

Town of Ossining, New York Stormwater Management Program



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Town of Ossining, New York Stormwater Management Program

1.0 General Information

The Town of Ossining, New York, in order to comply with the requirements of the United States Environmental Protection Agency, and the New York State Department of Environmental Conservation, has developed this Stormwater Management Plan for the purpose of documenting municipal efforts for the purpose of improving stormwater quality.

Each of the six (6) minimum control measures including; public education and outreach, public participation and involvement, illicit discharge detection and elimination, construction site stormwater runoff control, post construction stormwater management and pollution prevention and good housekeeping is documented herein..

1.1 Agencies / Offices Responsible for Program Implementation

The Table below shows the respective agencies and offices of the Town which are responsible for implementation of the individual Minimum Control Measures. In each case, the Department Head shall be the contact person.

Minimum Control Measure	Agency / Office	Telephone Number
Public Information and Outreach	Supervisor's Office	914-762-6001
Public Participation and Involvement	Supervisor's Office	914-762-6001
Illicit Discharge Detection and Elimination	Supt. of Highways Building Inspector	914-941-2241 914-762-8419
Construction Site Stormwater Runoff Control	Building Inspector Town Engineer	914-762-8419
Post Construction Stormwater Management	Supt. of Highways Building Inspector	914-941-2241 914-762-8419
Pollution Prevention and Good Housekeeping	Supt. of Highways	914-941-2241

1.2 Municipal Demographics

The Town of Ossining is located in the west central area of Westchester County, New York.

The Town is bordered on the south by the Towns of Briarcliff and Ossining, on the east by the Town of Mount Pleasant, on the west by the Village of Ossining and Croton River and on the

north by the Town of New Castle.. The highway network consists of approximately 18.1 miles of Town maintained streets and 5.3 miles of county and state maintained highways. The Town is primarily a residential community made up mostly of single family homes with a small business corridor on North State Road.

The main water body to which stormwater flows is the Hudson River by way of the Town and Village of Ossining stormwater conveyance system, the Croton River, Pocantico River and smaller brooks and streams. Pollutants of Concern include:

Item	Pollutant	Pollutant	Pollutant	Pollutant	Pollutant
Croton River	None	None	None	None	None
Pocantico River	Nutrients(Sus.)				
Hudson River	Metals(cadmium)	PCB's	pathogens(Sus.)	Problem Species(Sus.)	Therm. Changes(Sus.)

Source: NYSDEC Lower Hudson Water shed Waterbody Inventory

Areas of Concern include the North State Road Corridor, residential areas and areas along the Pocantico and Croton Rivers.

Routes 9, 9A and the Taconic State Parkway are the principal highways in and in close proximity to the Town

Municipal offices are located at 16 Croton Avenue, Ossining, New York 10562

1.3 Stormwater Management Program Committee

The Town Stormwater Committee consists of the following individuals:

Supervisor
Building Inspector
Highway Superintendent
Dolph Rotfeld Engineering, P.C. (consultant)

The committee meets twice annually and at other times as may be requested by any member of the committee. The purpose of the committee is to develop and manage the Town's overall Stormwater Management Plan, insure that changes to the overall concept of Stormwater Management at the Federal or State levels is added to the Town's plan, develop an annual budget for stormwater management, develop and implement individual components of each of the six (6) minimum control measures, review previous years efforts to determine if the documented goals and objectives of the program are being met (and adjust municipal efforts as may be needed), prepare the annual report for review by the public, review by the Town Board and submission to the New York State Department of Environmental Conservation.

1.4 Annual Budget

A budget shall be prepared annually for implementation of the Town's Stormwater Management Program. The budget shall address each of the six (6) minimum control measures, specifying a dollar amount to be set aside for each. Where funds are set aside in other areas of the budget for stormwater related programs (i.e street sweeping and catch basin cleaning) the section of the budget where those functions are listed shall be indicated along with the approximate dollar amount available.

1.5 Annual Review

The Stormwater Management Program Committee shall meet prior to the preparation of the Town's Annual Report for the purpose of reviewing efforts being made to improve stormwater quality, determine if the established goals and objectives are being met, and determine what changes if any are needed to the Town's Stormwater Management Program and any associated budgetary needs. (see form at the back of this section)

1.6 Records

Records relating to all work associated with the Town's Stormwater Management Program shall be kept for a minimum of 5 years. Records may be kept either as an electronic or hard copy. Records shall be readily available to the public as well as Federal, State and Local agencies during the normal business hours of Town Hall. A copy of the Town's Annual Report to the New York State Department of Environmental Conservation will be posted on the Town's Website with annual updates. Records with respect to Construction Site Stormwater Runoff Control shall be kept as part of the individual building site file or other format as determined by the Building Inspector. Post Construction records with respect to Best Management Practices (BMP) for both public and private facilities shall be kept indefinitely.

1.7 Cooperative Efforts and 3rd Party Participation

The Town shall cooperate with the Stormwater Management efforts of surrounding municipalities as far as practical. Cooperation may take the form of meetings to determine items of work which can produce economies of scale for cooperating municipalities/agencies and the implementation of those work items. Where the Town utilized a 3rd party in any portion of its Stormwater Management Program, that party shall comply with the MS4 permit requirements applicable to the work being performed. Compliance shall be verified in the form of a Compliance Certification attached to and made part of this document in **Section 12**.

1.8 Exempt Non-Stormwater Discharges

The following Non-Stormwater Discharges are exempt from the need for SPDES permit coverage unless the New York State Department of Environmental Conservation determines them to be substantial contributors of pollutants to the Town. (See Permit No. GP-0-08-002), Part IA(2).

- water line flushing
- landscape irrigation
- diverted stream flows
- rising ground water
- uncontaminated ground water infiltration(as defined in 40 CFR35.2005(20))
- uncontaminated ground water
- discharges from potable water sources
- foundation drains
- air conditioning condensate
- irrigation water
- springs
- water from craw space and basement sump pumps
- footing drains
- lawn and landscape watering runoff provided that all pesticides and fertilizers have been applied in accordance with the manufacturers product label
- water from individual residential car washing
- flows from riparian habitats and wetlands
- de-chlorinated swimming pool discharges
- residual street wash water
- discharges or flows from fire fighting activities
- de-chlorinated water from reservoir discharges
- any SPDES permitted discharge

Annual Plan Review and Signoff

This plan shall be reviewed and updated as needed prior to completion of the Annual Report to the NYSDEC.

[illegible]

2.0 Public Education and Outreach

2.1 Policies and Procedures

It is the policy of the Town of Ossining, New York to conduct a program to educate the public on the problems associated with impaired stormwater quality, the conditions which contribute to impaired water quality, and the actions which can be taken by the community both individually and as a whole to improve the quality of stormwater runoff.

The Town will develop and operate a program to inform residents and businesses of the problems associated with impaired water quality through the distribution of literature, postings on the Town website, announcements when Stormwater related events are planned, articles in Town Newsletters/mailings, postings on cable television, cable televised question and answer sessions, presentations before the general public, neighborhood groups, fraternal organizations, schools and targeted groups. Hard copies of the Town Stormwater Management Program will be available at Town Hall and the Public Library and copy of all Stormwater related information will be forwarded to the School District for their dissemination.

2.2 Goal (s)

It is the goal of the Town to insure that sufficient information is made available to the public on impairments to stormwater quality and what needs to be done in order that individuals and businesses may make informed decisions on how best to contribute to the overall Stormwater Management Program effort.

2.3. Information To Be Distributed / Information Outlets

Printed information to be distributed will take the form of single and multi-page information bulletins. These bulletins will be both generic in nature and target audience specific. Information such as lawn care and use of fertilizers is generic to all home and business owners with landscaped properties. Targeted audiences will have information available to them which focuses on their particular business or land use. The targeted audiences include **service stations and vehicle repair shops, supermarkets / grocery stores / food outlets, sites containing large parking areas**. Information on non-stormwater discharges will also be provided along with information on reducing pollution (where appropriate) from these type discharges. Illicit Discharge Detection and Elimination information is included in this Minimum Control Measure. All information will be placed on the Town website.

The Town website will have a section dedicated to Stormwater Management. The website shall include a general welcome letter to the site by the Town Supervisor followed by drop down screens with the information outlined above. The website will also include links to Federal, State, County, Organizational and Professional Stormwater websites as well as the name and contact information of the Stormwater Management Coordinator for the Town.

At least one informational session on Stormwater Management will be held annually at Town Hall and Stormwater Management staff will make themselves available for neighborhood and other civic events to inform residents of the Town's efforts. A cable television discussion on the Town's efforts and stormwater management in general will be prepared and programmed to run monthly. Text spots will also be prepared to run daily on cable television.

2.4 Activity Timetable

Tentative Information Dissemination Calendar

Item / Month	J	F	M	A	M	J	J	A	S	O	N	D
Mailing *	X					X						
Internet Posting	X											
Newspaper / Newsletter Article (s)*												
Cable Television Spot (s)	X	X	X	X	X	X	X	X	X	X	X	X
Community Presentations*				X						X		
Annual Report Public Session				X	X							
Annual Program Budget Review**								X	X			

Subject to change based on need

* As warranted by program activities and developments

** The educational and outreach effort will be reviewed during the annual budget preparation period with funding provided accordingly.

2.5 Program Implementation Reporting

The following indicators will be utilized to represent the efforts used to inform the public of the Town's Stormwater Management Program:

- List of activities performed for general and target audiences including number of attendees, pieces of literature distributed, numbers of inquires to Town Hall.
- Illicit Discharge Detection and Elimination training for employees including number of attendees and hours.
- Number of hits to the Town's Stormwater webpages (if possible)
- Construction site stormwater control training completed / attended
- Pollution Prevention Training for employees
- Report on program effectiveness and measurable goal assessments

3.0 Public Participation and Involvement

3.1 Policies and Procedures

It is the policy of the Town of Ossining to utilize the participation of the general public, businesses in order to maximize the Town's efforts to lessen the impact of pollutants on stormwater quality.

The Town will invite public participation, on an annual basis, through its educational and media outlets. Notification to residents, businesses and visitors will be accomplished through an open letter on the Town website. Contact information for the Town's Stormwater Coordinator will be on all literature distributed. Each year in April / May, Public Notice will be made utilizing Town Board Meeting agendas or posting on the Town website to notify businesses and residents that they may review, comment, and where appropriate, receive a response to their inquiry on the Annual Report prior to its presentation to the Town Board and subsequent transmittal to the New York State Department of Environmental Conservation. A summary will be made of all comments to the Annual Report as well as the Town's response to questions about the information in the Annual Report. Comments / inquiries as well as the Town's responses will be attached to the Annual Report. The Annual Stormwater Report once finalized and forwarded to the New York State Department of Environmental Conservation will be posted on the Town's website.

3.2 Goal(s)

It is the goal of the Town with respect to Public Participation and Involvement effort that all residences and businesses have an opportunity to better understand and "buy in" to the idea that water quality is the concern of each and every homeowner and business and that participating in the process of improving stormwater will have a positive impact on the overall quality of life in the Town.

