees starting in 2004. The fees are typically assessed by NYSDEC based on manifest records with invoices sent to and paid centrally by Main Office Accounting with the correctness of the assessment determined by regional review. The combined fees start at \$5,000 (\$1,000 regulatory fee and \$4,000 surcharge fee) for a facility generating 15 tons and increase with higher generations. These fees are in addition to disposal costs and the special tax that is assessed on waste generations.

7c. Special Assessment (Tax) - A quarterly assessment (Form TP-550) is required to be submitted to

the NYS Department of Taxation for any calendar quarter that hazardous waste disposals exceeded 1 ton or more, dependant on the disposal method. This assessment is in addition to the disposal fees and regulatory fees.

7d. Records Retention - All manifests, annual reports, land disposal restriction notifications and documentation of the hazardous waste disposal must be retained for at least 3 years. As the generator has cradle-to-grave responsibility which has no time limit, it is often advisable to retain documentation of proper disposal for longer time frames.

5.1.2 Non-hazardous industrial wastes

Some wastes that do not meet any hazardous waste criteria, but result from work activities are considered industrial-commercial wastes. Industrial commercial wastes are disposed of at municipal/commercial disposal facilities, similar to routine nonhazardous solid waste, at recycling facilities and/or at specialized facilities for that type of waste. Shipment, however, requires transport by permitted waste transporters, if transported in greater than exempt quantities (500 pounds/shipment). Examples of non-hazardous industrial wastes include:

- Paint and paint chips that do not contain any regulated RCRA metals or that do not fail the TCLP test. This also includes millings of traffic markings and adhering road material when markings are purposely removed from pavement;
- Non-hazardous used oil, non-hazardous waste antifreeze, and other waste vehicular fluids and filters that do not meet the criteria of hazardous waste;
- Contaminated soil such as soil contaminated with petroleum or other materials, but not at levels to be considered a hazardous waste;
- Friable (able to flake) asbestos (Special concerns apply. See *5.4 – Waste Management- Specific Items and Topics- ASBESTOS*);
- Unused products containing chemicals (that are not hazardous wastes); and
- Empty drums/containers for disposal, not recycling.

NYSDOT may self-transport up to 500 pounds of non-hazardous industrial wastes in a single shipment without requiring the vehicle to be permitted. See *5.4 - Waste Management - Specific Items and Topics* for disposal information specific to each item.

5.1.3 Non-hazardous solid wastes

Routine garbage, office trash, and most litter collection are considered non-hazardous wastes. Most of the adopt-a-highway trash, excluding tires and other items that are industrial or possibly hazardous wastes, are non-hazardous solid wastes. These wastes should be sent to municipal or commercial landfills or trash burning plants, and no special haulers or manifests are needed.

5.1.4 C & D (Construction and Demolition) Debris

Uncontaminated solid waste from construction, remodeling, repair and demolition may be disposed of at permitted C&D debris landfills or may be disposed of at municipal solid waste landfills. Permitted C&D debris processing facilities may also be an economical disposal option for projects in metropolitan areas. Generally, where available, C&D debris landfills typically charge less than municipal or commercial solid waste landfills. Certain C&D wastes have additional disposal options outlined below under *Exempt C&D and Spoil*. Permitted C&D landfills can accept the following types of wastes:

- Uncontaminated bricks, glass, asphaltic pavement, concrete and masonry materials. (Pavement containing routine intact traffic markings or that has come into contact with petroleum products through normal vehicle use of the roadway are considered clean);
- Uncontaminated soil, rock and land clearing debris;

- Wood and wood products;
- Wall coverings, plaster and drywall;
- Plumbing fixtures, electrical wiring and components containing no hazardous liquids, non-asbestos insulation, plastics that are not sealed in a manner that conceals other wastes, roofing shingles and other roof coverings;
- Empty buckets/containers (10 gallons or less) with less than one inch of residue in the bottom
- Pipes or metal attached to, or embedded in, these waste materials; and/or
- Contact the NYSDEC Regional Solid Waste contact for information regarding authorized disposal or treatment facilities in the area.

Exempt C&D Debris and Spoil: Some types of C&D wastes (*Exempt C&D* or “fill”) have additional disposal options as follows:

- Waste related to vegetation, including trees, stumps, yard waste and wood chips from these materials may be buried on ROW/NYSDOT property in an area that has been approved by Environmental staff. (*Note: Within the APA, this activity requires a permit from the APA.*) Regions or residencies may use mulch from trees, stumps or other vegetation waste to help control erosion, stabilize banks or protect new plantings, such as living snow fence, from being overrun by weeds. Mulch is also useful for starting or maintaining deer composting piles.

In some parts of the State, the presence of invasive insects, such as the Asian Longhorn Beetle or the Emerald Ash Borer, may require special handling or disposal of vegetation wastes. Because of the dynamic nature of the spread of invasive insects, check with your MEC or Director of Regional Crews, to see if there are special handling or disposal requirements for vegetation wastes at your location;

- Recognizable uncontaminated concrete and concrete products (including steel reinforcing rods embedded in concrete), asphalt pavement, brick, glass, soil and rock may be buried on NYSDOT property (except for Nassau and Suffolk Counties) as above or off-site at a facility (except for Nassau and Suffolk Counties) that takes no compensation and operates only during daylight hours (i.e., facilities requesting fill at no charge). (*Note: Within the APA, this activity requires a permit from the APA*); and
- Recognizable (unprocessed) uncontaminated concrete and other masonry waste (including steel or fiberglass reinforcing embedded in concrete), asphalt pavement, brick, soil or rock that has not been in contact with a spill from a petroleum product, hazardous waste, or industrial waste, and is not commingled with any other solid waste may be handled at a registered C&D debris processing facility. Readily recyclable items such as steel beams, guiderail, posts and cables are not considered exempt C&D.

If other wastes get mixed into the materials listed above, the entire area may be considered an illegal landfill and cleanup and removal of everything may be required. More restrictive regulations for Nassau and Suffolk Counties and within the Adirondack Park require a permit for any landfilling, including placement of fill.

Placement of any materials must consider the environmental issues associated with the location of the placement as discussed within the general work and operational activities (See sections 2 and 3) and includes consideration of:

- Wetlands and floodplains (can not be placed in wetlands/buffer);
- Erosion Control;
- SPDES Phase 2 (Fill placement may disturb more than 1 acre);
- Property - owner approval;

- Local planning and zoning approval which owner must consider; and
- Cultural resource presence.

5.2 Specialty Waste Disposal (including drums and containers of products, chemicals, and other wastes)

Specialty wastes include hazardous wastes, chemical products (including partially-used products) or other materials that are not disposed of by routine trash collection and require a special waste contract for disposal. Disposing of specialty wastes is generally a two-step process:

a) *Identify specialty wastes and if necessary perform laboratory testing* - Known unused materials with sufficient information on their characteristics from material safety data sheets (MSDSs) or other information sources can be identified adequately for disposal. Examples include unused containers of toluene or paint with labels intact and MSDSs available. Sufficient information may also be available to identify used materials of known characteristics such as antifreeze where the waste had previously been tested and the process generating the waste has not changed; or fluorescent bulbs which are known to be hazardous due to mercury content. For waste of unknown or uncertain identity or where contamination could be added at unknown levels to the material upon use, testing may be required to adequately identify the waste for disposal. The NYSDOT has contracts with analytical laboratories and standard procedures for confirming suspected drum contents. The contracts with these labs are designed to characterize wastes for disposal and will meet regulatory standards without adding unnecessary testing. Call the MEC for assistance in inventorying, identifying and testing materials for disposal. The current lab contract is posted in the Manual/Guidance Section of the ESB Intradot site;

b) *Specialty waste disposal contracts* - A specialty waste disposal contract can be developed to remove and dispose of specialty wastes as identified on the inventory. The contracts should include MSDSs and analytical results to assist the contractor in providing proper handling, recordkeeping and disposal of the wastes. It is generally most cost-effective to arrange for disposal of all waste materials within a DOT Region at one time, but smaller or periodic disposal contracts may be required if storage time limits or storage space are issues (See 5.1.1.3 *Hazardous Wastes-Accumulation/Storage*). Contact the MEC and/or the Procurement Bureau ((518) 457-4401) in the Main Office for assistance in developing contracts; and

c) *Laboratory Analysis Tests (Totals versus TCLP)*- “Totals” testing measures the constituent component as a part of the entire sample, usual on a weight of constituent per weight of entire sample, such as milligrams per kilogram. The Toxicity Characteristic Leaching Procedure (TCLP) measures the component of the constituent that will leach out in a standard (EPA preparation method 1311) “extracting” solution (with specified timeframes, dilutions, etc. The constituent concentration is measured as the component of constituent in weight per volume of the resulting extraction solution, such as milligrams per liter. Since the objective of waste regulation is to consider the hazards of the waste upon disposal, some of waste characterization criteria (specifically, the characteristic of toxicity), consider the tendency of the hazardous constituent (such as metals, organic compounds and pesticides) to leach and become mobile and contaminate groundwater/waters upon disposal. A “theoretical” maximum TCLP concentration can be determined by material balance and mathematical calculations from the total concentration of a constituent which assumes that all of the constituent present is extracted into the leachate. For this theoretical maximum concentration conversion, the concentration in mg/kg is divided by 20 to determine the maximum possible TCLP concentration in mg/l. In determining what analytical tests to perform it is important to determine the form of the standards for which the results will be compared. Generally, for employee exposure and site assessment work (for soils that may remain on site) and non-hazardous contaminated soils, total concentrations are most frequently required. For RCRA metals contamination, TCLP results are needed to determine if it is regulated as a hazardous

waste.

5.3 Waste Reduction, Recycling, Reuse and Environmental Sustainability

The overall objective of the transportation system is “sustainable” development that balances economic, environmental and social needs and consists of a long-term, integrated approach to planning, design and decision making. Another objective is incorporation of environmental stewardship/ environmental enhancements into projects, because there is the opportunity (often simple and inexpensive) to do so. The Department Environmental Policy, Environmental Initiative and Solid and Hazardous Waste Reduction Policy support these goals on an agency-wide approach.

The Department's waste reduction and recycling goal includes two major objectives:

1. Reduce waste quantity and toxicity generated and pursue recycling of wastes generated from construction and maintenance operations; and
2. Maximize recycled material use within highway applications and support functions (such as use of reused materials as a substitute for raw materials) and minimize use of clean natural materials in projects (including balancing of cuts and fills).

The policies document the following principles:

- Wastes should be prevented or reduced at the source whenever feasible;
- Wastes that cannot be prevented should be recycled whenever feasible;
- Wastes that cannot be prevented or recycled should be treated whenever feasible;
- Disposal or other release into the environment should be employed as a last resort and should be conducted in an environmentally safe manner;
- Source reduction will include any practice which:
 - Reduces amounts of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) before recycling, treatment, or disposal; and
 - Increases efficiency in use of raw materials, energy, water, or other resources, or protection of natural resources by conservation.

Practices can pertain to: equipment or technology modifications, process or procedure modifications, reformulation or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control. Examples of techniques that have been used by NYSDOT to reduce wastes include:

- 1) **Recycling** - DOT recycles waste materials such as used antifreeze and vehicle batteries;
- 2) **Reuse** - Whenever possible, DOT reuses asphalt and concrete pavements as a substitute for crushed stone in subbase and other engineering applications; and
- 3) **Waste to energy** - DOT routinely collects used motor oil that is burned for fuels or space heating.

5.4 Waste Management - Specific Items and Topics

This category discusses disposal procedures for specific wastes items and discusses specific waste topics, arranged alphabetically. If you have any waste disposal questions, contact the MEC.