3.3 List of Activities for Participants

The general public and businesses will be invited to participate in the Town's Stormwater Management efforts. Ways to participate may include, but will not be limited to:

- Roadside Cleanups
- Stream Walks
- Insuring contracted landscapers are utilizing proper methods of lawn fertilization and native plantings
- Seeding or providing ground cover to areas on one's property where erosion may be occurring

The Town will provide guidance as to the implementation of such efforts and arrange for municipal collection of debris collected during roadside cleanups and stream walks.

3.4 Activity Timetable

Tentative Public Participation Calendar

Item / Month	J	F	M	A	M	J	J	A	S	O	N	D
Annual Report Comment Period				X	X							
Stream and Roadside Cleanups				X	X	X	X	X	X	X		
Proper Lawn Care Activities			X	X	X	X	X	X	X	X		

3.5 Program Implementation Reporting

The following indicators will be utilized to describe the level of participation in the Town's Stormwater Management Program:

- Annual Report Presentation /Availability to the public including how comments can be received by the Town and how responses are provided.
- List of public participation activities including the date, activity undertaken, number of participants and quantitative listing of activity results.
- Reporting methods / quantifying of stormwater quality concerns including reporting spills, illegal dumping, and construction site concerns.
- Report on program effectiveness and measurable goal assessments

4.0 Illicit Discharge Detection and Elimination

4.1 Policies and Procedures

It is the policy of the Town of Ossining to ***inspect*** its stormwater outfalls on an ***annual basis*** and, where illicit discharges are found, determine their source and take action to terminate said discharge to the stormwater drainage system. ***A minimum of 20% of all stormwater outfalls shall be inspected annually.***

The Town has placed in its municipal code, legislation which outlines action which will be taken to detect and eliminate illicit discharges. Inspections shall be made by qualified staff on a schedule developed by the Town's Stormwater Management Coordinator. Inspections shall be made no sooner than 72 hours following a rain event. The basic inspection shall be visual in nature utilizing the information obtained and documented on the initial Outfall Reconnaissance Inventory (ORI). Should the existence of an illicit discharge be detected, staff will immediately seek out the source of the illicit discharge and take the necessary action to terminate same. The decision for containment of the illicit discharge and its sampling and testing as well as notification of higher authority, shall be made by the Superintendent of Highways.

4.2 Goal(s)

The goal of the Town to inspect its stormwater conveyance system on both a scheduled and unscheduled basis and to remediate any illicit discharges detected.

4.3 Legislation

A copy of the Town's Legislation on Illicit Discharges may be found in Section 14.

4.4 Mapping of Outfalls

A copy of the Town's Stormwater Outfall Mapping may be found in Section 15.

4.5 Mapping of Conveyance Systems and Stormsheds

Mapping of storm sheds shall be completed preliminarily by March 9, 2010.

4.6 Timetable for Inspections

Routine outfall inspections shall be made between April 1st and October 1st of each year. Inspections shall be made only after a period of 72 hours with no rainfall. A visual inspection shall be made initially utilizing the criteria on the Center for Watershed Protection Outfall Reconnaissance Inventory Form. Any illicit discharges detected shall be reported immediately

to the Superintendent of Highways. Reports of illicit discharges shall be inspected immediately. The Superintendent of Highways shall direct the steps to be taken to identify the source of the illicit discharge and to mitigate same.

4.7 Action and Remediation when Illicit Discharge is Detected

The Superintendent of Highways (or Hazardous Materials Response Team) shall direct the actions to be taken in the event that an illicit discharge is detected. Immediate action shall be taken to trace the illicit discharge back to its origin. If the type of discharge can not be immediately identified, the Superintendent of Highways may take / direct that samples be taken to determine the composition of the illicit discharge. Regulatory agencies such as the Westchester County Health Department and the New York State Department of Environmental Conservation shall be contacted to make them aware of the illicit discharge.

Once the source of the discharge is located, it shall be discontinued / mitigated immediately and further action against the polluter taken in accordance with the Town's Local Law on Illicit Discharges.

When performing Illicit Discharge Trackdowns, the Town will utilize The Center for Watershed Protection document titled, "Illicit Discharge Detection and Elimination" guidance manual dated October 2004.

4.8 Media and In-House Information Outlets

Illicit Discharge Detection and Elimination public education and outreach is conducted under Minimum Control Measure # 1. The information distributed will include a definition of illicit discharges, some typical types of discharges as well as how homeowners and businesses should inspect their properties to insure that there are no illicit discharges emanating from the properties.

4.9 Staff Training

Staff performing illicit discharge inspections shall receive training as to how to recognize them, characterize them and the proper reporting procedures for same. Records shall be kept with respect to employees who receive training and information about the actual training program conducted.

4.10 Program Implementation Reporting

The following indicators will be utilized to describe the level of participation in the Town's Stormwater Management Program:

- Number and Percent of outfalls mapped
- Number of Illicit Discharges detected and eliminated

- Percent of Outfalls for which an Outfall Reconnaissance has been performed
- Status of system mapping
- Activities and results from informing employees, businesses and the general public of the hazards associated with illicit discharge and improper disposal of waste.
- Regulatory mechanism status, certification and equivalence
- Report on effectiveness of program, BMP and measurable goal assessment.

5.0 Construction Site Stormwater Runoff Control

5.1 Policies and Procedures

It is the policy of the Town of Ossining to require all construction sites with one acre or more of disturbance to include in the site and design plans submitted, a stormwater pollution prevention plan (SWPPP). The Stormwater Pollution Prevention shall be prepared in accordance with the New York State Department of Environmental Conservation State Pollution Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity Permit No. GP-0-08-001 and Permit No. GP-0-08-002, Municipally Separate Storm Sewer Systems. All SWPPP's shall be prepared in accordance with the most current version of the New York Standards and Specification for Erosion and Sediment Control.

Project Review

- The Building Inspector/Town Engineer, prior to referral, shall require the builder/developer to submit the appropriate number of copies of the Project Plans, including the required Stormwater Pollution Prevention Plan, for Planning Board review.
- Each set of Project Plans provided shall include an original signature, date, and raised seal of the New York State Licensed Professional Engineer, Architect, or Landscape Architect who prepared the Plans. The Stormwater Pollution Prevention Plan Section of the Project Plan documents shall include a separate original signature, date, and raised seal of the New York State Licensed Professional Engineer. A Certified Professional Erosion and Sediment Control may also sign the Stormwater Pollution Prevention Plan if there are no permanent stormwater measures.
- The Building Inspector / Town Engineer / Planning Board shall have the SWPPP reviewed for the municipality by a New York State Licensed Professional Engineer, or Certified Professional Erosion and Sediment Control to insure compliance with the New York State Stormwater Design Manual (latest revision) and other technical standards.
- A public meeting shall be held as part of the Planning Board Review Process where individuals are allowed to comment either in writing or in person on the overall project as well as any specifics relating to the Stormwater Pollution Prevention Plan. Adequate public notice of the meeting shall be given in the local newspaper, posting on the municipal bulletin board and where available on the municipal website. Timeliness of the notice shall be in accordance with municipal code requirements. Plans and specifications for the project shall be available for review at the municipal offices during regular business hours.
- Public comments received both in writing and verbally with respect to the Stormwater Pollution Prevention Plan shall be documented by the Planning Board and included in the overall project file.
- The Planning Board may request the builder/developer to make changes to the Stormwater Pollution Prevention Plan as deemed appropriate and said changes shall be made to the Project Plans and resubmitted to the Planning Board prior to the Planning Board approval of the Project Plans.

- The Stormwater Pollution Prevention Plan shall include, in addition to a Table of Maintenance for Best Management Practices utilized during construction;
 1. A Table of Maintenance for permanently installed Best Management Practices including a schedule of inspections (once a year at a minimum), operating and maintenance procedures for structural Best Management Practices, Engineer's calculations with respect to any sizing of Best Management Practices, and operating, maintenance, planting and mowing practices for open space areas.
 2. Designation of the individuals, owners, homeowners association, or management agencies which shall be responsible for the operation and maintenance of permanently installed Best Management Practices.
 3. The designation of an annual date by which the individuals, owners, homeowners association, or management agencies shall certify, in a form acceptable to the Building Inspector that the installed Best Management Practices are being properly operated and maintained in accordance with the documented/industry standards.
 4. Documentation acceptable to the municipality allowing officials or their designated representatives access to the site for inspection of, or operation and maintenance of installed Best Management Practices should the owner default on said maintenance and operating procedures.
 5. A tabulation in a Microsoft Excel Format, (or other format designated by the Building Inspector) of all Construction and Post Construction Best Management Practices including inspection schedules as per New York State Department of Environmental Protection Stormwater Design Manual and other industry standards.

5.2 Goal(s)

To insure that all projects are completed with minimal or no impact on water quality. Where the final construction product is anticipated to have an impact on water quality, that Best Management Practices have been constructed and are properly operated and maintained in perpetuity.

5.3 Legislation

A copy of the Town's Legislation on Construction Site Stormwater Runoff Control may be found in Section 14.

5.4 Media and In-Information Outlets

Information on the submission of Stormwater Pollution Prevention Plans will be available in the office of the Building Inspector. In addition, a meeting between the owner/developer and the Building Inspector will be held prior to the submission of plans for consideration for construction to insure that all the requirements of the Town's legislation on Construction Site Stormwater Runoff are understood. A mechanism is in place to allow the public to review construction

proposals and comment on same (part of the Planning / Zoning Board Process), and for the public to receive a response to their inquiries prior to a final decision for construction to proceed.

5.5 Staff Training

Town staff will take advantage of training opportunities related to Construction Site Inspection and Runoff, available through the New York State Department of Environmental Conservation, Soil and Water Conservation Districts, professional organizations and other training and education outlets. A record shall be kept of all training activities attended.

5.6 Contractor Procedures Inspection and Reporting Requirements

Shall be as outlined in the New York State Department of Environmental Conservation State Pollution Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity Permit No. GP-0-08-001 and as directed by the Building Inspector // / Town Engineer with respect to submission formats and timeliness.

Project Inspection

Municipal staff overseeing construction projects shall insure that owner/operator staff performing stormwater and SWPPP related inspections are qualified to perform such work and require the submission of documentation such as:

- Licensed Professional Engineer
- Certified Professional in Erosion and Sediment Control
- Registered Landscape Architect
- 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 NYSDEC endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other NYSDEC endorsed entity

Owner/operator staff performing SWPPP site inspections shall do so at a minimum interval of every seven (7) days or within 24 hours after every .25 inches of rainfall. Inspection reports must cover all aspects of the SWPPP and be signed and dated by the owner/operator designated site inspector. These reports shall be filed with the Building Inspector/Municipal Engineer within 48 hours of the completion of said inspections. A copy of all SWPPP site inspection reports shall remain on the site and be available to the Building Inspector/Municipal Engineer during working hours. Site inspections may be adjusted accordingly during site shutdowns during the winter months in accordance with documented requirements for such shutdowns. The Building Inspector/Municipal Engineer shall visit the construction site periodically to verify owner/operator site inspection reports in order to insure both accuracy and compliance.