ABANDONED DRUMS AND CONTAINERS IN RIGHT-OF-WAY (ROW): Abandoned drums or containers of unknown substances that are found along the ROW are handled similarly to spills of hazardous substances on the ROW (See 3.8 - *Spill Response Within the ROW*). The NYSDEC spill response program has contractors who can safely remove the drum or container, test its contents, and dispose of it properly. If you find a drum or container of an unknown substance, note its location but **DO NOT MOVE IT OR TAKE IT BACK TO THE RESIDENCY!** Call the NYSDEC Spill Hotline at 1-800-457-7362 to report abandoned drums and for assistance. NYSDEC

may need assistance to locate where the drum can be found on the ROW. Some illegally disposed drums may be the result of criminal activity. State or local police investigators may want to look for evidence such as fingerprints, footprints, tire tracks, etc. Be careful and try not to ruin any evidence that may be helpful to police.

ACUTE HAZARDOUS WASTES: Acute hazardous wastes (P listed) are toxic or reactive in small quantities and are regulated as strictly as larger quantities of other wastes. They include cyanide, strychnine and dioxin wastes and are not anticipated from typical NYSDOT activities.

ADOPT-A-HIGHWAY and ROADSIDE TRASH/DEBRIS WASTE: Routine trash picked up along the ROW is considered non-hazardous waste and can be disposed of at municipal/commercial landfills or disposal facilities. Except for items that are possibly industrial or hazardous wastes, AAH groups should not separate roadside trash, garbage and debris. Some wastes that are industrial or possibly hazardous wastes need special handling and are listed as: abandoned drums and containers, medical waste including needles and syringes, tires, animal carcasses or anything that appears to be a hazardous waste. Call a Region or Residency Adopt-a-Highway contact or MEC if you have questions.

AIR CONDITIONING FLUIDS (Freon): See *REFRIGERANTS*.

ANIMAL CARCASSES (Road-Kill): Dead animals can be disposed in several ways:

- 1) Placed in wooded or heavily vegetated areas well off the shoulders in rural parts of New York.
- 2) Buried on NYSDOT owned property if:
 - (a) No more than 10 animals are buried in a single pit;
 - (b) At least 1 meter (3 feet) of soil is placed over the carcasses which cannot be placed within groundwater;
 - (c) The burial pits are spaced at least 15 meter (50 feet) from each other, from any residence and from any surface waters; and
 - (d) Burial is in a well-drained area, above the water table;(Note: the transportation agency is allowed to do such burial on their own property, but any other landowners could not bury carcasses from off-site without permits and compliance with landfill standards.)
- 3) At a municipal disposal facility or rendering plant that will accept them. (*Note: Many landfills have refused to accept carcasses*);
- 4) Work Order Contracts (WOCs): Some parts of the State are covered by contractors who will pick-up and remove carcasses for a fee; and
- 5) Static Pile Deer Carcass Composting.

Composting deer carcasses is an effective alternative to the above methods. Complete details of the document entitled *Road-Kill Deer Carcass Composting, Operational and Maintenance Manual, Region 8 NYSDOT* can be found at:

http://www.dot.ny.gov/divisions/engineering/environmental-analysis/repository/deer_c_manual.pdf

The basic procedure is to select a well drained location with an impervious work surface and layer deer carcasses between layers of chipped tree limbs. To manage odor and discourage scavenging, care must be taken to completely cover all carcasses with a thick layer of wood chips and the compost pile should not be mixed.

ANTIFREEZE (COOLANTS): New antifreeze would not be a listed hazardous waste or fail any characteristic for hazardous waste. However, any contaminants such as chlorinated solvents,

benzene, or metals that could be introduced during use must be considered to determine if the waste antifreeze could be a hazardous waste. Generator knowledge and/or representative testing of the typical waste is required to determine if it is classified as hazardous waste. Used antifreeze should be collected in dedicated drums or tanks and clearly labeled. Disposal should preferably be by a commercial recycler who will reclaim the material.

ASBESTOS: Asbestos is a mineral that breaks into very small fibers and was used for many years in making fire-proofing, roofing, siding, flooring, ceiling tile and others building products. Friable and non-friable asbestos containing materials (ACM) shall only be handled or packaged for transport by NYS Department of Labor (NYSDOL) licensed certified personnel. Friable asbestos (able to flake) waste shall only be transported by a permitted waste transporter under a waste shipment record and disposed of at a permitted waste management facility approved to accept friable asbestos. Non-friable asbestos, however, may be transported and disposed of as C&D waste. Any renovations or demolitions involving buildings, bridges, and utility lines that could contain asbestos must be evaluated by licensed certified personnel. OSHA requires a visual inspection to identify materials you think may contain asbestos for future reference. If this inspection has not been performed at the facility, or if you think you have found asbestos waste along the ROW, contact the MEC for help and further instructions. (See also NYSDOT Safety Bulletin, SB-02-5, Asbestos)

BALLASTS - Polychlorinated biphenyls (PCBs): Some older fluorescent lamp (light) fixtures have ballasts with an oily insulating liquid that contain PCBs which must be disposed of as a PCB hazardous waste. PCB-free dielectric oil contained in newer ballasts can be handled and disposed of as used oil. Assume the ballast contains PCBs unless it is marked “does not contain PCBs”. The ballast should be separated from the lampbulb and disposed of separately. Quotes for disposal should be obtained following Department purchasing procedures. (See *FLUORESCENT BULBS* for bulb disposal).

BATTERIES: Requirements vary for batteries dependant upon type and content and may require specialty recycling or disposal due to metal content or corrosivity. The federal Battery Act of 1996 required the phase out of mercury in alkaline batteries and required the development of recycling programs for nickel cadmium, lead and certain other batteries. Review information on the battery (or provided with it) and, unless supplier information indicates otherwise, handle by the following general guidelines:

- **Lead Acid Batteries**, typically vehicle batteries and small sealed batteries in electronic equipment, contain acid liquid and lead and must be recycled or disposed as hazardous waste. NYS law requires retailers/distributors to accept used automotive/truck/RV batteries back for recycling at no charge (two per month maximum without new battery purchase). Turn in the old batteries when new batteries are installed. Licensed waste transporter, manifesting of shipment, or inclusion of the battery quantities in site hazardous waste generation amounts and generator status calculations are not required;
- **Nickel-Cadmium** rechargeable batteries must be recycled or managed under the “Universal Waste Rule”. The Rechargeable Battery Recycling Corporation (RBRC) at 800-8-BATTERY can provide assistance in recycling; alternatively, specialty waste disposal contracts could include the recycling of these batteries in their requirements;
- **Nickel Metal Hydride** batteries are not specifically required to be, but should also be similarly recycled. **Silver Oxide** and formerly available **Mercuric Oxide** batteries must also be recycled or disposed of as hazardous waste due to silver or mercury content, respectively; and
- **Alkaline batteries** and carbon-zinc batteries are now made with no intentionally added mercury and are considered acceptable for disposal as routine municipal waste.

BRUSH AND TREE (Clearing and Grubbing) Waste: See 5.1.4 - Waste Management - C & D (Construction and Demolition) debris - Exempt C&D.

CESQG (Conditionally Exempt Small Quantity Generators) (hazardous wastes): Facilities that generate <100 kg hazardous wastes in any month and store less than 1000 kg on site at any one time have significantly reduced hazardous waste regulatory requirements as follows:

- **Waste Identification** (372.2) - Determine if wastes generated are hazardous wastes and determine quantities of generation;
- CESQG **do not require** an EPA ID number, annual reports, manifesting of shipment, accumulation time and storage requirements, training/emergency planning documentation, and land ban notification requirements (371.1(f)); and
- Hazardous wastes from CESQGs can be disposed at a permitted hazardous waste facility or municipal or industrial solid facilities that can accept that type of waste. (It is recommended, however, that CESQG quantities be disposed of at hazardous waste facilities and most protective secure options be selected). Since wastes from CESQGs can be accepted at other locations without requiring the recipient site to be a permitted facility, CESQG waste can be moved and consolidated at other locations (For other categories of hazardous waste generators, storage without a permit is only allowed at the site of generation unless special agreements are negotiated).

C & D (CONSTRUCTION AND DEMOLITION) WASTES: See 5.1.4 - Waste Management - C & D (Construction and Demolition) debris

CONCRETE SEALERS: Unused concrete sealers typically have a flash point below 140° F which would classify the product as an ignitable hazardous waste. The product upon use, however, with the volatile components evaporated, is no longer ignitable/flammable.

CONTAMINATED SOIL OR SEDIMENT: Contaminated soil is an industrial waste and requires disposal at municipal/commercial disposal facilities (such as sanitary landfills) reclamation facilities or at specialized facilities for the type of contamination present. The potential for contaminated soil to be a hazardous waste due to characteristics such as flammability or toxic metal content must also be considered. If you suspect that soil or sediment is contaminated, call the MEC to help arrange further investigation and possible testing. Soil or sediment may be contaminated if it is discolored or stained, or smells like fuel or sewage.

CULVERT AND CATCH BASIN CLEANINGS: Uncontaminated grit and sediment from culverts and catch basins is normally disposed of as C&D waste and is not considered contaminated unless it smells like petroleum, fuel, or solvents, or is mixed in with other wastes like roadside trash. (See 5.1.4 - C&D (Construction and Demolition) debris - Exempt C&D and Spoil and 3.2- Drainage and Stream Channel Maintenance). Contaminated cleanings should be handled as contaminated soil and sediments.

DEGREASERS: See PARTS WASHER WASTES.

DIAMOND GRINDING SLURRY: "Diamond grinding" is a process used to restore smoothness to concrete (or asphalt) pavement. Slurry consists of fines removed from the pavement and water, originating as the coolant from the abrading process. NYSDOT placement of concrete or asphalt slurry from diamond grinding is considered recognizable concrete/asphalt subject to the exemption provisions of the Construction and Demolition (C&D) debris provisions of 6NYCRR Part 360-7.1 (b) (1)(i) when placed on state property under the control of NYSDOT in a manner and location that is in compliance with all other environmental regulations. Letter of interpretation and supplemental

information may be found in the Appendix of TEM Chapter 4.4.20 – Contaminated and Hazardous Materials.

DISPOSAL PROCEDURES FOR EACH CATEGORY OF WASTE (including Drums and Containers of Wastes and Other Specialty Wastes): See 5.2- *Specialty Waste Disposal Procedures* and/or specific waste item.

EMPTY DRUMS AND CONTAINERS: Drums and containers that have had all of the contents removed by common practices and have less than 25 mm (1 inch) product residue on the bottom and less than 3 % of the original product are considered “empty” and nonhazardous, even if the material they contained (such as solvents or coatings with flashpoints below 140°F) would otherwise be classified as a hazardous waste (This does not apply to drums or containers that held acutely hazardous wastes which would require “triple cleaning”). “Empty” containers may be returned to the manufacturer, sent to a reconditioner or handled as scrap metal, cardboard, etc. They are exempt from waste transporter requirements when destined for such reuse. “Empty” containers are nonhazardous industrial wastes when otherwise disposed. Small containers of up to 10 gallon capacity are, however, considered C&D debris and can be disposed of as such.

The original product label and hazard warnings must be left on drums or containers until they are empty as described above and no longer pose the indicated hazard. Remove or obliterate the label and mark the drum “empty” as soon as the drum is empty by these criteria. The hazard markings must be removed from an empty drum meeting these criteria prior to removing from the facility.

EPA ID NUMBER (Hazardous Wastes): See 5.1.1 *Hazardous Wastes- Background*.

FILL (Exempt C&D) - Brush & Tree (Clearing and Grubbing) Waste and Some Recognizable C & D Debris: See 5.1.4 - *C & D (Construction and Demolition) debris - Exempt C&D*.

FREON: See *REFRIGERANTS*.

FLOOR DRAINS: See 4.1 - *Vehicle Washing, Floor Drains and SPDES*.