In the performance of his or her duties as the representative of the municipality having jurisdiction over the construction project, the Building Inspector or Engineer/Consultant on

staff/retained by the municipality for such purpose shall utilize the New York State Department of Environmental, “Construction Stormwater Inspection Manual” and “New York State Standards and Specifications for Erosion and Sediment Control” latest revision when determining compliance with the Project Stormwater Pollution Prevention Plan.

Upon project completion, all SWPPP inspection reports shall be filed and kept with the Section/Block and Lot file or other storage mechanism/media utilized by the municipality

5.7 Program Implementation Reporting

The following indicators will be utilized to describe the level of participation in the Town’s Stormwater Management Program:

- Number of SWPPP’s reviewed annually
- Number and type of enforcement actions
- Percent of active construction sites inspected once
- Percent of active construction sites inspected more than once
- Number of construction sites authorized for disturbances of one acre or more
- Report on effectiveness of program, BMP and measurable goal assessment

6.0 Post Construction Stormwater Management

6.1 Policies and Procedures

It is the policy of the Town of Ossining to insure that all constructed Best Management Practices (BMP's) are properly operated and maintained in accordance with the requirements of the New York State Department of Environmental Conservation State Pollution Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity Permit No. GP-0-08-001 and Permit No. GP-0-08-002, Municipally Separate Storm Sewer Systems.

6.2 Goal(s)

The goal of the Town is to insure that all installed BMP(s) are properly operated and maintained in perpetuity

6.3 Legislation

A copy of the Town's Legislation on Post Construction Stormwater Management may be found in Section 14.

6.4 Operation and Maintenance

The operation and maintenance of all Best Management practices installed since March 2003 shall be documented as part of the approved Building / Planning and or Zoning Board Permit. The individual, association, public/private agency or other legal entity having responsibility for the installed BMP(s) shall be documented as part of the approved Building / Planning and or Zoning Board Permit. Prior to the approval of the BMP(s) to be installed, the owner / developer shall submit to the Building Inspector for approval, documentation as to why the particular BMP to be installed was chosen along with the analysis, its expected life expectancy, an inspection schedule and a maintenance schedule outlining in detail when individual maintenance efforts are to be undertaken. An easement for access to the installed BMP(s) shall be provided for municipal use in the event the owner of the BMP(s) defaults in the operation and maintenance of the structure(s). Owners of installed BMP(s) shall report to the Building Inspector at least annually, certifying that the BMP(s) is operating and being maintained properly.

6.5 Documentation of Best Management Practices

The Building Inspector shall keep a record of all BMP(s) installed since March 2003. The record shall be kept in perpetuity and include:

- Name ,address and contact information of the owner of the BMP
- Operations and maintenance manual for the BMP
- Schedule as to when inspections and maintenance is to be performed
-

- Schedule as to written documentation receipt that inspections and maintenance were performed.
- Name of qualified stormwater management professional / firm providing verification as to proper operation and maintenance.
- Mechanism to insure that inspections performed are reported in a timely manner

In addition to Best Management Practices installed since March 2003, the Building Inspector shall make a determination as to all installed BMP(s) prior to March 2003. Documentation of BMP(s) to be provided by the owner of record shall be the same as that shown above. Should the BMP(s) not be being properly maintained or operated, the Building Inspector must reconcile said inactivity in accordance with local laws.

6.6 Program Implementation Reporting

The following indicators will be utilized to describe the level of participation in the Town's Stormwater Management Program:

- Number of SWPPP's reviewed
- Number and type of enforcement actions
- Number and type of post-construction stormwater management practices inventoried
- Number and type of post-construction stormwater management practices inspected
- Number and type of post construction stormwater management practices maintained
- Regulatory mechanism status – certification that regulatory mechanism is equivalent to one of the "NYSDEC Sample Local Laws for Stormwater Management and erosion and sediment control" (if not already done)
- Report on effectiveness of program, BMP and measurable goal assessment

7. Pollution Prevention and Good Housekeeping

7.1 Policies and Procedures

General

Introduction

As part of its efforts to improve water quality at its municipally owned and operated facilities, the Town of Ossining has formalized and set down its policies and procedures with respect to Minimum Control Measure # 6, Pollution Prevention and Good Housekeeping, in its Stormwater Management Program. The eight (8) elements associated with Minimum Control Measure # 6 include; 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 Erosion and Sediment Control. Each of these eight (8) elements has Best Management Practices (BMP's) common to one or more of them as well as specific to each.

BMP Implementation

Municipal employees perform numerous municipal activities that have the potential to discharge pollutants. Staff should consistently implement the procedures or BMPs applicable to these activities. Some municipal activities are contracted to other parties. For example, many municipalities contract out street sweeping or waste collection. Municipalities may lease their facilities to other parties, at which activities take place that have the potential to discharge pollutants. To ensure measures are taken to reduce pollutants while contractors or lessees perform such activities, contract and lease language should explicitly specify requirements to comply with all BMP specifications.

Successful implementation of a BMP is dependent on the following components:

- Effective training of municipal and contract employees working in both fixed facilities and field programs.
- Regular inspections of fixed facilities, field programs, and treatment controls.
- Maintenance of treatment controls as needed to ensure proper functioning.
- Periodic evaluation/monitoring of BMP performance consistent with NPDES permit requirements.
- Follow-up action to correct deficiencies in BMP implementation noted during inspections.
- Accurate record keeping to track training, inspections, monitoring, and BMP maintenance.

- Submittal of an annual report to the New York State Department of Environmental Conservation regarding the effectiveness of the municipal efforts to reduce pollutants from fixed facilities and field programs.

Stormwater sampling and testing shall be conducted **if determined to be necessary** by the NYSDEC at the Town Highway Garage located at 85 Old Route 100, Briarcliff Manor, New York. Testing shall be conducted in accordance with New York State Department of Environmental Conservation SPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity Permit No. GP-0-06-002 Sector AE - Department of Public Works and Highway Maintenance Facilities, Table VIII-AE-1., Benchmark Monitoring Requirements. Procedures for performing such sampling and testing may be found in United States Environmental Protection Agency document EPA 832-B-09-003, "Industrial Stormwater Monitoring and Sampling Guide"

Staff Training

Education and training is the key to the success of BMP implementation. The Town will provide annual training sessions. In addition to Town sponsored training, staff may also attend local, regional, statewide, or national training seminars or workshops related to stormwater management and water quality conducted by other organizations.

The Town will provide training both program specific, and where feasible and appropriate, cross train staff with respect to all pollution prevention and good housekeeping efforts in order to maximize monitoring and implementation of BMP's.

Education and training will include:

- Maintenance Procedure Implementation and Inspection - In this training effort, proper procedures for performing municipal activities that may adversely affect stormwater quality are addressed. Maintenance procedures cover a wide range of municipal activities and the training may address either all maintenance procedures applicable to the municipality or a specific procedure (e.g. fertilizer and pesticide use). This training can be conducted in either a formal or a tailgate-style format.
- Pollution Prevention/Spill Awareness - This training addresses the general techniques municipal staff may implement to prevent pollution, as well as to respond to spills once they have occurred. Training can be tailored to management and other municipal staff who oversee pollution prevention measures, to field staff conducting activities that may result in spills, or to field staff who may encounter spills or illicit discharges.
- Where contract personnel are utilized, certificates indicating stormwater related training relative to the element in which the contractor is working, shall be required with no certification older than 3 years.

Site Inspections

Inspections of municipal fixed facilities and field programs shall be performed to verify that BMPs are being implemented, that they are appropriate for that facility or program, and that they continue to reduce the discharge of pollutants. Inspections shall generally consist of the following:

- Fixed Facilities - Inspections are typically performed by a combination of stormwater program staff and on-site fixed facility managers. The inspection of a fixed facility may include spot checks of the facility and activities being performed at the facility, and interviews with key line staff.
- Field Programs- Inspections are typically performed by a combination of stormwater program staff and field program supervisors. The inspection of a field program may include spot checks of activities being performed, and interviews with key staff.
- Contracted Activities - Inspections are typically performed by municipal staff to supplement and check on self-inspections and reporting by the management staff of the contract firm performing the activity. Performance should be checked against contract/lease language
- Leased Facilities - Inspections are typically performed by municipal staff to supplement and check on self-inspections and reporting by the management staff of the lessor.

Inspection Frequencies

Fixed facility or field program inspection frequency depends on the nature of the facility or program. Annual inspection shall be made as a minimum, with a more frequent schedule for facilities/activities that pose a greater threat to discharge pollutants (e.g. municipal yards). In the event of an observed problem, such as ineffective maintenance procedures or detected non-stormwater discharges, the inspection frequency shall be increased as appropriate to facilitate correction of the problem.

Inspection Documentation Procedures

Inspection forms shall be developed and used to properly document all inspections and gather the necessary information for record keeping and annual reporting. Forms shall include:

- General Inspection Forms - These primary forms provide for a general characterization of the fixed facility or field program being inspected, including the type of facility or program, the reason for inspection, activities that may take place, and BMPs applicable for the facility. A general form for all inspections and a single fixed facility specific form should be completed.
- Activity Specific Inspection Forms - These secondary forms include a series of questions or checklist items about specific activities taking place at a fixed facility or as part of a field

- program, as well as a list of suggested corrective action plans that can be implemented should a problem be found. All forms applicable to the activities being performed at a fixed facility or field program should be completed.

Treatment Control BMP Maintenance

Maintenance of treatment controls and drainage conveyance systems (e.g. detention and retention basins, infiltration devices, catch basins) shall be performed based on need at the time of inspection.

Where municipal contractors are responsible for maintenance of treatment controls, specific directions for maintenance shall be provided.

Analytical Monitoring

The Town shall perform analytical monitoring when needed in order to assist in identifying a potential polluter as well as determine the mitigation steps needed to bring closure to an event.

Enforcement

To ensure proper BMP performance, enforcement procedures and mechanisms should be established for the municipal fixed facilities and field programs. Enforcement actions may occur as a result of a problem found during an inspection or in response to a complaint that is received. Several different types of enforcement mechanisms and penalties can be utilized to ensure compliance. The internal enforcement procedures, directed toward municipal staff, include initial verbal warnings, written warnings, and more serious disciplinary actions if verbal and written warnings do not result in appropriate action. External enforcement procedures which pertain to municipal contractors maybe undertaken primarily by the municipality's inspectors, managers, and supervisors who possess enforcement authority through established policies and procedures or ordinances. Depending on the severity of the violation, enforcement could range from the issuance of a notice of noncompliance to the loss of a contract or lease, or a fine.

Recordkeeping

As applicable, the Town shall maintain records demonstrating successful implementation of BMPs. Recordkeeping shall include training, site inspection and maintenance, and if applicable, monitoring.

Training and Workshops

Records of all training sessions provided to staff shall be maintained and include:

- determining which staff requires which training;
- determining when training sessions must be conducted; and

- documenting training activities for enforcement and compliance purposes.

Municipal staff may attend training sessions or workshops sponsored by local or national organizations. For these sessions, the following information shall be recorded:

- Name of Workshop/Training
- Sponsoring Organization
- General Description of the Subject Matter
- Location
- Date
- Attendee information (name, title, department, phone and/or email)

Site Inspection and BMP Maintenance

Inspection reports shall be kept to track frequency and results of inspections, BMPs implemented, condition of BMPs inspected, and follow-up actions taken. It is also important to keep a record of maintenance activities or any other BMPs that are of an "action" nature. It is easy to demonstrate that a BMP that involves a physical change, such as berming or covering, has been accomplished. However, actions that relate to good housekeeping can only be demonstrated by recordkeeping. Besides demonstrating compliance, records can assist in BMP management. Keeping a record of catch basin cleaning, for example, also provides insight into how long it takes for the catch basin sump to refill.

Monitoring

Records of all stormwater monitoring information, inspections and visual observations, certifications, corrective actions and follow-up activities, and copies of all reports must be retained for a period of at least three years. These records shall include at a minimum, when applicable:

- Date, place, and time of sampling, visual observations, and/or measurements.
- Individual(s) who performed the sampling, visual observations, and or measurements.
- Visual observation records for storm events.
- Visual observations and inspections of non-stormwater discharges.
- Calibration and maintenance records of on-site instruments used.
- Visual observations and sample collection exception records.

- Date and approximate time of analyses.
- Individual who performed the analyses.
- Analytical results, method detection limits, and the analytical techniques or methods used.
- Quality assurance/quality control records and results. Sampling and analysis exemption and reduction certifications and supporting documentation.
- Record of any corrective actions and follow-up activities that resulted from observations

Reporting

An annual report, in a format as determined by the New York State Department of Environmental Conservation, and including all relevant information, shall be filed.

7.0 Pollution Prevention and Good Housekeeping

7.2 Policies and Procedures

Street and Bridge Maintenance

It is the **policy** of the Town of Ossining to sweep its street and bridge infrastructure in accordance with a schedule developed and implemented by the Highway Department.

The **procedure** used to implement this effort is to mechanically sweep streets, bridges and other facilities. Information will be provided to the general public with respect to the need for operation and maintenance of private parking facilities and sidewalks.

The Town utilizes motorized mechanical street sweeper equipment for implementation of its program. The sweepers are maintained by the Town's Central Garage Facility and replaced based on an annual assessment of the equipments life expectancy, current condition and annual operation and maintenance costs. Manual sweeping will be performed on an as needed basis.

Municipally owned parking lots are swept on an "as needed" basis based on observations by municipal street sweeper operators and Highway Department supervisory personnel.

The Town does not have any unpaved streets under its jurisdiction.

The Town shall provide an annual training review of its policy and procedures with respect to Street and Bridge Maintenance as it relates to Stormwater Management. Staff are required to sign in to the training session and a record of said training is kept with documentation relating to the Town's overall Stormwater Management Plan and Personnel Training Records.

Street and Bridge Maintenance Implementation

Records will be kept on a calendar year basis and reported at the Town's annual program review for the following work performed:

- **Tons or Cubic Yards** of debris cleaned from streets, sidewalks and parking lots (daily, monthly, cumulative for calendar year).
- **Number** of bridge repair / replacement projects with incorporated pollution prevention or streambank erosion control components.
- **Hours** of training, retraining or continuing education activities related to policies, procedures, implementation and stormwater management.
- **Number** of street and bridge maintenance policies and procedures, or BMP updates or revisions.

- **Number** of erosion control and drainage measures implemented for roads.
- **Information** will be distributed to the public in both hard copy and electronic format as well as through presentations with the focus being on litter control and privately owned facilities such as parking lots and sidewalks.

Implementation Calendar

Item / Month	1	2	3	4	5	6	7	8	9	10	11	12
Street Sweeping				X	X	X	X	X	X	X		
Public Information Update and Distribution	X	X	X									X
Staff Training and Continuing Education (Dependent upon seasonal workload and availability of organizational sessions)	X	X	X	X	X	X	X	X	X	X	X	X

*Implementation items not appearing on calendar may occur at any time of the year. All times subject to change.

Winter Road Maintenance

It is the **policy** of the Town of Ossining to utilize snow and ice control materials in a manner which creates maximum safety for vehicles and pedestrians and minimizes the impacts of snow and ice control products on the environment.

The **procedures** used to implement this effort includes:

The storage of road salts in an enclosed structure to eliminate the leaching of salt brine from stockpiles.

The storage of liquid deicing products in enclosed containers.

The utilizing of liquid deicing products as an alternative to increased quantities of road salt.

The use of ground speed control units on all large snow and ice control material application vehicles.

A reporting, inspection and maintenance program to insure that all snow and ice control application technology is in good working order.

Cleaning of vehicles under a covered structure in a wash rack which includes a grit trap and oil/water separator.

The Town provides an annual training review of its policy and procedures with respect to Winter Maintenance as it relates to Stormwater Management. Staff are required to sign in to the training session and a record of said training is kept with documentation relating to the Town's overall Stormwater Management Plan and Personnel Training Records.

Winter Road Maintenance Implementation

Records will be kept on a calendar year basis and reported at the Town's annual program review for the following work performed:

- **Tons or cubic yards** of materials reduction due to improved technology / procedures.
- **Tons or cubic yards** of rock salt utilized.
- **Gallons** of liquid materials utilized.
- **Hours** of training, retraining or continuing education activities related to policies, procedures, implementation and stormwater management.
-

- **Number** of street and winter maintenance policies and procedures, or BMP updates or revisions.
- **Information** distributed to the public in both hard copy and electronic format as well as through presentations.

Implementation Calendar

Item / Month	1	2	3	4	5	6	7	8	9	10	11	12
Public Information Update and Distribution										X	X	X
Staff Continuing Education (as available)	X	X	X	X	X	X	X	X	X	X	X	X
Staff training /refresher prior to onset of winter									X	X	X	X

Stormwater Drainage, Conveyance and Treatment System Maintenance

It is the **policy** of the Town of Ossining to inspect, maintain, clean, and upgrade its stormwater conveyance and treatment system so as to discharge said water to the environment in the cleanest condition possible.

The **procedures** used to implement this effort includes:

Inspection, Cleaning and Maintenance of Stormwater Catch Basins on a Town wide multi-year program with more frequent cleaning in identified areas.

Flushing of Stormwater Conveyance piping based on need at the time of Stormwater Catch Basin Cleaning.

Removal of debris and sediment buildup from outfall pits and open channel conveyances.

Maintenance and cleaning of detention/retention ponds.

Maintenance and cleaning of catch basin filter inserts.

Maintenance and cleaning of structural Best Management Practices.

The Town provides an annual training review of its policy and procedures with respect to Stormwater Drainage, Conveyance and Treatment System Maintenance as it relates to Stormwater Management. Staff are required to sign in to the training session and a record of said training is kept with documentation relating to the Town's overall Stormwater Management Plan and Personnel Training Records.

Stormwater Drainage, Conveyance and Treatment System Maintenance Implementation

Records will be kept on a calendar year basis and reported at the Town's annual program review for the following work performed:

- **Cubic Yards or Tons** of materials cleaned from system components.
- **Linear Feet** of piped system cleaned.
- **Linear Feet** of open channel cleaned and maintained
- **Number** of Outfall Pits cleaned
- **Number** of upgrades and Technology improvements to system.

- **Hours** of training, retraining or continuing education activities related to policies, procedures, implementation and stormwater management.
- **Number** of maintenance policies and procedures, or BMP updates or revisions.
- **Information** distributed to the public in both hard copy and electronic format as well as through presentations.

Implementation Calendar

Item / Month	1	2	3	4	5	6	7	8	9	10	11	12
Catch Basin Cleaning / Flushing Conveyance Piping*			X	X	X						X	
All Other Procedures				X	X	X	X	X	X	X	X	
Public Information Update and Distribution	X	X	X									X

*Cleaning subject to larvacide application in catch basins by Westchester County Health Department or on an emergency basis as necessary.

Vehicle and Fleet Maintenance

It is the **policy** of the Town of Ossining to maintain its fleet of vehicles, as well as all Central Garage Facilities in such a manner that pollutants are not discharged to the environment.

The **procedures** used to implement this policy include:

An inspection program undertaken on a regular basis to insure that fuel, oil and lubricating products do not leak from any vehicles

A vehicle washing program so that all oil, grit and other products washed from vehicles are directed toward a debris / oil / water separator before being discharged to the sanitary sewer system.

A written plan, reviewed and updated as needed annually for the operation of the Central Garage including fuel dispensing, spill procedures, storage of lubricants and hazardous materials, storage of road salt /de-icing materials.

Annual cleaning of all stormwater drainage structures at the Central Garage (minimum).

Recycling of oil, antifreeze, tires, batteries, paper products, metals and glass

Proper storage of Hazardous Materials and availability on site of all MSDS documentation

The Town provides an annual training review of its policy and procedures with respect to Vehicle and Fleet Maintenance as it relates to Stormwater Management. Staff are required to sign in to the training session and a record of said training is kept with documentation relating to the Town's overall Stormwater Management Plan and Personnel Training Records.

Vehicle and Fleet Maintenance Implementation

Records will be kept on a calendar year basis and reported at the Town's annual program review for the following work performed:

- **Cubic Yards** or **Tons** of material cleaned from system components including yard drains, floor drains and separators.
- **Volume** of oil and anti-freeze recycled
- **Tons** of tires recycled
- **Number** of batteries recycled

[illegible]

Parks and Open Space Maintenance

It is the **policy** of the Town of Ossining to operate its parks and open space facilities in a manner that limits the amount of pesticides, herbicides, insecticides and other chemicals utilized to enhance the appearance of such facilities and which also eliminates the potential impact of grass clippings, pruning waste, tree trimmings, weeds and litter on the Town's Stormwater Conveyance Systems.

The **procedures** used to implement this policy include:

Maintain an aggressive program for litter removal by providing sufficient disposal containers in parks and open space facilities along with a collection schedule sufficient to minimize overflowing containers.

Train personnel in the proper procedures for applying, handling and storage of landscape enhancement materials, mowing and related functions.

Insure that areas immediately surrounding stormwater drainage and conveyance infrastructure are properly maintained with no areas of erosion.

Reduce the use of high nitrogen fertilizers and those containing phosphorus that produce excessive growth requiring more frequent mowing and trimming.

Utilize mulching mowers where possible so that clippings are left in place. Collect grass clippings and recycle / dispose of where necessary.

Insure that all materials stored outside are secured in containers or covered sufficiently to eliminate migration.

Apply water commensurate with the infiltration rate of the soil.

Insure that the application of any products or materials is done by properly trained licensed / certified applicators.