FLUORESCENT BULBS: Mercury content makes typical spent fluorescent bulbs (lamps) hazardous wastes. Intact (not crushed or broken) fluorescent lamps may be handled as “universal wastes” allowing for somewhat reduced regulation (See *UNIVERSAL WASTES*). Some manufacturers are marketing lamps with lower mercury content; these lamps may not be hazardous wastes when spent. Unless the lamps are marked (or otherwise identified) as low mercury content lamps, assume they must be handled and disposed of as a universal or hazardous waste, with hazardous waste code, D009. Quotes for disposal should be obtained following Department purchasing procedures. Lamps marked or identified as low mercury must be evaluated to determine if they are a hazardous waste; manufacturer’s data may be used to support a determination that particular lamps are not a hazardous waste. Note: Ballasts should be segregated from the lamp. It may be a hazardous waste due to PCB content (See *BALLASTS*). For more information on lamp regulation, see: <http://www.dec.ny.gov/chemical/9088.html>.

FUEL FILTERS: Used gasoline or diesel fuel filters are hazardous wastes because they are typically ignitable (waste code D001) or toxic for benzene (waste code D018). These should be stored in closed containers, separate from other wastes, and labeled, handled and disposed as hazardous wastes. However, if fuel filters can be drained of all free liquids, they can qualify as scrap metal and be recycled at a scrap metal facility, under the scrap metal exemption.

GREASE AND TAR: Collect grease and soft tar in separate containers with proper labeling. Include these containers for disposal by a specialty waste disposal contract.

HAULING HAZARDOUS AND INDUSTRIAL WASTES: See *WASTE TRANSPORTER PERMITS*.

HAZARDOUS SUBSTANCES IN EQUIPMENT: Some equipment contains hazardous substances that may require special handling and disposal. Examples include switches or thermometers that contain mercury, or ballasts and light fixtures with PCBs (See *UNIVERSAL WASTES* and *BALLASTS*). Call the MEC with specific questions.

HERBICIDES: Herbicides are regulated pesticides. See *PESTICIDES*.

HYDRAULIC FLUID: Hydraulic fluids such as brake fluid, transmission fluid and power steering fluid are chemically different from motor oil, but for regulatory purposes can be handled as used oil and may be mixed with and recycled along with used oil. The recycler or disposal firm should be consulted, however, on their specific requirements. The fluids also must not be contaminated with any solvents or other materials that could make them hazardous wastes.

LIGHTING WASTES: See *BALLASTS* and/or *FLUORESCENT BULBS*.

LITTER FROM THE ROADSIDE: See *ADOPT-A-HIGHWAY WASTE*.

MANIFEST: See: 5.1.1.6- *Shipping, Manifesting, and Notifications*.

MEDICAL WASTE (Used Syringes or Needles): Used hypodermic needles and syringes are sometimes discarded at rest areas or along ROW. Used needles and other "sharps" can poke workers, and some bloodborne diseases like hepatitis can be transmitted if the virus is present. (The AIDS virus is unlikely to live more than an hour outside a human host, but should also be considered a risk.).

CAREFULLY place the syringe in a container and label with a biohazard sign (or use red containers). Disposal should be at a local hospital or other facility that can accept medical waste. As with "Abandoned Drums", notify NYSDEC for assistance if large quantities are found. (See also Safety Bulletin, SB-91-1, Infectious waste and agents).

METAL ARTICLES FOR RECYCLING: Materials including source separated metal materials (steel beams, guiderail, posts and cables, etc) traditionally incorporated as substitute to raw metal in the manufacturing process are encouraged to be recycled and are exempt from regulation as solid waste when recycled per 360-1.2(a)(4)(viii).

OIL FILTERS: Used oil filters are a non-hazardous waste if used oil is removed from the filter. The filter may then be preferentially recycled as scrap metal or otherwise disposed of as non-hazardous waste. For the oil to be considered "removed", filters must be gravity hot-drained by:

- Puncturing the filter and hot draining; or
- Hot draining and then crushing the filter; or
- Dismantling and hot-draining; or
- Other equivalent hot draining method that will remove used oil.

EPA recommends hot draining occur at or near engine operating temperature for at least 12 hours.

The drained oil is combined with other used oil from the site for recycling. See *USED OIL*.

PAINT: Most unused paints, including waterborne, have a flashpoint below 140 °F and therefore require handling and disposal as an ignitable waste (waste code D001). If the paint contains lead or chromium, the potential for the waste to have a toxicity characteristic for lead or chromium (codes D008 and D007, respectively) must also be considered.

PAINT REMOVAL WASTE (Lead-Based Bridge Paint): Paint removal waste from abrasive blasting or other removal methods for old lead based paint from bridge rehabilitations is typically considered a hazardous waste for lead toxicity. The following outlines and consolidates the information for handling, shipping and disposal of lead paint waste as a hazardous waste:

- *Hazardous Waste due to the Characteristic Lead Toxicity, Waste Code D008;*
- *USDOT Shipping Description: RQ Hazardous waste, solid, n.o.s. (D008); 9; NA3077; PG III;*
- *Constituents of Concern: Lead and Chromium;*
- *Treatability Group: Non-wastewater;*
- *Treatment Standard: 0.75 Lead mg/l and 0.60 mg/l Chromium by TCLP test;*
- *Reportable Quantity: 10 pounds;*
- *Placard for shipments exceeding 1001 pounds or bulk - Class 9;*
- *Markings on container:*
 - Hazardous waste, solid, n.o.s. (D008); NA3077*
 - HAZARDOUS WASTE –Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the US Environmental Protection Agency*
 - Generator's Name: NYSDOT Region_ EPA ID # (for bridge) ____.*
 - Manifest Document Number (fill in actual manifest # when shipped) Accumulation Start Date (When waste was placed in container (required for on-site identification, not shipment);*
- *Hazard Label on containers: Class 9;*
- *USDOT Emergency Response Guidebook Guide: 171, Substances (Low to Moderate Hazard); and*
- *NAICS (industrial classification code) included in EPA ID number requests: 23731 Highway, Street, and Bridge Construction (or 237310 same title) for NYSDOT typical construction/TMD sites NAICS code.*

(DRIED) PAINT CHIPS AND FLAKES: Dried pavement marking paints and other non-lead dried paint are non-hazardous industrial wastes, requiring disposal at a municipal landfill. These dried paints include markings purposely removed/milled from the road surface, but would not include the paint markings incidentally present on an entire removed section of roadway which would qualify as C&D debris. Testing of typical dried yellow pavement marking paints (waterborne and epoxy), however, has indicated that, although lead and chromium have been present in products in the past the dried products are under regulatory levels for hazardous waste. *Note: Landfills, however, may be unwilling to accept paint waste or may require additional testing. Dried paint wastes may also be collected, stored and disposed of by the specialty waste disposal contract.*

PAINT THINNER: Most paint thinners are organic solvents that would be listed or ignitable wastes. Store and handle them as hazardous wastes.

PAINT WASH WATER From PAVEMENT Marking Equipment (Waterborne pavement marking washwaters): Washwaters from cleaning of pavement marking equipment and activities must be disposed of as a specialty waste or, with approval of the servicing facility, discharged to the public sanitary treatment works. (It may not be discharged to stormwater or floor drains).

PARTS WASHER WASTES: Ignitability may make spent solvents from parts washers a hazardous waste. The solvent in Safety Clean parts washers typically has a flashpoint below 140°F

and would be an ignitable waste on disposal. The solvent in the Zep Parts washers has a flashpoint exceeding 140°F so would not be expected to be ignitable. Any contaminants such as metals that could be added through use must also be considered. Typical spent filters (bag and cartridge filters) from the Zep parts washers have been tested for contaminants including metals that could be introduced during its operation and were under regulatory limits and are therefore determined to be a non-hazardous waste.

PESTICIDES (Includes Herbicides and Insecticides): Keep all pesticides in original, labeled containers, and keep pesticide labels and Material Safety Data Sheet (MSDS) on file at the facility and with staff who are applying the pesticides. When herbicides are transferred to tanks, injection units, backpack sprayers or small spray bottle containers, such containers must have the herbicide label on the container or on the person making the application, in the case of backpack sprayers and small spray bottle containers. Save partly-used containers for next use. Pesticides that cannot be used must be disposed of by a specialty waste contract. Follow instructions on disposing of the container that are found on the pesticide or herbicide label.

It is possible to purchase many of the herbicides used by NYSDOT in reusable or returnable containers. Two issues that may limit the use of reusable and returnable containers are that they come in specific sizes and some vendors require purchasing a minimum quantity that may be greater than the amount of materials used at a location. (See also *EMPTY DRUMS AND CONTAINERS*).

PETROLEUM CONTAMINATED SOIL: Soil materials contaminated by petroleum products, including (but is not limited to) gasoline, heating oil, diesel fuel, kerosene, jet fuel, lubricating oils, motor oils, and other fractions of crude oil are require disposal as industrial waste (See *CONTAMINATED SOIL AND SEDIMENT*).

REFRIGERANTS: Refrigerants such as Freon are used in air conditioning systems and contain chlorofluorocarbons (CFCs) which pollute the air. Freon and other refrigerants must be removed and recycled by workers with EPA-approved training. Maintain records that show the name of the recycling facility that removed the refrigerants.

REGULATORY and SURCHARGE FEES (hazardous waste): See 5.1.1.7 – *Annual Reports, Fees, Taxes and Records Retention*.

SHOP RAGS (or Shop Towels): When rags are used to clean up known nonhazardous waste materials such as non-hazardous cleaning solvents or hydraulic fluid or motor oil, the rags would NOT be a hazardous waste. However, if rags are used to soak up a material that is a hazardous waste (toluene or chlorinated solvents for example), the rag itself could be a hazardous waste. Hazardous waste rags are not regulated as hazardous wastes if they are sent out to be cleaned and returned for re-use.

All used rags, shop towels, and clothing soiled with parts cleaner, gasoline or diesel fuel, used oil, etc. should be stored and managed in fire-proof or fire-resistant containers and must not be so saturated that they can drip any free liquid. Since NYSDOT does not typically use chlorinated solvents or hazardous waste cleaning solvent or other listed materials, it is likely that rags for disposal would be non-hazardous industrial wastes. Any rags, however, that were used for potentially hazardous waste materials could be hazardous wastes requiring disposal as specialty hazardous wastes and should be kept separate from non-hazardous waste rags. More information is available on the NYSDEC website at: <http://www.dec.ny.gov/chemical/292.html> or by contacting the MEC.

SOIL AND ROCK, EXCESS: Excess soil and rock may result from maintenance and construction activities. Provided these materials are uncontaminated, in accordance with 6 NYCRR 360-1.15(b)(7) they are not considered waste when used as fill material. These materials may be used for NYSDOT activities or sold (“placed in commerce”) to a consumer and the consumer is responsible for its use/placement.

SOLVENTS and DEGREASERS: See *PARTS WASHER WASTES OR PAINT THINNER*.

SORBENTS (Speedi-Dry or Sorbent Pads): When used to clean up spills from known nonhazardous sources such as hydraulic fluid or non-flammable (non-chlorinated) parts washers, the used sorbent is NOT a hazardous waste and may be disposed of as routine non-hazardous waste. Sorbents used to clean up known hazardous wastes, however, would be a hazardous waste. When sorbents are used to clean up spills from unknown sources, they could be hazardous wastes and should be tested. Call the MEC to arrange for testing and/or disposal as specialty wastes.

SPECIAL ASSESSMENT (Tax): See *5.1.1.7 – Annual Reports, Fees, Taxes and Records Retention*.

SPILLS ON THE HIGHWAY: See *3.8 - Spill Response within the ROW* and *4.4 - Spills of Fuels, Chemicals, and Hazardous Products*.

STORAGE OF WASTES: See *4.3 - Storing and Handling Products and Wastes* and *5.1.1.3- Accumulation/Storage*.

STREET SWEEPINGS (Shoulder Maintenance): Routine street sweepings are not considered contaminated and may be handled like fill or sent to a C&D (construction and demolition) or municipal waste landfill. Street sweepings should be handled as contaminated soil if they smell like petroleum or solvents, or contain considerable roadside litter such as paper, cigarette butts, plastic, etc. Contaminated street sweepings must be sent to a municipal landfill. Note: Additional requirements apply in Nassau and Suffolk Counties. See *7- Special Places & Special Rules – Long Island Landfills*.

SURCHARGE FEES (hazardous waste): See *5.1.1.7- Annual Reports, Fees, Taxes and Records Retention*.

SWITCHES: See *HAZARDOUS SUBSTANCES IN EQUIPMENT*.

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP): See *5.1.1.2- Hazardous Waste Determination* and *5.2- Specialty Waste Disposal- c. Laboratory Analysis Tests*.

TIRES: Waste tires and scrap tires collected along state highways may be stored for up to 18 months. A permit is required from the NYSDEC to store more than 1,000 tires. Waste tires can be sent to a landfill, recycler or trash-burning incinerator, but some landfills do not accept scrap tires because they are bulky and tend to "float" to the top of the waste pile. Some cement kilns or burn plants can burn tires for fuel. Check with the local waste hauler or landfill to see how to dispose of waste tires in your area.

TRANSPORTING WASTES: See *WASTE TRANSPORTER PERMITS*.

TREATED WOOD: The preserved wood industry with EPA has initiated a voluntary phase out of arsenic (CCA) treated wood preservatives in residential consumer applications. There are now alternative waterborne treatments (such as Alkaline Copper Quat, Copper Azole and Sodium Borates) and other materials available for many uses. For NYSDOT applications that may offer basically the same issue, it is recommended that substitutes be used.

EB00-022- Disposal of Treated Wood, March 2003, describes disposal requirements for treated/preserved wood, which remain unchanged from requirements before the phase-out. Treated wood including CCA-treated wood may be disposed of in construction & demolition (C&D) debris landfills and municipal solid waste landfills which are authorized to accept construction and demolition debris. CCA-treated wood should never be burned or shredded for mulch. Arsenic-treated (e.g., chromated copper arsenate [CCA]) wood products disposed by the end user are exempt from classification as a hazardous waste by a specific exclusion at 6 NYCRR Part 371.1 (e) (2) (viii). In addition, extensive TCLP testing of pentachlorophenol (“penta”) and creosote treated wood by industries and NYSDOT has conclusively demonstrated that treated wood products are not a hazardous waste and such generator knowledge can be applied.

UNIVERSAL WASTES: Certain common hazardous wastes that were considered to be low risk have been designated as “universal wastes” with reduced regulation. Universal wastes include spent batteries, certain unused pesticides, fluorescent bulbs containing mercury and mercury thermostats. Manifests are not required for shipment (although permitted waste transporters are required for transport of >500 pounds/shipment) and wastes may be accumulated on site for up to 1 year. Small quantity handlers (up to 5,000 kg at one time) do not need an EPA ID number.

UNUSED PRODUCTS: See 5.2 - *Waste Management - Specialty Waste Disposal*.

UNKNOWN DRUMS AND CONTAINERS FOUND IN ROW: See *ABANDONED DRUMS AND CONTAINERS IN ROW*.

USED OIL (Waste Oil): Used oil destined for recycling or burning for energy recovery is not regulated as a hazardous waste. “Used oils” include spent motor oil, hydraulic oil, cutting oil, transmission fluid, fuel oils, gear oil and greases. Collect used oil in clearly labeled tanks or drums. Do not mix any other materials such as solvents, antifreeze or gasoline with the used oil. (If any hazardous wastes such as solvents, degreasers, etc. are mixed with used oil, the entire volume may be classified as a hazardous waste). Send used oil to an authorized recycler or fuel blender using a permitted Waste Transporter.

USED OIL for Space Heating: Used oil may be used for on-premises space heating without requiring air permits (parts 225 and 201) and comprehensive fuel/waste analysis programs if: (i) the maximum operating heat input is less than one million Btu per hour; and (ii) waste oil is generated on site (or by owner). *(The facility becomes a used oil facility (not merely a generator) requiring a permit by Part 360-14 (and much more requirements including a Used Oil Quality Control Plan) if they accept used oil from other commercial/industrial generators.)*

WASTE TRANSPORTER PERMITS: NYSDOT trucks and employees can haul, without a permit, up to 500 pounds of industrial wastes, including petroleum-contaminated soil and materials, used oil and tires in a single shipment. Hazardous wastes from a conditionally exempt small quantity generator (<100 kg/month) may also be self-transported without a permit. A “Part 364” Waste Transporter Permit issued by the NYSDEC is required to haul larger quantities of petroleum-contaminated soil and materials, hazardous wastes and industrial wastes such as used tires.

Information on permit requirements or applications can be obtained by calling the NYSDEC's Division of Compliance Services at (518) 402-8707.

6 STATE ENVIRONMENTAL QUALITY REVIEW (SEQR)

The SEQR law was implemented in 1978 to help improve the environment by including environmental factors along with social/community and economic considerations whenever state or local governments make decisions. Under the provisions of this law, NYSDOT established its own implementing regulations in 17 NYCRR Part 15 for NYSDOT projects only. All non-NYSDOT projects must comply with NYSDEC SEQR (6 NYCRR Part 617). SEQR classifies actions based on how they could affect the environment, placing more stringent requirements on major actions and exempting small, minor actions.

Most of NYSDOT's maintenance activities are classified as exempt or "Type II" actions that require little documentation and no regulatory processing. To classify a project as Type II it must be listed in 17 NYCRR Part 15.14(e) and not exceed the applicable threshold in 15.14(d). Exempt acts may include **maintenance or repair which involves no substantive changes in existing structures or facilities**, such as maintaining pavement, shoulders, roadsides, drainage systems, stream channels, bridges (including painting or repair by contract), equipment, rest areas, traffic control, pavement markings, and snow and ice control. Other exempt acts include maintenance of waterways including repairing and replacing riprap, bank protection, shore maintenance, excavating silt to restore channel dimensions, removing debris from existing channels and emergency actions. For more information about work in waterways, including environmental permits and BMPs, see 2 - *General Work on the ROW*.

Type II actions include activities that have a very minor effect on the environment, such as "in kind" replacement, reconstruction, restoration or minor expansion of existing structures and facilities; installing highway traffic control devices, pavement markings, lighting or signs; safety improvements to existing highways such as removal of roadside obstacles, grooving, installing impact attenuators, guide rails, at-grade protection devices, fencing or glare screening; and resurfacing or spot repair of deteriorated pavements, facilities and structures.

Some actions, known as "Non-Type II" have a larger impact on the environment and some documentation or processing may be required if the proposed project meets or exceeds one of the following:

- 1) Activities that affect archeological sites or other historic resources or their setting (this could include cutting down mature trees that contribute to the setting of an historic building or work on a historic bridge or parkway);
- 2) More than minor alterations of wetlands, floodplain areas, agricultural lands, unique natural areas, or affecting water resources such as lakes, rivers and streams;
- 3) Physically altering more than 2.5 acres of designated open space or recreation areas;
- 4) Significant changes in traffic volume, vehicle mix, patterns or access;
- 5) Acquiring or having an effect on occupied dwellings, businesses, abutting property or established human activities;
- 6) Inconsistency with locally adopted plans; or
- 7) Activities that require an indirect source air quality permit.

Non-Type II actions may require completing an Environmental Assessment Form and publishing a "Negative Declaration" reasonably elaborating why there will be no significant environmental impact. An Environmental Impact Statement (EIS) may be necessary for larger, Non-Type II projects such as relocating or building a new maintenance residency, especially if the new facility is located in or near a sensitive environmental or community resource area.

Contact the MEC with specific questions about maintenance activities under SEQR or would like more information about SEQR

More information about SEQR is given in NYSDOT's regulations 17 NYCRR Part 15 and The Environmental Manual Chapter 4.1.2.

7 SPECIAL PLACES & SPECIAL RULES

The requirements and suggestions in this Handbook apply throughout New York State, but additional environmental rules apply in specific places. Primary special area requirements that can significantly impact NYSDOT work are described briefly here. Call the MEC if you need more details or have specific questions.

Adirondack Park Agency - Regions 1, 2 and 7: The Adirondack Park Agency (APA) Guidelines apply to many routine NYSDOT maintenance activities. See the MEC if you need a copy or have specific questions.

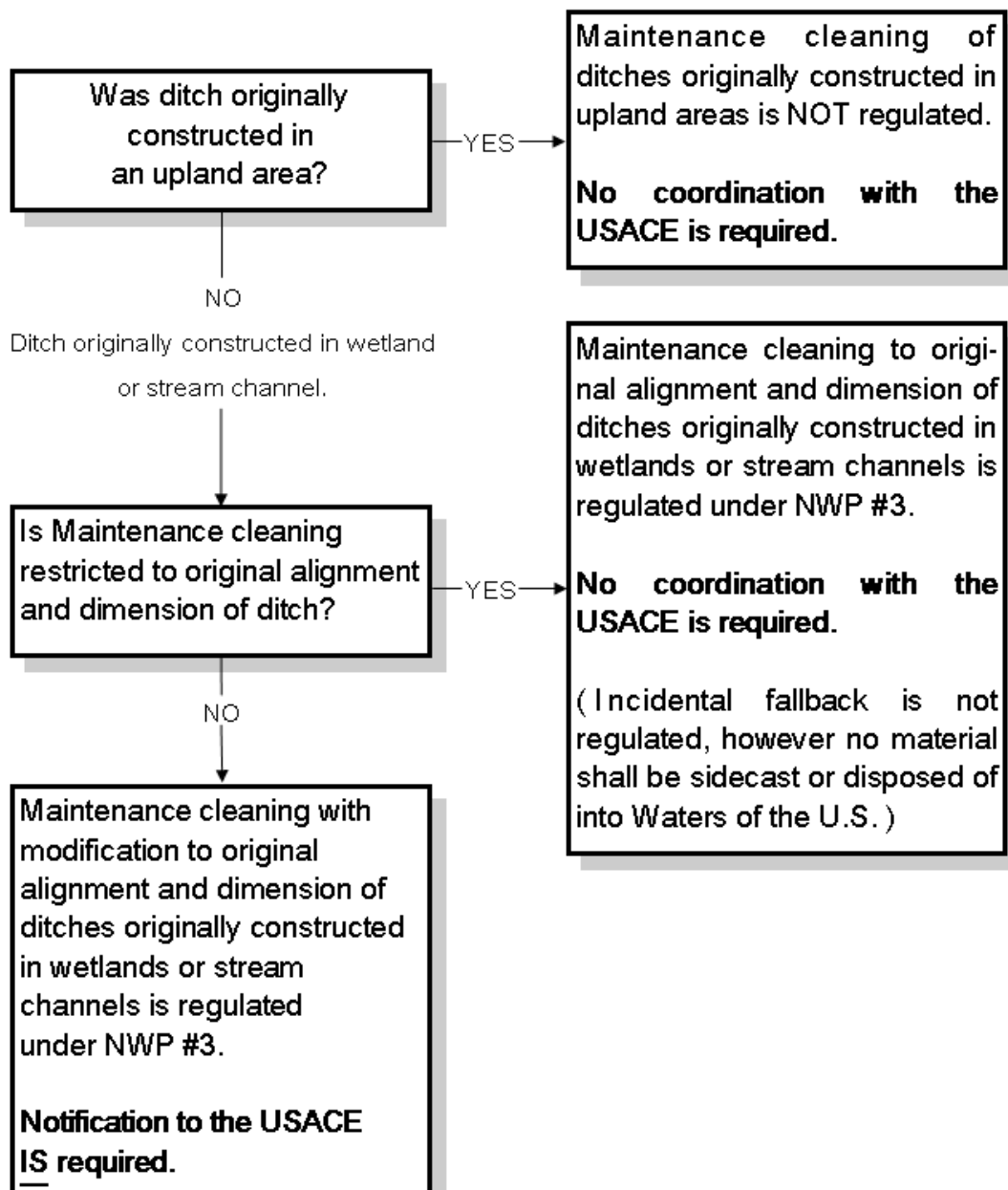
Long Island landfills - Region 10: More restrictive regulations landfills in Nassau and Suffolk County require a permit for any landfilling, including placement of fill. Recognizable uncontaminated concrete, steel, wood, sand, dirt, soil, glass, and C&D debris must be disposed of at an authorized lined disposal facility or taken to an authorized C&D debris processing facility.