Familiarize all staff with the hazards associated with products and chemicals utilized and maintain a copy of Material Safety Data Sheets (MSDS) on site where stored.

The Town provides an annual training review of its policy and procedures with respect to Parks and Open Space Maintenance as it relates to Stormwater Management. Staff are required to sign in to the training session and a record of said training is kept with documentation relating to the Town's overall Stormwater Management Plan and Personnel Training Records.

[illegible]

[illegible]

Solid Waste Management

It is the **policy** of the Town of Ossining to collect, store, process and dispose of solid waste, including materials recycling in a manner which minimizes the potential impact on water quality. This service may be performed by town staff or contracted services.

The **procedures** used to implement this policy include:

Identifying illegal dumping sites and modifying \ posting to discourage the practice

Providing collection containers and schedules to handle litter in business areas, parks and other areas of the Town where a need is identified.

Providing ordinances requiring collection of pet waste.

Advertise Westchester County Household Hazardous Waste Collection Program.

Encourage greater utilization of Town's Recycling Programs

The Town provides an annual training review of its policy and procedures with respect to Solid Waste Management as it relates to Stormwater Management. Staff are required to sign in to the training session and a record of said training is kept with documentation relating to the Town's overall Stormwater Management Plan and Personnel Training Records.

Solid Waste Management Implementation

Records will be kept on a calendar year basis and reported at the Town's annual program review for the following work performed:

- **Tons** of Solid Waste Collected
- **Tons** of Glass Collected
- **Tons** of Paper Collected
- **Tons** of Metal Collected
- **Tons** of Plastic Collected
- **Tons** of Organics Collected
- **Tons** of Bulk Metal Collected
- **Tons** of Electronic Equipment Collected
- **Hours** of training, retraining or continuing education activities related to policies, procedures, implementation and stormwater management.
- **Number** of maintenance policies and procedures, or BMP updates or revisions.

Implementation Calendar

Item / Month	1	2	3	4	5	6	7	8	9	10	11	12
Collection of Solid Waste and Recyclables*	X	X	X	X	X	X	X	X	X	X	X	X
Collection of Organic Yard Waste			X	X	X	X	X	X	X	X	X	X
Staff Training / Continuing Education	X	X	X	X	X	X	X	X	X	X	X	X
Number of policy / procedure updates	X	X	X	X	X	X	X	X	X	X	X	X

* Household Hazardous Waste Collection provided by Westchester County Department of Environmental Facilities

Streambank Stabilization and Hydrologic Habitat Modification

It is the **policy** of the Town of Ossining to minimize the exposure of streambanks and waterbodies to the products of erosion.

The **procedures** used to implement this policy include:

Initial inspection of open ditch stormwater conveyance system for determining where erosion from public / private property may be depositing sediment.

Program for stabilization of stream banks within the Right-of-Way where needed.

Program for insuring maintenance of stream banks during construction activities

Public education for residents having stormwater conveyance systems within their property or waters which are tributary to.

The Town provides an annual training review of its policy and procedures with respect to Streambank Stabilization and Hydrologic Habitat Modification as it relates to Stormwater Management. Staff are required to sign in to the training session and a record of said training is kept with documentation relating to the Town's overall Stormwater Management Plan and Personnel Training Records.

Streambank Stabilization and Hydrologic Habitat Modification Implementation

Records will be kept on a calendar year basis and reported at the Town's annual program review for the following work performed:

- **Linear Feet** stabilized utilizing:
 1. Hard Engineering for Streambanks (Rip Rap)
 2. Soft Engineering for Streambanks (Plantings)
 3. Hard Engineering Ponds and Lakes (Rip Rap)
 4. Soft Engineering for Ponds and Lakes (Plantings)
- **Each** ponds and lakes with Siltation Forebays
- **Cubic Yards** of material removed from siltation forebays
- **Linear Feet** of streambank walked including GPS
- **Number** of maintenance policies and procedures, or BMP updates or revisions.
- **Hours** of training, retraining or continuing education activities related to policies, procedures, implementation and stormwater management.

Implementation Calendar

[illegible]

7.3 Town of Ossining Best Management Practices

Pollution Prevention / Good Housekeeping Element

Detailed Information 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
SC – 11 Spill Prevention, Control, Cleanup	X	X	X	X	X	X	X	
SC – 20 Vehicle and Equipment Fueling				X	X			
SC – 21 Vehicle and Equipment Cleaning		X		X	X			
SC – 22 Vehicle and Equipment Repair				X				
SC – 30 Outdoor Loading and Unloading		X		X	X	X		
SC – 33 Outside Storage of Raw Materials		X		X	X	X	X	
SC – 34 Waste Handling and Disposal			X	X	X	X	X	
SC – 41 Buildings and Grounds Maintenance				X	X	X		
SC – 43 Parking / Storage Area Maintenance	X	X		X		X		
SC – 61 Safer Alternative Products				X	X	X		
SC – 70 Road, Street and Bridge Maintenance	X	X						
SC – 71 Plaza and Sidewalk Cleaning	X							
SC – 72 Fountain and Pool Maintenance					X			
SC – 73 Landscape Maintenance					X	X		
SC – 74 Drainage System Maintenance			X				X	
SC – 75 Waste Handling and Disposal	X			X	X	X	X	
SC – 76 Water and Sewer Utility Maintenance			X			X		
Road Salt Application and Storage		X						
EC – 12 Streambank Stabilization								X

Storm Water Management Plan			Town of Ossining			Next Review July 2015			1 of 4
Pollution Prevention and Good Housekeeping									
Principal Categories of Municipal Operations	Written								
	Policy and	Last	Sufficient	Sufficient	Personnel	Partnerships		(Meas. Goals)	
Category and Status of Individual Elements	Procedures	Review	Personnel to	Equipment to	Training Program	Established	Record Keeping	Quantitative	
	In Place (Y/N)	(Date)	Sustain Program	Sustain Program	In Place	St./Cty./Lo./V	In Place	Indicators	Note
<u>Street and Bridge Maintenance</u>									
Program Element									
1. Street Cleaning Priorities	Y	Jul-12	Y	Y	Y		Y		Scheduled
2. Schedules and Frequency	Y	Jul-12	Y	Y	Y		Y		
3. Priority Water Body Considerations	Y	Jul-12	Y	Y	Y		Y		
4. Equipment	Y	Jul-12	Y	Y	Y		Y		
5. Sidewalks and Municipal Parking Lot Cleaning	Y	Jul-12	Y	Y	Y		Y		
6. Pollution Prevention and Streambank Erosion Control	Y	Jul-12	Y	Y	Y		Y		
7. Maintenance of Unpaved Roads, (drainage, erosion, dust control)	NA	Jul-12	NA	NA	NA		NA		
Program Implementation									
Street Sweeping Debris Removed							Y	Cubic Yards	
Projects with incorporated pollution prevention / stream erosion							Y	Each	
Staff Training / Continuing Education							Y	Hours	
Best Management Practices, policies and procedures Updates							Y	Each	Utilize as available / funded
Erosion Control and drainage measures implemented for roads							Y	Each	As needed
<u>Winter Road Maintenance</u>									
Program Element									
1. Deicing Materials Storage Methods	Y	Jul-12	Y	Y	Y		N		
2. Storage Site Operations and Cleanup	Y	Jul-12	Y	Y	Y		N		Cleanup after delivery / storm
3. Salt Reduction Options / Alternative Materials	Y	Jul-12	Y	Y	Y		N		
4. Improved Application Technologies	Y	Jul-12	Y	Y	Y		N		
5. Application Equipment Maintenance	Y	Jul-12	Y	Y	Y		N		With vehicle repair records
6. Vehicle Washing	Y	Jul-12	Y	Y	Y		N		
7. Priority Water Body Considerations	Y	Jul-12	Y	Y	Y		N		
8. Aquifer Considerations (Private and Community Wells)	NA	Jul-12	NA	NA	NA		NA		
Program Implementation									
Storage Facilities Sufficient / In Good Repair							Y	Yes / No/ NA	
Deicing Materials / Abrasives Under Proper Cover							N	Yes / No/ NA	
Application Technology Maintenance and Upgrades							NA	Yes / No/ NA	As available / funded
Materials Utilization Reductions (Strategy/Technology Based)							NA	Tons	
Materials Utilized (Solids (Salt/Abrasives)							Y	CY /Tons	
Staff Training / Continuing Education							N	Staff / Hours	
Best Management Practices, policies and procedures Updates							N	Each	As available / funded

Storm Water Management Plan			Town of Ossining						2 of 4
Pollution Prevention and Good Housekeeping									
Principal Categories of Municipal Operations	Written								
	Policy and	Last	Sufficient	Sufficient	Personnel	Partnerships			
Category and Status of Individual Elements	Procedures	Review	Personnel to	Equipment to	Training Program	Established	Record Keeping	Quantitative	
	in Place (Y/N)	Date	Sustain Program	Sustain Program	In Place	St./Cty./Lo./V	In Place	Indicators	Note
<u>Stormwater Drainage, Conveyance and Treatment System</u>									
<u>Maintenance</u>									
Program Element									
1. Priority Setting for portions of System based on Impacts	Y	Jul-12	Y	Y	Y		Y		
2. Inspection of System Components, Record Keeping /Tracking	Y	Jul-12	Y	Y	Y		Y		Inspections at time of cleaning
3. Technology Improvements and Installations	Y	Jul-12	Y	Y	Y		Y		
4. Maintenance, Repair and Cleaning of System Components	Y	Jul-12	Y	Y	Y		Y		
5. Public Education and Communications	Y	Jul-12	Y	NA	NA		NA		
6. Maintenance of open ditches	Y	Jul-12	Y	Y	Y		Y		
Program Implementation									
Materials Cleaned from System Components							Y	Cubic Yards	
Storm Drain Pipe Cleaned							Y	Linear Feet	on "as needed basis" only
Outfall Pits Cleaned							Y	Each	
Upgrades/Technology Improvements							Y	Each	
Staff Training / Continuing Education							Y	Hours	
Best Management Practices, policy and procedures Updates							Y	Each	As available
Length of open ditches maintained / erosion control							N	Linear Feet	
<u>Vehicle and Fleet Maintenance</u>									
Program Element									
1. Wastewater Disposal and Treatment from Vehicle Washing	Y	Jul-12	Y	Y	NA	N	N		
2. Site Drainage System Maintenance and Cleanout	Y	Jul-12	Y	Y	Y	N	Y		As observed and needed
3. Recycling (including oil and anti-freeze)	Y	Jul-12	Y	Y	Y	N	Y		
4. Hazardous Materials Storage and MSDS Library)	Y	Jul-12	Y	Y	Y	N	Y		
5. Spill Prevention and Response	Y	Jul-12	Y	Y	Y	N	Y		Absorbent pads and speedy dry
6. Solid Waste Disposal	Y	Jul-12	Y	Y	Y	N	Y		Part of town wide effort
7. Alternative Product Usage	Y	Jul-12	Y	Y	N	N	N		As becomes available
Program Implementation									
Inspection / Cleanout schedule for drains/separators							Y	# annually	
Volume of oil/anti-freeze/other recycled							Y	gallons	
Treatment facilities for vehicle washing byproduct							Y	# facilities	
Staff Training / Continuing Education							Y	Hours	
Best Management Practices, policies and procedures Updates							N	Each	Utilized as available and funded