Land Use Permits in the New York City Watershed - Regions 1, 8 and 9

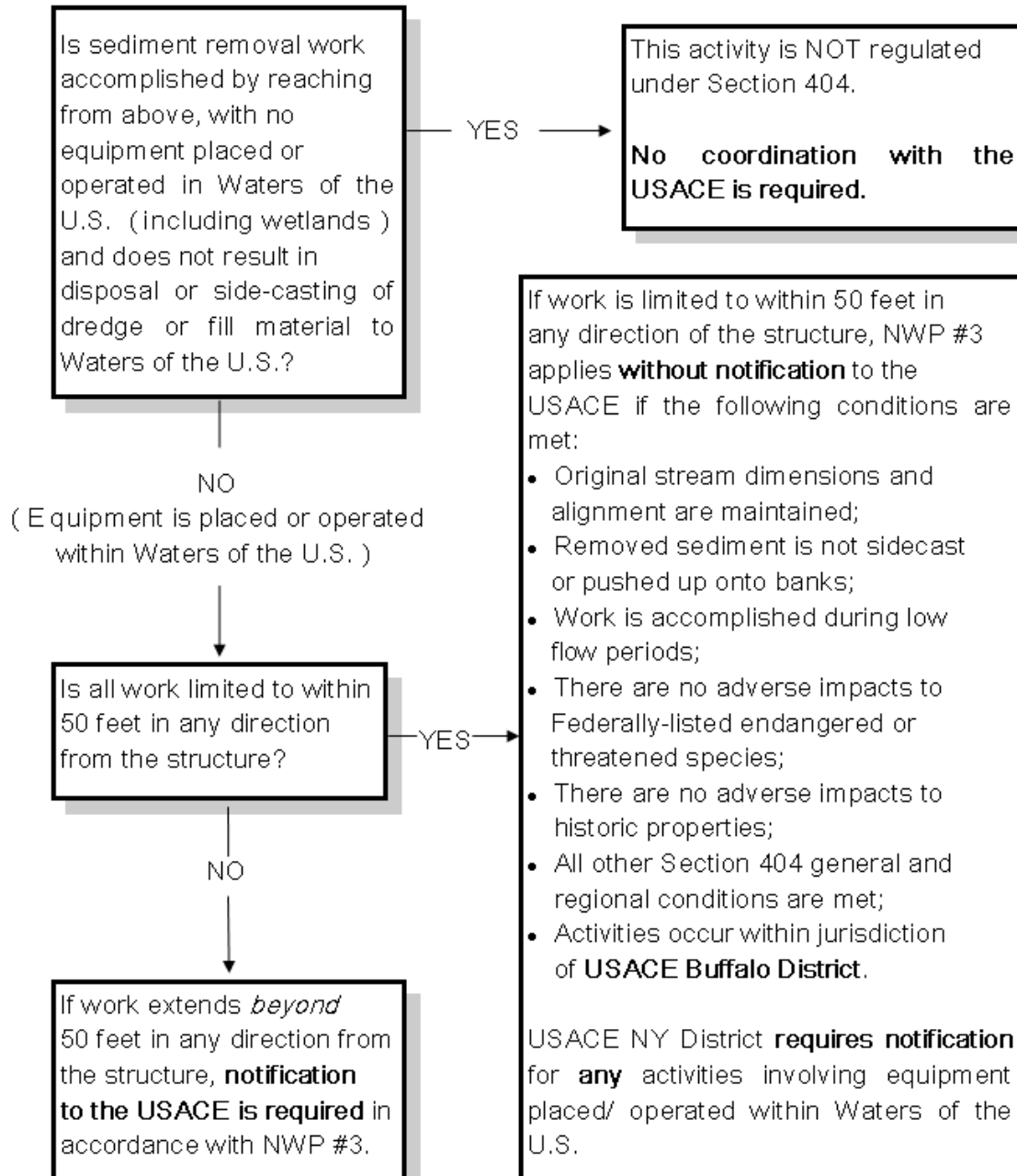
The New York City Department of Environmental Protection (NYCDEP) requires a Land Use permit for some NYSDOT activities on land owned by NYC. Maintenance activities that are likely to require a land use permit include selecting both staging and spoil areas. Contact the MEC when you are planning these activities.

**APPENDIX-A. USACE SECTION 404 NATIONWIDE PERMIT # 3
MAINTENANCE- DITCH CLEANING, CULVERT CLEANING AND BANK
STABILIZATION & SCOUR PROTECTION**

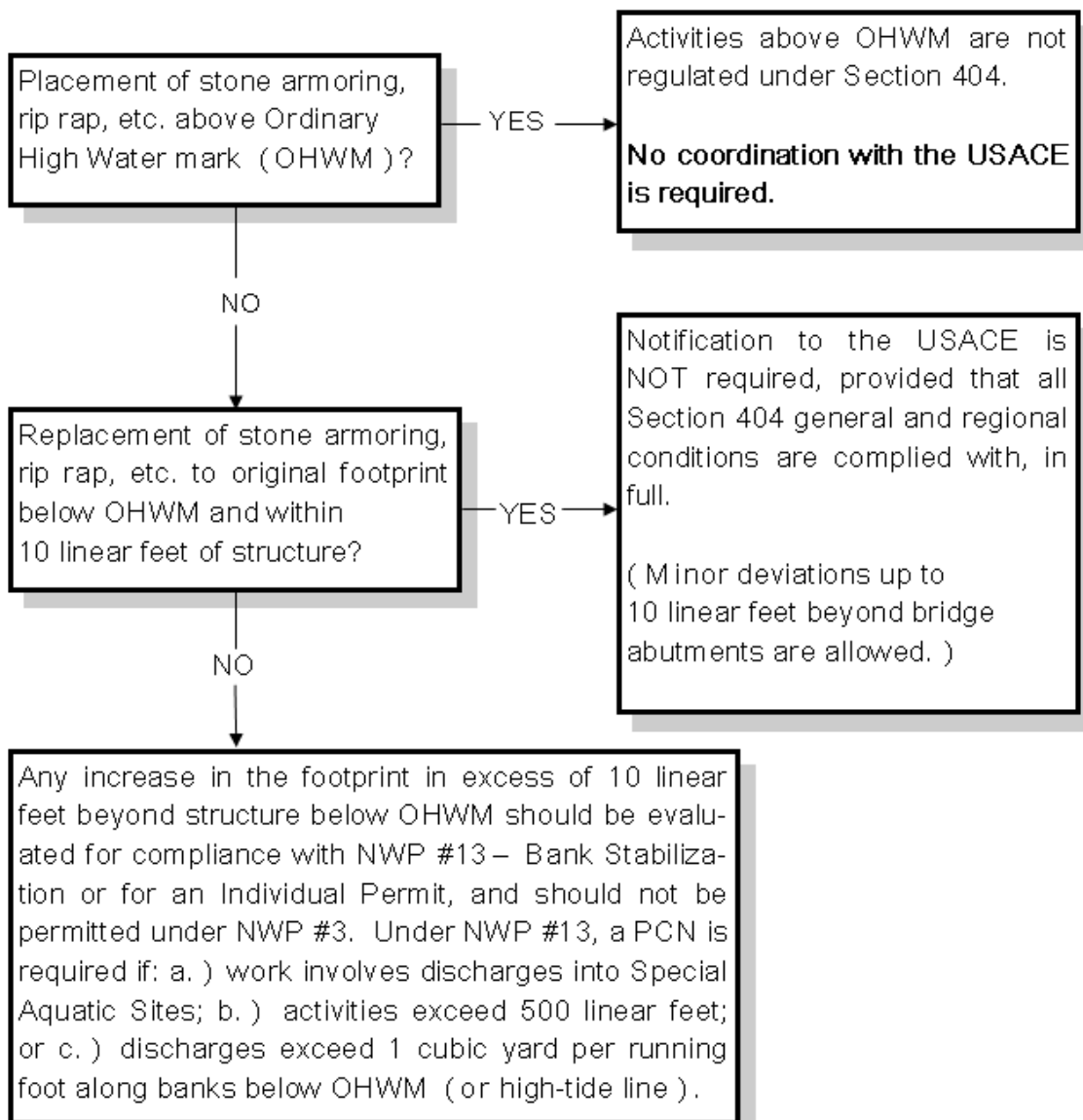
DITCH CLEANING



CULVERT CLEANING



BANK STABILIZATION & SCOUR PROTECTION



It is recommended that cofferdams used in association with projects qualifying for NWP #3 consist of gravel bags, concrete jersey barrier, wood or metal sheet piling or water-filled bladders. Cofferdams shall be removed in their entirety when work is completed. Notification to the USACE is NOT required in these cases.

APPENDIX B – CHECKLIST FOR PETROLEUM BULK STORAGE, HANDLING AND ASSOCIATED ITEMS

Item	Yes/no
A. Registration and information	
1. Does the facility have petroleum bulk storage registration?	
2. Is registration information correct?	
3. Is the registration certificate displayed?	
4. Are accurate as-built drawings available?	
5. Are manuals and operational information available?	
6. Are all fill ports correctly color coded?	
7. Are valves in place and operational?	
8. Is the Fire Code “communications” sign prominently displayed at the fuel distribution island?	
9. Has the fire suppression system been inspected semi-annually on gas tanks?	
10. Are out of service tanks properly closed?	
B. Aboveground Storage Tank (AST)	
1. If AST installed after December, 1986, does it have: Welded steel; Protective surface coating (painting) of exterior surfaces; Cathodic protection, if AST rests on ground; and Impermeable barrier beneath the tank with the ability to monitor for leaks ?	
2. Does product level gauge accurately show level in tank or is a high level alarm (or high level liquid pump cut off controller) installed and operating?	
3. Does AST have required markings?	
4. Is inspection of tank and containment performed at least monthly?	
5.A Does the facility require a SPCC (Spill Protection Control and Countermeasures Plan)?	
5.B If answer to 5.A is yes, is the SPCC in place?	
C. Underground Storage Tanks (UST) Federal requirements	
1. Are leak detection/monitoring systems in place?	
2. Does the tank or tanks have spill protection?	
3. Does the tank have overfill protection?	
4. Is tank and piping constructed with corrosion-resistant material, or is cathodic protection present and functional?	
D. UST State requirements	
1. Has five year tightness testing occurred?	
2. Is secondary containment present on tank or tanks?	
3. Is a label plate present on the UST fill port?	
4. Is inventory monitoring performed or records kept?	
5. If tanks and piping metal, is annual cathodic testing conducted?	
E. Spill Prevention and Response Items	
1. Are supplies available for spill response?	

Explanation of Inspection Checklist Items (continued on back page)

A.1	Registration: Required for facilities with > 1100 gallons total petroleum storage in tanks (above and underground (exclusive of heating fuel tanks <1100 gal for on-premise heating)). Note: small tanks on racks should also be included in the registration
A.2	Registration information: Are all tanks at site, all removed tanks or upgrades correctly described?
A.3	Registration certificate displayed: Displayed preferably at tanks or otherwise in main office on site
A.4	As-Built Drawings/Plans: For UST - As-built drawings/plans must show size and location of tanks and piping system. Plans must include a statement by installer that system has been installed in compliance with NYS Standards for New/Substantially Modified Petroleum Storage Facilities, 6 NYCRR Part 614. For AST - Drawings/plans needed for SPCC and compliance with AST regulations.
A.5	Manuals and operational information: tank information includes: tank capacity and dimensions; manufacturer principles of design and operation; tank manufacture design standard; products (including additives) acceptable for storage in the tank (compatible with all tank

	materials); procedures to operate, maintain and test tank and associated equipment. Associated Installed Systems information includes manufacturer, operational and testing procedures or other (may be separate or part of O&M manual) including: leak detection system; inventory monitoring; cathodic protection; fire suppression
A.6	Fill port colors: (Diesel = Yellow; Unleaded gasoline = White w/black cross; Kerosene = Brown)
A.7	Shutoff valves required for remote pumping units at motor fuel dispensers (shear valve in supply line to close automatically if dispenser dislodged from pipe). Shutoff valve Solenoid or equivalent required for gravity-fed motor fuel dispenser (so liquid cannot flow out if piping dispenser hose fails) Check valves required for backflow prevention on for pump-filled tanks with remote fills. Operating valve required on every line with gravity head. Dike drain valves required for secondary containment (ASTs) and must be locked in closed position
A.8	Fire Code Sign must state: IN CASE OF FIRE, SPILL OR RELEASE: 1. USE EMERGENCY PUMP SHUTOFF 2. REPORT THE ACCIDENT! FIRE DEPARTMENT TELEPHONE NO.____ NEW YORK STATE DEC SPILL HOTLINE NO. (800) 457-7362 FACILITY ADDRESS ____
A.9	Semi-annual fire suppression inspections
A.10	Out of service tanks: Tanks no longer in service must be emptied, manways locked (bolted) securely, gauge openings and pump lines must be capped/plugged to prevent unauthorized access. If tank temporarily closed, all registration, testing and inspection are still required.
B	NYS AST requirements applicable to all petroleum ASTs at facilities requiring registration
B.1	Aboveground storage tanks (AST): Design standards for metal tanks include: UL Nos. 58 and 142; API Standards No. 620 and 650; CAN4-S601-M84; or CAN4-S630-M84)
B.2	Product level measures: Shows level in tank or high-level alarm (or high level liquid pump cut-off controller)
B.3	Markings: Tank identification number, design and working capacity must be clearly marked on tank and gauge.
B.4	Monthly tank and containment inspections
B.5A B.5B	SPCC plan: Required if facility has more than 1,320 gallons aboveground petroleum stored in tanks and containers larger or equal to 55 gallons.
C	EPA requirements applicable to all petroleum USTs of any size with the exception of heating fuel USTs for on premises heating (all other petroleum USTs included except as outlined by each provision)
C.1	Leak Detection: Identify and correct malfunctioning, missing or non conforming leak detection systems. USTs meeting new construction standards to be monitored for leaks at least weekly. If tank is double wall, monitor interstitial space. If monitoring by automatic sensing device, check status weekly (power light on, alarm light off). If monitoring is electronic (continuous), check electronics monthly. If another secondary containment system is used, automatic tank gauge or monitoring wells inside secondary containment (vault or excavation liner) may be used. Facility must record all monitoring and keep records for at least one year. Manual Tank Gauging is limited to tanks < 1000 gal and tank must be taken out of service for at least 36 hours/week. <i>Exception: USTs solely for emergency power generation are deferred from the EPA requirements for leak detection (but other requirements all apply); NYS regulation, however, requires periodic tightness testing on tanks not otherwise monitored.</i>
C.2	Spill protection: May include "spill buckets" or catchment basins to hold spilled product.
C.3	Overfill protection: May include: automatic shutoff devices, overfill alarms, or ball float valves to prevent overfill. Spill/overfill protection not required if tank receiving material in less than 25 gallon increments (e.g., used oil)
C.4	Corrosion protection: Corrosion resistant material or, if metal, cathodic protection present
D.1	5 year tightness testing: Tanks greater than 1100 gallons that have not been upgraded (did not require leak detection by EPA regulations (heating fuel or emergency power generation), must be periodically tested.
D.2	Presence of secondary containment
D.3	Label plate on fill port must include: Manufacturer's statement: "This tank conforms with 6 NYCRR Part 614;" standard of design by which tank was manufactured; petroleum products and % of volume of petroleum additives which may be stored permanently and compatibly in the tank or reference to a list available from manufacturer which identifies products compatible with all tank materials; the year in which tank was manufactured; tank dimensions, design and working capacity and model number; name of manufacturer and facility tank ID (from registration).
D.4	Inventory monitoring and record keeping: Daily inventory records required to detect leaks and apparent losses/gains reconciled during any 10 day period. If tank has metered dispenser (motor fuels), then records must be kept of sales, deliveries etc. Stick readings need to be taken to the closest 1/8 ". If tank unmetered (heating oil), then inventory losses must be detected in an alternative manner. Acceptable options include an annual standpipe analysis or tank test or monitoring for inventory losses during the off season.
D.5	Annual cathodic protection test: USTs with cathodic protection systems must be monitored at least annually
E.1	Supplies for spill response:

Appendix C – Invasive Insect Control Practices for NYSDOT Vegetation Management

The requirements and suggestions in this Handbook apply throughout New York State, but additional environmental rules apply in specific places. Primary special area requirements that can significantly impact NYSDOT work are described briefly here. Call the MEC if you need more details or have specific questions.

OVERVIEW

This appendix describes the role of the Office of Transportation Maintenance (OTM) in responding to invasive insects on rights of way or adjoining land. “Invasive insects” includes species such as the Emerald Ash Borer (EAB) or Asian Longhorn Beetle.

Invasive insects typically take several years to kill a tree, by killing leaves or by attacking the cambium, the layer inside the bark that supplies nutrients to leaves and branches. With this timeline, there is no need to remove trees from a roadside in advance of an infestation.

NYSDOT’s first tree removal obligation is to remove trees that are a hazard to the traveling public. Requests to remove trees to control invasive insects must be considered based on a Region or residency backlog of other high priority hazard tree removals, resources available, and other required work.

The New York State Department of Environmental Conservation (NYSDEC), New York State Department of Agriculture and Markets (NYSDAM) and United State Department of Agriculture (USDA) regulate invasives by various means. Among the most important measures is to quarantine an area infested with invasive insects.

Maintenance Practices

1. **Roadside monitoring:**
 - a. NYSDOT, working with regulatory agencies, will continue to provide training, appropriate to the level of infestation threat, to maintenance managers and workers on identifying: invasive insects; tree species targeted by insects; and when invasive insects are present in trees or brush.
 - b. If time permits, Residencies are encouraged to note the number of right of way trees susceptible to certain invasive insects, for example ash trees which can be infested by EAB. This will help develop an estimate of needed resources needed if a subsequent decision is made to remove infested trees or trees that may shelter invasive insects.
2. **Suspected infestations** If workers or managers discover a suspected infestation, they should report it to the Region’s MEC, who, in turn should report it to the regional NYSDEC office. If NYSDEC confirms the infestation, the MEC should report it to the OTM Roadside Program Manager.
3. **Hazardous Tree Work Planning and Work Practices:**
 - a. NYSDOT’s first obligation is to remove hazard trees from highway rights of way. Trees infested or made hazardous by invasive insects will be prioritized based their relative hazard rating.
 - b. An insect life cycle affects the most effective time to remove an infested tree. With EAB, for example, winged insects die by late fall and only larvae are present in winter and early spring. NYSDOT will consider an insect’s lifecycle, where possible, in scheduling removal of infested trees.

- c. Wood chippers that chip to under an inch long by one inch wide by one inch thick kill larvae and can slow infestations. NYSDEC may require chippers making small chips in some infestations.
- d. Stumps remaining after removal of a tree infested with invasive insects require treatment to avoid resprouting and growth that will shelter insects in the future. The preferred treatment is a cut stump treatment with a small amount of herbicide immediately after the tree is cut. If herbicide use is not possible and resources permit grind the stump with a stump grinder.
- 4. The State High Voltage Proximity Act, OSHA regulations and ANSI standards for line clearance apply to all tree removal operations.
- 5. **Wood waste.** NYSDOT or its contractor:
 - a. **Will not** move any wood which contains living EAB in any stage of its development. If EAB is discovered, coordination with NYSDEC and NYSDAM is required.
 - b. **Will advise** people who receive wood after a tree is cut, or wood disposed of from a NYSDOT facility, that they may not move:
 - i. Fire wood (of any species) more than 50 miles from its source, and will confirm the wood's source;
 - ii. Any ash (genus *Fraxinus*), in any form, living or dead, that is within a quarantine area out of that quarantine area;
 - iii. Bark mulch or wood chips of any tree species, larger than 1 inch in two dimensions that is within a quarantine area out of that quarantine area.
 - c. **May** continue to dispose of wood near the site of tree removals, as long as disposals are consistent with NYSDOT internal controls, right of way safety and items a and b above.
- 6. **Equipment Cleaning:** Before leaving a site infested with invasive insects, staff shall remove as much waste as possible, given site conditions, access to cleaning equipment and season. If waste cannot be completely removed, staff shall clean equipment as thoroughly as possible on site and finish work when they return to their Residency or crew location.
- 7. **Public Education and Outreach:** Outside agencies may request use of NYSDOT facilities, such as rest areas, to provide information to the traveling public on invasive insects. NYSDOT will cooperate with these requests to the extent possible.
- 8. **Studies by Outside Agencies:** Some outside agencies study invasive insect infestations, including setting traps along roads and highways. Regions are encouraged to cooperate with these agencies. If Highway Work Permits are required, consider issuing Region-wide permits.



Department of
Environmental
Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

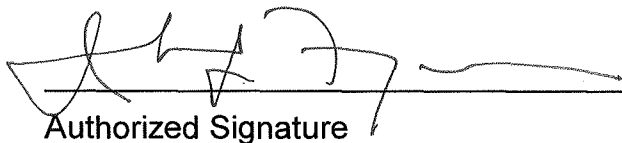
Issued Pursuant to Article 17, Titles 7, 8 and Article 70
of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator



Authorized Signature

1-23-20
Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act (“CWA”), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System (“NPDES”)* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of “*construction activity*”, as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM
CONSTRUCTION ACTIVITIES**

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges to surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;
2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants to surface waters of the State*.
3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

Discharges authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize the discharge of pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* (“SWPPP”) the reason(s) for the

deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

- a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge of pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:
- (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharges*;
 - (ii) Control stormwater *discharges*, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;
 - (iii) *Minimize* the amount of soil exposed during *construction activity*;
 - (iv) *Minimize* the disturbance of *steep slopes*;
 - (v) *Minimize* sediment *discharges* from the site;
 - (vi) Provide and maintain *natural buffers* around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharges*, unless *infeasible*;
 - (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;
 - (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and
 - (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.
- b. **Soil Stabilization.** In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

- c. **Dewatering.** *Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, must be managed by appropriate control measures.*
- d. **Pollution Prevention Measures.** Design, install, implement, and maintain effective pollution prevention measures to *minimize the discharge of pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:
 - (i) *Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;*
 - (ii) *Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and*
 - (iii) *Prevent the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures.*
- e. **Prohibited Discharges.** The following *discharges* are prohibited:
 - (i) *Wastewater from washout of concrete;*
 - (ii) *Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;*

- (iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;
 - (iv) Soaps or solvents used in vehicle and equipment washing; and
 - (v) Toxic or hazardous substances from a spill or other release.
- f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual (“Design Manual”), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices (“SMPs”) are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.
2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

- (i) Runoff Reduction Volume (“RRv”): Reduce the total Water Quality Volume (“WQv”) by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.
- (ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

- (iii) Channel Protection Volume (“Cpv”): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
 - (1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
 - (2) The site discharges directly to tidal waters, or fifth order or larger streams.
- (iv) *Overbank* Flood Control Criteria (“Qp”): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
 - (1) the site discharges directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.
- (v) Extreme Flood Control Criteria (“Qf”): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
 - (1) the site discharges directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.

b. Sizing Criteria for New Development in Enhanced Phosphorus Removal Watershed

- (i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

calculated in accordance with the criteria in Section 10.3 of the Design Manual.