Storm Water Management Plan	Town of Ossining		3 of 4						
Pollution Prevention and Good Housekeeping									
Principal Categories of Municipal Operations	Written	Last	Sufficient	Sufficient	Personnel	Partnerships			
Category and Status of Individual Elements	Procedures	Review	Personnel to	Equipment to	Training Program	Established		Quantitative	
	in Place (Y/N)	(Date)	Sustain Program	Sustain Program	In Place	St./Cty./Lo./V	In Place	Indicators	Note
<u>Parks and Open Space Maintenance</u>									
Program Element									
Grounds Maintenance									
integrated pest management	N	Jul-12	NA	NA	NA	NA	N		
fertilizer use, alternatives and reductions	N	Jul-12	Y	Y	Y	NA	N		
erosion control practices	N	Jul-12	N	N	N	NA	N		
solid waste: waste reduction, recycling and litter control	N	Jul-12	Y	Y	Y	NA	N		
hazardous materials storage	N	Jul-12	N	NA	NA	NA	N		
fertilizer usage records	N	Jul-12	N	N	N	NA	N		
Animal Waste Management									
pet waste control, education and enforcement	N	Jul-12	N	N	N	N	N		
bird waste control	N	Jul-12	N	N	N	N	N		
wildlife	N	Jul-12	N	N	N	N	N		
public education and communication	N	Jul-12	N	N	N	N	N		
4. Municipal Pool Maintenance									
hazardous materials storage	N	Jul-12	Y	Y	Y	WCHD	Y		
alternative discharge options for chlorinated water	N	Jul-12	Y	Y	Y		Y		
Program Implementation									
Grounds Maintenance									
Staff Certified as NYS Pesticide Applicators							N	Each	
Reduction in Fertilizer Usage							N	Lbs.	
Animal Waste Management									
Ordinance in Place for Collection and Disposal (all sites)							Y	Yes/No/NA	
Program for control of concentrated animal sites							Y	Yes/No/NA	
Staff Training / Continuing Education							N	Yes/No/NA	
Best Management Practices, policies and updates Updates							Y	Yes/No/NA	As Available
Municipal Pool Maintenance									
Procedures for proper drainage and discharge of pool water							Y	Yes/No/NA	
Hazardous materials properly stored and secured							Y	Yes/No/NA	
<u>Municipal Building Maintenance</u>									
Program Element									
1. Petroleum Bulk Storage spill prevention and response	N	Jul-12	Y	Y	N	N	N		All Permits in Place
2. Hazardous material storage	N	Jul-12	Y	Y	N	N	N		
3. Onsite septic system inspection and maintenance	NA	Jul-12	NA	NA	N	N	N		
4. Grounds maintenance (fertilizer, erosion control)	N	Jul-12	Y	Y	N	N	N		
5. Erosion control new construction / other sites	N	Jul-12	NA	NA	N	N	N		
6. Waste disposal and recycling	Y	Jul-12	Y	Y	N	N	Y		Per WCDEF Regulations
7. Alternative product usage	N	Jul-12	Y	Y	N	N	N		
8. Building site drainage, roof drainage system, infiltration	N	Jul-12	Y	Y	N	N	N		All to Storm Drains
Program Implementation									
Onsite septic inspections and pumpouts							N	Each	
Alternative products adopted for use							N	Each	
Reduction in fertilized usage							N	Yes/No/Na	
Pesticide Use changes (management/reduction/conversion)							N	Yes/No/Na	
Volume of material recycled							Y	C.Y. / Tons	
System modifications to manage "clean water"							N	Yes/No/NA	
Staff Training / Continuing Education							N	hours	
Best Management Practices, policies and procedures Updates							N	Each	

TOWN OF OSSINING
WESTCHESTER COUNTY, NEW YORK

Notice of Intent for Coverage Under

SPDES General Permit for
Storm Water Discharges

from

SMALL MUNICIPAL SEPARATE STORMWATER SEWER
SYSTEMS
(MS4s)

STORM WATER MANAGEMENT PROGRAM



March 10, 2003

James J. Vanoli, PE
Consulting Engineer
752 Old Kensico Road
Thornwood, New York 10594

JAMES J. VANOLI, P.E.

CONSULTING ENGINEER

752 OLD KENSICO ROAD
THORNWOOD, NEW YORK 10594

TELEPHONE (914) 769-0902
FAX (914) 747-3402

March 3, 2003

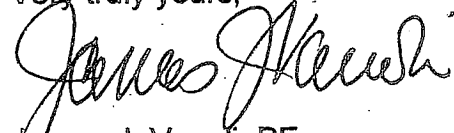
Storm Water Notice of Intent
New York State
Department of Environmental Conservation
625 Broadway
Albany, New York 12233

Re: Town of Ossining
Notice of Intent for Coverage Under an
SPDES General Permit for
Storm Water Discharges from
SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS

Dear Sir/Madam:

Please find enclosed the Town of Ossining's application under the NYS DEC Storm Water Phase II Program for the above referenced matter. The application consists of the original permit form bound into a report that addresses Section D of the permit application. This original document is being sent to you as the official application.

Very truly yours,



James J. Vanoli, PE
Enclosed

Cc:	Supervisor John V. Chervokas	w/encs
	Mr. R. Curtin – Superintendent of Highways	w/encs
	Mr. G. Weeks – Planning Board Chairman	w/encs
	Mrs. M. Elks – Conservation Advisory Board Chairman	w/encs

Ossining\\TownBrd\\NYSDECStormwaterPhaseII\\030303\\NYS DEC

**TOWN OF OSSINING
STORM WATER MANAGEMENT PROGRAM**

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New York State Department of Environmental Conservation
625 Broadway
Albany NY 12233-3505

**Notice of Intent for Coverage Under an SPDES General Permit for
Storm Water Discharges From SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS**

Submission of this Notice of Intent (NOI) constitutes notice that the entity identified in Section A of this form intends to be authorized by DEC's Small MS4 SPDES General Permit issued for storm water discharges from the small municipal separate storm sewer system (MS4) in New York State. Submission of the NOI also constitutes notice that the party identified in Section A of this form has read, understands, and meets the eligibility conditions of Part I.B. of the Small MS4 General Permit; agrees to comply with all applicable terms and conditions of the Small MS4 General Permit; understands that continued authorization under the Small MS4 General Permit is contingent on maintaining eligibility for coverage, and that implementation of the permittee's storm water management program is required to begin within five(5) calendar days after a completed NOI is received by DEC. In order to be granted coverage, all information required on this form must be completed. Please read and make sure you comply with all permit requirements, including the requirement to prepare and implement a storm water management program.

Section A. Small MS4 Owner/Operator Information

1. Name: TOWN OF OSSINING 2. Phone: (914) 762-6000
3. a. Mailing Address: a. Street or P.O. Box: MUNICIPAL BUILDING, 16 CROTON AVENUE
b. City: OSSINING c. State: NY d. Zip Code: 10562

Section B. Small MS4 Location Information

1. MS4 Name: TOWN OF OSSINING
2. a. City/Town/Village: TOWN OF OSSINING
b. County(ies): WESTCHESTER
3. a. Permit Applicant: ☐ Federal ☐ State ☐ County ☐ City ☒ Town ☐ Village
☐ School District ☐ Fire District ☐ Other public entity
4. Does the MS4 discharge to receiving waters or a watershed which is/are impaired (appears on DEC's 303(d) list or for which a Total Maximum Daily Load (TMDL) has been determined)? ☐ Yes ☒ No

Section C. Initial Identification of Management Practices (attach additional sheets as necessary)

1. Public Education and Outreach on Storm Water Impacts	
Outreach Techniques	Management Practices to Encourage
☒ Plan and conduct an ongoing public education and outreach program (required) ☐ Classroom education/school programs ☒ Outreach to commercial entities ☒ Webpage ☒ Printed material ☒ Media campaign ☐ Library of educational materials ☒ Events and Programs ☐ Displays ☐ Posters and signs of varying sizes (magnet to billboards) ☒ Speakers to community groups ☐ Economic incentives ☐ Promotional giveaways ☒ Other <u>work with school district</u>	☒ Proper lawn and garden care (fertilizer and pesticide use, sweeping, etc.) ☐ Low impact development ☐ Pet waste management ☐ Pollution prevention for businesses ☒ Proper disposal of household hazardous wastes ☒ Trash management ☐ Water conservation practices ☐ Others: _____
2. Public Involvement/Participation	
Involvement Techniques	Participation Activities
☒ Public notice and access to documents and information (required) ☒ Public presentation and comments received SWMP and on annual reports (required) ☒ Public involvement/participation program (required) ☒ Contact person identified (required) ☐ Advisory/partner committees ☒ Watershed organizations ☐ Attitude surveys ☐ Community hot lines ☐ Stakeholder meetings ☐ Mailing list development and use ☐ Other _____	☐ Adopt-a-stream ☐ Reforestation program ☒ Storm drain stenciling ☒ Stream, beach, roadway cleanup ☒ Volunteer monitoring ☐ Wetland plantings ☐ Others _____
3. Illicit Discharge Detection and Elimination	
Detection and Elimination Activities	Type of Discharges to Target
☒ Outfall mapping (required) ☒ Illicit discharges prohibited (required) ☒ Public, employees, businesses informed of hazards from illicit discharges (required) ☒ Illicit discharges identified (required) ☒ System mapping ☐ Dye testing ☐ Shoreline surveys ☐ System inspections ☐ Other _____	☒ Failing septic systems ☒ Illegal dumping ☐ Industrial/business connections ☐ Recreational sewage ☒ Sanitary sewer overflows ☐ Wastewater connections to the storm drain system ☐ Others _____
4. Construction Site Storm Water Runoff Control	
Construction Program Requirements (at a minimum equivalent to GP-02-01)	Program Criteria
☒ Require erosion and sedimentation controls through an ordinance or other regulatory mechanism (required) ☒ Provide opportunity for public comment on construction plans (required) ☒ Require construction site plan review (required) ☒ Require overall construction site waste management (required) ☒ Site inspections and enforcement (required) ☒ Education and training of construction site operators (required) ☐ Other _____	☒ New York State Standards and Specifications for Erosion and Sediment Control ☒ New York State Stormwater Management Design Manual

Section C. Initial Identification of Management Practices (continued)

5. Post-Construction Stormwater Management Post-Construction Program Requirements		Program Criteria
☒ Assess existing conditions throughout the MS4 and identify appropriate management practices to reduce pollutant discharge to the maximum extent practicable. (required) ☒ Regulate post-construction runoff from development through an ordinance or other regulatory mechanism (required) ☒ Develop management practice inspection and maintenance program. (required) ☐ Other	☒ New York State Stormwater Management Design Manual	
6. Pollution Prevention/Good Housekeeping for Municipal Operations Program Requirements		Management Practices
☒ Prevent discharge of pollutants from municipal operations (required) ☒ Follow DEC NPS Management Practices Catalog, or equivalent (required) ☒ Conduct employee pollution prevention training (required)	☒ Street cleaning ☒ Catch basin and storm drain system cleaning ☐ Alternative discharge options for chlorinated water ☒ Vehicle maintenance and washing ☐ Hazardous and waste materials management ☐ Landscaping and lawn care ☐ Integrated Pest Management (IPM) ☒ Marina Management ☒ Road salt storage ☐ Roadway and bridge maintenance ☐ Municipally-owned septic system management ☐ Spill response and prevention ☐ Others:	

Section D. Initial Identification of Measurable Goals (attach additional sheets as necessary)

Person(s) responsible for implementing or coordinating the storm water management program:

SUPERVISOR JOHN V. CHERVORAKS

Phone: (914) 762.6000

1. Public Education and Outreach on Storm Water Impacts

Measurable goals (with start and end dates):

PLEASE SEE ATTACHED REPORT

4. Construction Site Storm Water Runoff Control

Measurable goals (with start and end dates):

PLEASE SEE ATTACHED REPORT

2. Public Involvement/Participation

Measurable goals (with start and end dates):

PLEASE SEE ATTACHED REPORT

5. Post-Construction Storm Water Management in New Development and Redevelopment

Measurable goals (with start and end dates):

PLEASE SEE ATTACHED REPORT

Section D. (continued)**3. Illicit Discharge Detection and Elimination**

Measurable goals (with start and end dates):

PLEASE SEE ATTACHED REPORT

6. Pollution Prevention/Good Housekeeping for Municipal Operations

Measurable goals (with start and end dates):

PLEASE SEE ATTACHED REPORT

Section E. Cooperating MS4s

Identify any MS4 partners that will be assisting you in carrying out your Stormwater Management Program: (Attach a description of what portions of which management practices that the other MS4s will be doing for you, and similarly what practices that you are assisting them with.)

Name of Cooperating MS4	Address	Contact Person	Telephone number	Email
VILLAGE OF OSSINING	16 CROTON AVE. OSSINING, NY	PAUL SHEW	(914) 941.3554	
VILLAGE OF BRIARCLIFF MANOR	1111 PLEASANTVILLE RD. BRIARCLIFF MANOR, NY	MICHAEL BLAU	(914) 941.4837	
TOWN OF NEW CASTLE	200 SOUTH GREELEY AVE. CHAPPAQUA, NY	MARION SINEK	(914) 238.4771	

Section F. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print Name: JOHN V. CHERVOLAS, TOWN SUPERVISORSignature: John V. Chervolas Date: 3/3/03

Instructions for Completing the Notice of Intent for Coverage Under an SPDES General Permit for Storm Water Discharges From SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS

Who Must File a Notice of Intent?

Under the provisions of § 402(p) of the Clean Water Act (CWA) and regulations at 40 CFR Part 122, Federal law prohibits "point source" discharges of storm water from municipal separate storm sewer systems (MS4s) to waters of the U.S. without a State Pollutant Discharge Elimination System (SPDES) permit. If you are an operator of a regulated small MS4 designated under §122.32(a)(1) or §122.32(a)(2), you must apply for coverage under a SPDES permit, or apply for a modification of an existing SPDES permit. If you have questions about whether you need a permit under the SPDES Storm Water Program, contact DEC. Finally, the NOI must be submitted in accordance with the deadlines established in Part 2.A. of the MS4 General Permit.

When to File the NOI Form

DO NOT FILE THE NOI UNTIL YOU HAVE READ A COPY OF THE SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM GENERAL PERMIT. You will need to determine your eligibility, prepare your initial storm water management program, and correctly answer all questions on the NOI form, all of which must be done before you can sign the certification statement on the NOI in good faith (and without risk of committing perjury).

Where to File the NOI Form

NOIs must be sent to the following address:

Storm Water Notice of Intent
NYSDEC
625 Broadway
Albany NY 12233

Completing the NOI Form

To complete this form, type or print, using uppercase letters, in the appropriate areas only. Please make sure you have completely filled out every section of this form and have made a photocopy for your records before sending the completed form to the address above.

Section A. MS4 Owner/Operator Information

1. Provide the legal name of the governmental entity, or other legal entity that operates the MS4 described in this application. The responsible party is the legal entity that controls the MS4's operation.
2. Provide the telephone number of the MS4 operator.
3. Provide the mailing address of the MS4 operator. Include the street address or P.O. box, city, state, and zip code. All correspondence regarding the permit will be sent to this address, not the MS4 address in Section B.

Section B. MS4 Location Information

1. Enter the official or legal name of the MS4.
Enter the city or cities, county or counties, and state in which the MS4 is located.
2. Indicate the legal status of the MS4 operator as a Federal, State, County, City, Town, Village, or other public entity.
3. Indicate whether the MS4 discharges storm water into one or more receiving water(s) that appear on the 303(d) list or for which a Total Maximum Daily Load (TMDL) has been established.

Section C. Identification of Initial Management Practices

Check the management practices that you have selected to meet each of the minimum measures. Management practices listed in **BOLD** type are required by the permit and **MUST** be checked. If a selected practice is not on the list, check "Other" and write the name of the practice in the space provided. Attach additional pages as necessary.

Section D. Identification of Initial Measurable Goals

List the person(s) responsible for implementing or coordinating the storm water management program. Provide a narrative description of the measurable goals that will be used for each of the storm water minimum control measures. Indicate the month and year in which you will start and fully implement each of the minimum control measures, or indicate the frequency of the action in the description. Attach additional pages as necessary.

Section E. Identification of Cooperating MS4s

List other MS4s that you are cooperating with to implement your SWMP. Also list any MS4s for which you are providing assistance.

Section F. Certification

Certification statement and signature. (CAUTION: An unsigned or undated NOI form will prevent the granting of permit coverage.) Federal statutes provide for severe penalties for submitting false information on this application form. Federal regulations require this application to be signed by either a principal executive or ranking elected official as described in Part VI.G. of the Small MS4 General Permit.

INTRODUCTION

INTRODUCTION

The Town of Ossining, defined as the unincorporated area of the Town, is located in the central and western section of Westchester County, on the east shore of the Hudson River. The Village of Ossining, wholly within the Town, comprises most of the shoreline. However, the northern portion of shoreline is the Town of Ossining. The Village of Briarcliff Manor is in the Towns of Ossining and Mt. Pleasant. Approximately 90% of the Village of Briarcliff Manor is in the Town of Ossining.

An elected Town Supervisor, Town Board and Highway Superintendent govern the Town. The Town Board appoints the Planning Board, Zoning Board of Appeals and Environmental Advisory Committee.

The land area of the Town is approximately 3 square miles, with a population of 5,500 +/- people.

There are approximately 16.6 miles of dedicated roads that the Town owns and maintains. The length of storm drainage pipes is unknown, more on this matter later in the report in Section 3, with about 400 catch basins.

The Town of Ossining is incorporating an important task in this Notice of Intent that applies to all of the proposed activities and programs. *That task is to evaluate the original Storm Water Management Program, as submitted herein, on an as needed basis and modify the Program as necessary.* The need for modification will be determined by public input, reaction, response and success of the proposed programs.

The Town has partnered with the Villages of Ossining and Briarcliff Manor on certain aspects of this Storm Water Management Program, particularly in regard to equipment for street sweeping and catch basin cleaning.

The following table shows the defined dates for the years of the Program:

Year 1:	March 10, 2003	to	March 9, 2004
Year 2:	March 10, 2004	to	March 9, 2005
Year 3:	March 10, 2005	to	March 9, 2006
Year 4:	March 10, 2006	to	March 9, 2007
Year 5:	March 10, 2007	to	March 9, 2008

Section 1

Public Education and Outreach on Storm Water Impacts

Section 1

Public Education and Outreach on Storm Water Impacts

General

Local government needs the support of the overall population in addressing and abating storm water pollution. Individuals can help in reducing storm water impact in their everyday activities and by supporting the municipal programs and ordinances. The effectiveness of Best Management Practices (BMP's) is frequently connected to the effectiveness of the public' education on the issues.

Proposed Actions

- Partnerships
 - Partnerships can aid in the implementation of the program by sharing the knowledge of certain individuals, or groups, and accelerating the program. Eliminating duplication of effort is cost effective, helps to stimulate the participants and results in a coordinated effort covering greater aspects of the issue.
- Educational Material
 - The Town publishes a newsletter and recycling information guide that is distributed to taxpayers. Articles on storm water pollution can be included therein.
 - Pamphlets can be prepared for distribution in the school system.
 - Science fairs, assemblies and Arbor Day lend themselves to this level of participation in the school system.
 - The Town Supervisor hosts a local cable television show on which the matter can be presented verbally, along with visual aids.
 - The Town website is an excellent location for posting factual material and schedules for upcoming events.

- Management Practices

- Proper lawn and garden care can be discussed in the information pamphlets to be distributed.
- Westchester County conducts a program for disposal of household hazardous wastes. The Town residents will be reminded of this opportunity and encouraged to participate.
- The Town sponsors an annual trash collection event.

Measurable Goals

Year 1

1. Consult with other municipalities and organizations for currently available material.
2. Discuss potential programs with school administrators.
3. Discuss potential programs with Parent-Teacher-Associations.
4. Create a section on the Town website dedicated to Storm Water Pollution.

Year 2

1. Distribute the flyers and brochures to the schools.
2. Include the Storm Water Management Program information in the Town newsletter.
3. Mail the newsletter.
4. Start a public education program.

Year 3

1. Continue with the programs and activities established in Year 2.

Year 4

1. Evaluate the effectiveness of the programs that has been placed into action.
2. Consult with the involved administrators for possible improvements.
3. Make modifications as needed.

Year 5

1. Institute the modifications made to the programs and literature as identified in Year 4.

Section 2

Public Involvement and Participation

Section 2

Public Involvement and Participation

General

The public can provide assistance and participate in the formation and implementation of a storm water management plan. The objective here is to keep the public enthusiasm high and maintain its interplay with the municipal officials. This can be accomplished with public hearings, programs in the community, scouting projects and in cooperation with the school system.

Broader public support can lead to fewer obstacles encountered when an program is to be implemented. This can be seen in the Town of Ossining with the Environmental Advisory Council and its concern about the Indian Brook Reservoir watershed. The Indian Brook Reservoir provides part of the water supply to the Village of Ossining water treatment and distribution system. The balance comes from the Croton Reservoir system. Its watershed is in the Towns of Ossining and New Castle.

The contact person on *all* activities in the Storm Water Management program will be the Town Supervisor. That office will delegate the various duties and activities to the appropriate parties. This will provide for a cohesive and coordinated approach. Also, the Town Supervisor and the Town Board are the governing bodies of the municipality.