- (ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible*.

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

- (iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
 - (1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
 - (2) The site *discharges* directly to tidal waters, or fifth order or larger streams.
- (iv) Overbank Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
 - (1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.
- (v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
 - (1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

- (i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.
 - (1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or
 - (2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or
 - (3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or
 - (4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

- (ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.
- (iii) Overbank Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.
- (iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharges* necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;
2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and
3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharges* authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharges* authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharges* will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.
2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharges*; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.
3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: “Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned”; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharges* from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.
4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharges* after *construction activities* have been completed and the site has undergone *final stabilization*;
2. *Discharges* that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;
3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;
4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;
6. *Construction activities* for residential, commercial and institutional projects:
 - a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and
 - b. Which are undertaken on land with no existing *impervious cover*; and
 - c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.
7. *Construction activities* for linear transportation projects and linear utility projects:
 - a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and
 - b. Which are undertaken on land with no existing *impervious cover*; and
 - c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:
- a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.
 - 1-5 acres of disturbance - 20 feet
 - 5-20 acres of disturbance - 50 feet
 - 20+ acres of disturbance - 100 feet, or
 - b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
 - (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
 - (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
 - (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
 - (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or
 - c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

- (i) No Affect
- (ii) No Adverse Affect
- (iii) Executed Memorandum of Agreement, or

d. Documentation that:

- (i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharges from construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.
2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the "MS4 SWPPP Acceptance" form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.
3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of Owner or Operator) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4*. This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (<http://www.dec.ny.gov/>). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

**NOTICE OF INTENT
NYS DEC, Bureau of Water Permits
625 Broadway, 4th Floor
Albany, New York 12233-3505**

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.
3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.
4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.
2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:
 - a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (<http://www.dec.ny.gov/>) for more information,
 - b. where required, all necessary Department permits subject to the *Uniform Procedures Act* ("UPA") (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators of construction activities* that are required to obtain UPA permits

must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

- c. the final SWPPP has been prepared, and
 - d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.
3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:
- a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:
 - (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or
 - (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;
 - (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

- b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:
 - (i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed “MS4 SWPPP Acceptance” form, or
 - (ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed “MS4 SWPPP Acceptance” form.
- 4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

- 1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination (“NOT”) has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.
- 2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor’s or subcontractor’s certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.
- 3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

use control MS4, the regulated, traditional land use control MS4 (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

- a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.
 - b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.
 - c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.
 - d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.
 - e. The *owner or operator* shall include the requirements above in their SWPPP.
4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..
 5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.
 6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of a *construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4*, the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.
2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.
3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.
2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.
3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.
4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:
 - a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

- b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;
 - c. to address issues or deficiencies identified during an inspection by the *qualified inspector*, the Department or other regulatory authority; and
 - d. to document the final construction conditions.
5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.
6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor*. The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

"I hereby certify under penalty of law 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 most current version of the New York State Pollutant 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 violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:
 - a. Background information about the scope of the project, including the location, type and size of project

- b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge(s)*;
- c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);
- d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;
- e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;
- f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;
- g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;
- h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;
- i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

- j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;
 - k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and
 - l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.
2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

The post-construction stormwater management practice component of the SWPPP shall include the following:

- a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

- b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;
- c. A Stormwater Modeling and Analysis Report that includes:
 - (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;
 - (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;
 - (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;
 - (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;
 - (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and
 - (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;
- d. Soil testing results and locations (test pits, borings);
- e. Infiltration test results, when required; and
- f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria*, Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators of construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators of the construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.
2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.
3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
 - Certified Professional in Erosion and Sediment Control (CPESC),
 - New York State Erosion and Sediment Control Certificate Program holder
 - Registered Landscape Architect, or
 - someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].
1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:
 - a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

- b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;
 - c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and
 - d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.
2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:
- a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.
 - b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.
 - c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

- d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization*, and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the “*Final Stabilization*” and “*Post-Construction Stormwater Management Practice*” certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.
 - e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.
3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization*, all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.
 4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

- a. Date and time of inspection;
- b. Name and title of person(s) performing inspection;
- c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
- d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
- e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;
- f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;
- g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
- h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;
- i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;
- j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);
- k. Identification and status of all corrective actions that were required by previous inspection; and

- I. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.
5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.
6. All inspection reports shall be signed by the *qualified inspector*. Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.
2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:
 - a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

- b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;
 - c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.
 - d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.
3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the “*Final Stabilization*” and “Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.
4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the “MS4 Acceptance” statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector’s* final site inspection certification(s) required in Part V.A.3. of this permit.
5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:
- a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

- b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),
- c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,
- d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator*, its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to \$37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit, or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:
 - a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

- (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or
 - (ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
 - b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or
 - c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:
 - (i) the chief executive officer of the agency, or
 - (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).
2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:
- a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

- c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.
3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.
4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4*, or by a duly authorized representative of that person.

It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge(s)*, the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner's or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;
2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.
4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.
2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property – means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the “Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State” prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both “sewage” and “stormwater”.

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for “*Construction Activity(ies)*” also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for “*Commence (Commencement of) Construction Activities*” and “*Larger Common Plan of Development or Sale*” also.

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment – means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

- (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State;
- (ii) Designed or used for collecting or conveying stormwater;
- (iii) Which is not a *combined sewer*; and
- (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer – means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the “Required Elements” sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank Flood* (Qp), and *Extreme Flood* (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture (“USDA”) Soil Survey as Soil Slope Phase “D”, (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint sources*. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint sources*, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only
Includes Erosion and Sediment Controls

<p>The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:</p> <ul style="list-style-type: none">• Single family home <u>not</u> located in one of the watersheds listed in Appendix C or <u>not directly discharging</u> to one of the 303(d) segments listed in Appendix E• Single family residential subdivisions with 25% or less impervious cover at total site build-out and <u>not</u> located in one of the watersheds listed in Appendix C and <u>not</u> directly discharging to one of the 303(d) segments listed in Appendix E• Construction of a barn or other <i>agricultural building</i>, silo, stock yard or pen.
<p>The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:</p> <p>All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.</p>
<p>The following construction activities that involve soil disturbances of one (1) or more acres of land:</p> <ul style="list-style-type: none">• Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains• Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects• Pond construction• Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover• Cross-country ski trails and walking/hiking trails• Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;• Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.• Slope stabilization projects• Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

**Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP
THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS**

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES
POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development conditions*
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

**CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES
POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES**

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover*, and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual (“Design Manual”).

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

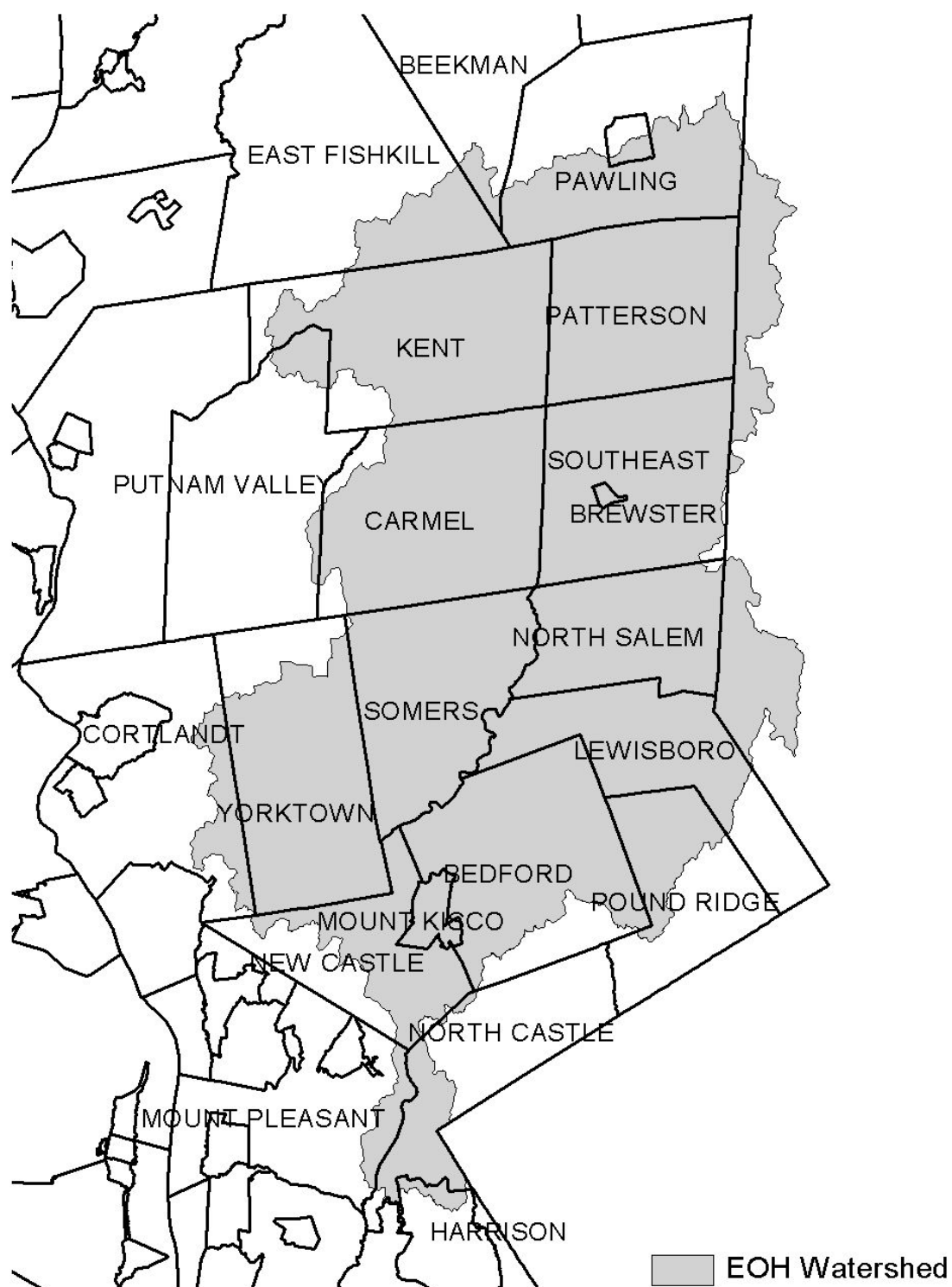
Figure 1 - New York City Watershed East of the Hudson

Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

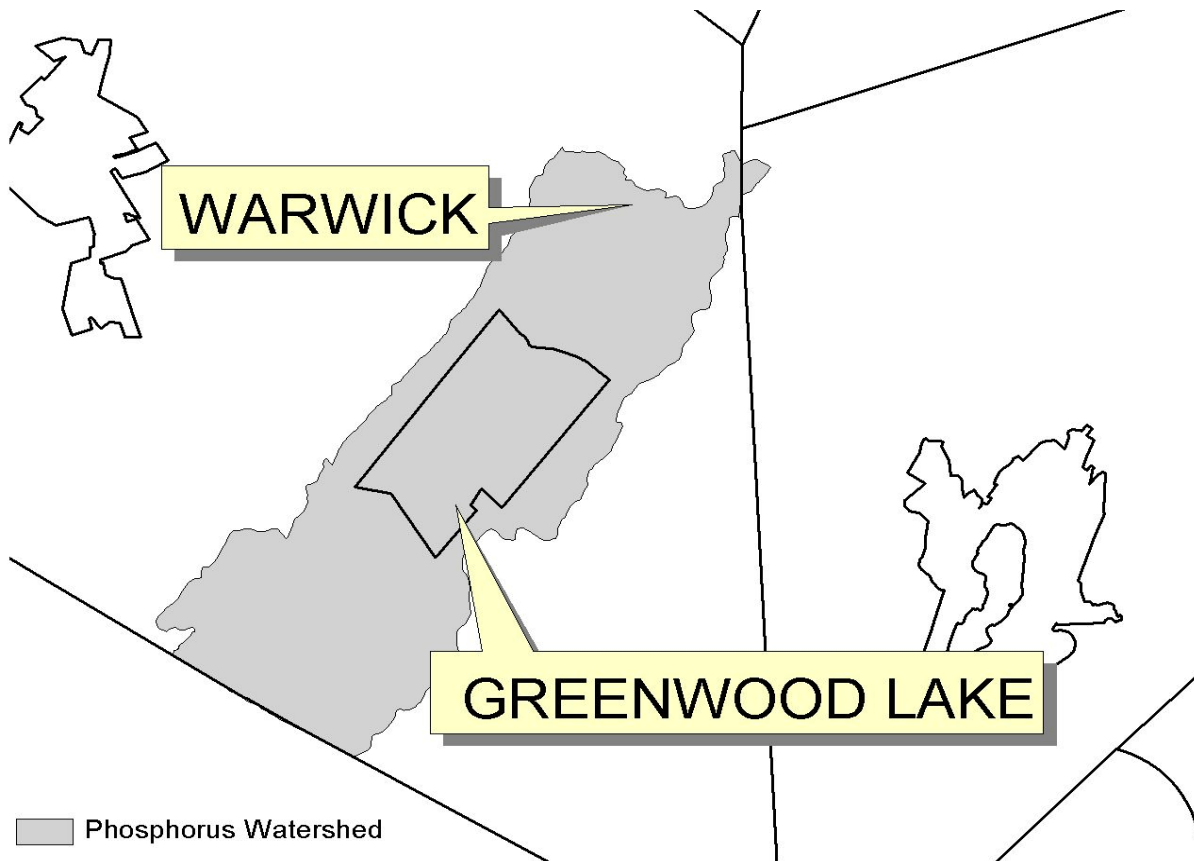


Figure 4 - Oscawana Lake Watershed

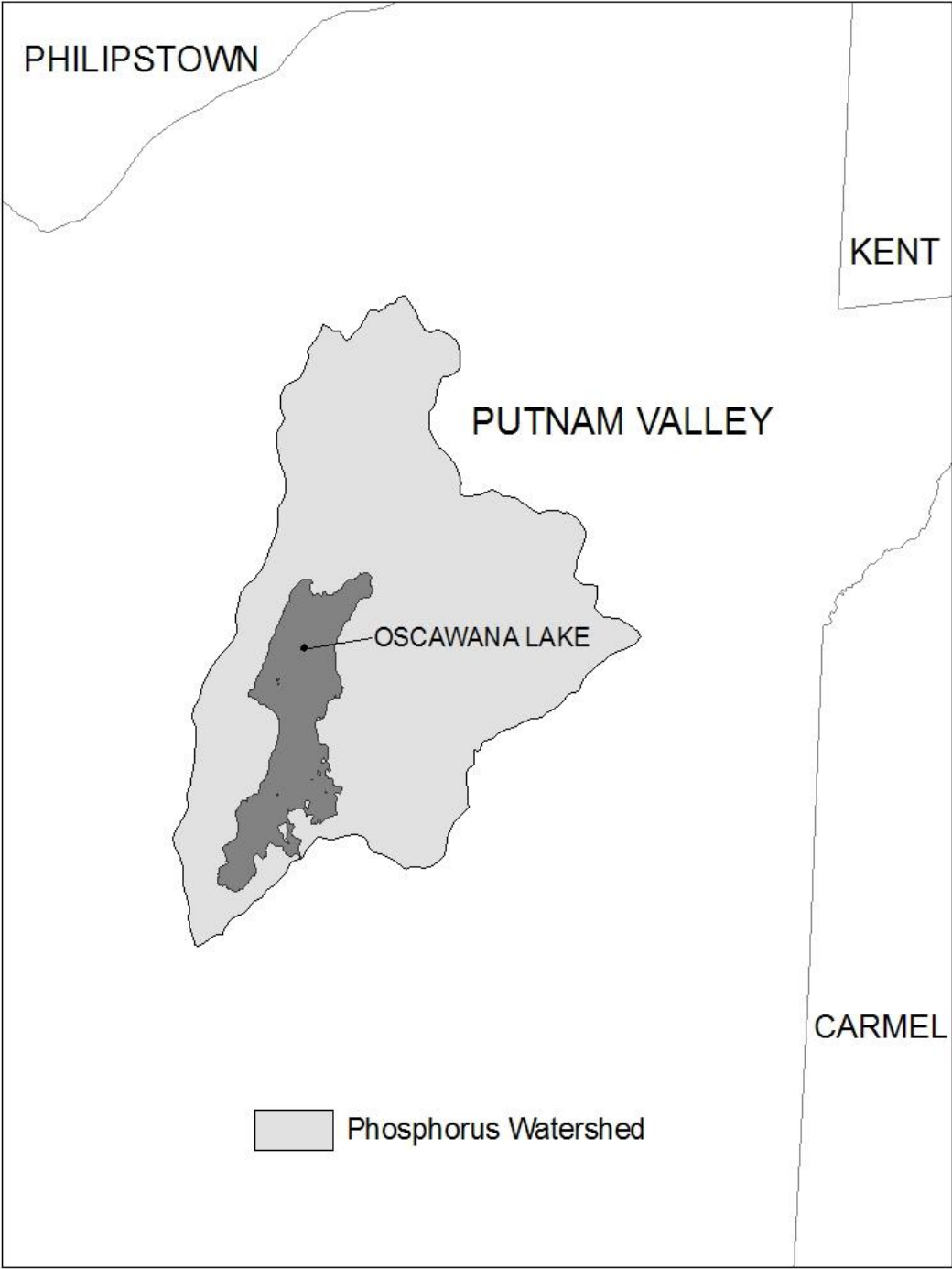
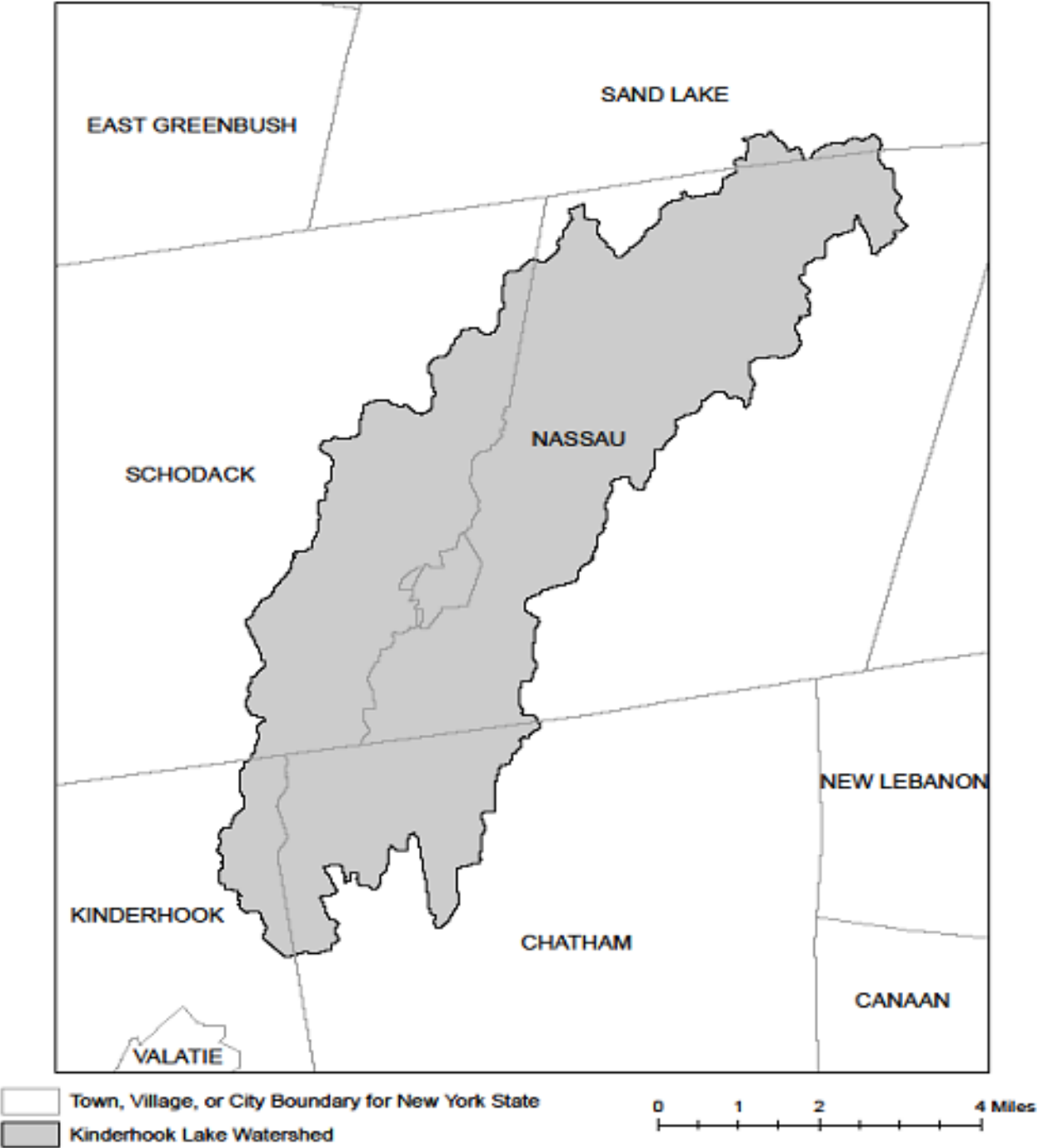


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C
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APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

<u>Region</u>	<u>COVERING THE FOLLOWING COUNTIES:</u>	<u>DIVISION OF ENVIRONMENTAL PERMITS (DEP) PERMIT ADMINISTRATORS</u>	<u>DIVISION OF WATER (DOW) WATER (SPDES) PROGRAM</u>
1	NASSAU AND SUFFOLK	50 CIRCLE ROAD STONY BROOK, NY 11790 TEL. (631) 444-0365	50 CIRCLE ROAD STONY BROOK, NY 11790-3409 TEL. (631) 444-0405
2	BRONX, KINGS, NEW YORK, QUEENS AND RICHMOND	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4997	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4933
3	DUTCHESS, ORANGE, PUTNAM, ROCKLAND, SULLIVAN, ULSTER AND WESTCHESTER	21 SOUTH PUTT CORNERS ROAD NEW PALTZ, NY 12561-1696 TEL. (845) 256-3059	100 HILLSIDE AVENUE, SUITE 1W WHITE PLAINS, NY 10603 TEL. (914) 428 - 2505
4	ALBANY, COLUMBIA, DELAWARE, GREENE, MONTGOMERY, OTSEGO, RENSSELAER, SCHENECTADY AND SCHOHARIE	1150 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2069	1130 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2045
5	CLINTON, ESSEX, FRANKLIN, FULTON, HAMILTON, SARATOGA, WARREN AND WASHINGTON	1115 STATE ROUTE 86, Po Box 296 RAY BROOK, NY 12977-0296 TEL. (518) 897-1234	232 GOLF COURSE ROAD WARRENSBURG, NY 12885-1172 TEL. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