Proposed Actions

- Advertisement of public hearings, meetings and events.
- The Supervisor's television program is an excellent opportunity to air the views of citizens and active groups.
- Residents of both the Town and Village frequent the Ossining Community Center, in the Village of Ossining. The public events bulletin board is an excellent location for display of upcoming events.
- Notices can be made bilingual.

Participation Activities

- Storm drain stenciling has been targeted as an excellent opportunity to provide public participation. Scouting allows access to both adults and adolescents alike.
- Engel Park, a Town owned park, is a stretch of Hudson River shoreline just north of the Westchester County Ossining Waste Water Treatment Plant. The Town has implemented several clean-up programs at Engel Park in the past. The programs have been in the summer, typically and have included:

- A prison guard work detail. Note that the Sing Sing Correctional Facility is just south of Engel Park.
- A Diver's Association clean up.
- The Ossining Boat and Canoe Club is an active organization with a vested interest in keeping the Hudson River clean. A presentation of the program can be made to their membership. Hopefully, this will precipitate group or individual actions.
- Voluntary monitoring may be realized by reaching out to members of the Ossining Boat and Canoe Club, the Environmental Advisory Committee and other citizen groups.

Measurable Goals

Year 1

1. Compile a list of potential groups and individuals that might be willing to participate in the storm water program.
2. Design the program around these participants.
3. Provide public notice of this opportunity to the community.

Year 2

1. Coordinate these groups and individuals into an effective force.
2. Provide for coordination of effort without duplication of activities.
3. Provide the participants with flyers, pamphlets and the like.

Year 3

1. Continue to support the public participation effort.
2. Analyze and evaluate this portion of the program and suggest modifications, if needed.

Year 4

1. Implement the modifications to the program.
2. Search for additional, new groups that may have formed.
3. Provide newer, updated information, as may be available.

Year 5

1. Institute the revised program
2. Continue to support the public action groups.

Section 3

Illicit Discharge Detection and Elimination

Section 3

Illicit Discharge Detection and Elimination

General

Illicit discharge, as defined by Federal regulations, is "...discharge to an MS4 that is not composed entirely of storm water..." with some exceptions. These exceptions include discharges from SPDES and NPDES permitted industrial sources and discharges from fire fighting operations. Illicit discharges are so named because MS4s are not designed to accept, process or discharge non-storm water wastes. Illicit does not mean illegal. Not every illicit discharge is necessary a prohibited illegal discharge.

Some examples of illicit discharges are:

- Sanitary sewage.
- Effluent from septic tanks.
- Septic system overflows.
- Car wash wastewater.
- Improper waste oil disposal.
- Radiator flushing disposal.
- Laundry wastewater.
- Spillage from roadway accidents.
- Improper disposal of auto and household toxics.

Significant portions of dry weather flows in urbanized areas are often due to illicit discharges and connections to the MS4s.

These flows enter the municipal drainage system through either direct piped connection, direct hand discharge or indirect connections. These untreated discharges carry high levels of oil, grease, heavy metals, bacteria, viruses, solvents, phosphorous and nitrogen into the storm drain system and then the receiving water body.

The following activities are *not* considered illicit discharges:

- Water line flushing.
- Landscape irrigation.
- Uncontaminated ground water infiltration.
- Uncontaminated pumped ground water.
- Discharges from potable water sources.
- Foundation drains.
- Air conditioning condensation.
- Irrigation water.
- Springs.
- Water from crawl space pumps.
- Lawn watering.

- Individual residential car washing.
- Flow from riparian habitats and wetlands.
- De-chlorinated swimming pool discharges.
- Street wash water.

Proposed Actions

The Town of Ossining does not have a complete map of its sanitary sewer system or its storm drainage system. Currently, the only overall maps that are available are included earlier in this report. They consist of the typical USGS Quadrangle, Tax maps that are in dire need of updating and a planning map the used the USGS Quadrangle as its base with the road system shown thereon, slightly more than stylistically.

Location of pipes, catch basins and outfalls are by common knowledge of longtime employees of the Town. Old subdivision maps are used from time to time towards this end. These can be misleading as they do not necessarily represent the as-built location of the utilities and the utilities may have been modified over the years.

Therefore, we must start from nearly nothing and create the map system. Fortunately, the Town is in the process of updating its tax maps to current, mandated standards. The Town has been made aware of potential sources of aerial photographs. These will be investigated to determine if they have any practical value to a mapping company. It is hoped that combining the street and contour mapping with the tax map project will result in an economic saving.

These maps will then provide the base for mapping:

- Sanitary sewer system.
- Storm drainage system.
- Storm drainage outfalls.
- Areas serviced by septic systems.
- Areas of low elevation that may be conducive to stagnant water.
- Areas that may be developed into BMPs in the future.

The building inspector will be relied upon heavily to spot illegal dumping during his daily routine. Also, the public will be made aware of the types of activities that are illicit discharges. They will be able to call the building department, who will then investigate.

The Town Code will have to be amended to provide legal authority to the building inspector, or other official as they deem proper, to investigate the alleged illicit actions and proceed with the appropriate means to remedy the situation.

Falling septic systems can be readily identified by odors from catch basins. The most likely places for these to occur will be where there are no public sanitary sewers. The mapping project will provide the Town with both the catch basin locations and the areas that are not serviced by public sanitary sewers.

Measurable Goals

Year 1

1. Investigate available existing resources for mapping project, including, but not limited to, aerial photographs. This may include partnering with another municipality or governmental organization.
2. Develop an Illicit Discharge regulation for the Town Code. Hold public information meetings and public hearings on the proposal.
3. Publish, or obtain, flyers and pamphlets on illicit discharges.

Year 2

1. Evaluate the several options that are expected to be enumerated for the mapping project. Award bid for project, as budget may allow.
2. Adopt the Illicit Discharge regulation and incorporate into the Town Code.
3. Direct the building inspector, or other named official, to enforce the new regulation.
4. Distribute the flyers to schools, civic organizations, scout troops, Rotary Club, etc.
5. Use the annual Village Fair to present the hazards of illicit discharge.

Year 3

1. The consultants chosen to prepare the maps will be completing their contractual obligations.
2. Begin to assemble all available information on sanitary sewer and storm drainage systems, in preparation for placing that information on the maps.
3. Continue to enforce the illicit discharge regulation.

Year 4

1. Receive the new maps in electronic digital file and hard copy format. Begin placing the sanitary sewer, storm drains and outfalls on the maps.

2. Review the results of the illicit discharge regulation in so far as actions that have been taken. Adjust the regulation as needed.
3. Reinforce the public participation and awareness of the pollutants that illicit discharges carry to the receiving waters.

Year 5

1. Complete the mapping of the existing sewer and storm drainage systems.
2. Identify the outfalls and any available land area in the vicinity, or along the course of the piping system.
3. Enact any new modifications to the illicit discharge regulation.
4. Continue public awareness of the problems with illicit and illegal discharges to the drainage system.

Section 4

Construction Site Storm Water Runoff Control

Section 4 Construction Site Storm Water Runoff Control

General

Construction sites can be the biggest contributors to siltation runoff causing severe stormwater impacts. The nature of the onsite activity resulting in raw dirt plus the mud and silt carried off site by the trucks cause instant high levels of turbidity to receiving water bodies.

The Clean Water Act, Section 402 shows that stormwater discharges from construction activities, that result in a land disturbance of one (1) acre or greater, to the waters of the United States are unlawful unless they are authorized by a NPDES permit for Stormwater Discharges from Construction Activity or by a State SPDES permit. The State of New York's SPDES program is a NPDES approved program with permits issued in accordance with the Environmental Conservation Law. Discharges of pollutants to all other "Waters of the State of New York" are also unlawful unless authorized by a SPDES Permit. However, a discharger, owner, or operator may obtain coverage under this general permit by submitting a Notice of Intent (NOI) for Stormwater Discharges Associated with Construction Activity to the New York State Department of Environmental Conservation.

The Town of Ossining is a regulated MS4 under the Federal Phase II Program. Therefore, it is required to obtain SPDES permit coverage for stormwater discharges under their jurisdiction and control. Also, they must address storm water runoff from construction activities. Construction activities covered under this permit, which are subject to storm water runoff controls of a regulated MS4, have to comply with the MS4's controls.

The Town of Ossining intends to adopt the NYSDEC technical standards for erosion and sediment control contained in the document, "New York Standards and Specifications for Erosion and Sediment Control", published by the Empire State Chapter of the Soil and Water Conservation Society. Water quality and water quality controls, post-construction storm water control practices, the NYSDEC technical standards as detailed in the "New York State Stormwater Management Manual" will be adopted.

Proposed Action

The Town of Ossining will institute control measures for construction site runoff that is equivalent to the SPDES General Permit for Stormwater Discharges from Construction Activities. The existing Town Code will be reviewed to determine whether or not it is adequate in this regard. It will be amended to include, perhaps by direct reference, the State publication, if found to be deficient.

These control measures include, but are not limited to the following:

- An ordinance requiring the implementation of proper erosion and sediment control measures.
- An ordinance requiring the erosion and sediment controls to be designed by a NYS licensed professional engineer.
- Requirements for construction site operators to implement erosion and sediment control management practices.
- Sanctions to ensure compliance to the extent allowable by law.
- Requirements for construction site operators to control waste such as discarded building materials, concrete truck washouts, chemicals, litter and sanitary waste at the site.
- Procedures for site plan reviews that incorporate the potential water quality impacts.
- Review of site plans prior to construction to ensure compliance with the Town requirements.
- Procedures for site inspections with named representatives of the Town.
- Punitive damages may be considered in the drafting of the 'Town's regulations.

Measurable Goals

Year 1

1. Review existing Town Code and regulations for conformance with the requirements of the documents stated herein before.
2. Modify the existing documents as needed. This will include consulting with other municipalities and governmental agencies.

Year 2

1. Hold public hearings on the proposed modifications to the Town code and regulations.
2. Adopt the modifications as may be appropriate and approved.
3. Notify all local developers, builders and engineers of the new regulations.

Year 3

1. Implement and enforce the regulations.
2. The building inspector, or other duly authorized person, will be the field person.
3. Determine if the adopted codes are practical and workable.
4. Determine if the enforcement provisions are workable.

Year 4

1. Revise regulations, if needed.
2. Continue enforcement of regulations.

Year 5

1. Continue enforcement of regulations.

Section 5

Post Construction Stormwater Management

Section 5 Post Construction Stormwater Management

General

This Phase II rule requires the Town to develop, implement and enforce a program to reduce pollutants in post-construction runoff to their storm drainage system from new developments and redevelopment projects that involve one (1) acre or more of land disturbance. The Town must:

- Develop and implement an ordinance requiring the implementation of post-construction runoff controls in accordance with, and as allowed by, Federal, State and local law.
- Develop and implement strategies that include best management practices (BMPs). These may be structural or non-structural.
- Ensure adequate long term operation of these facilities by providing funding in the annual budget.

Proposed Actions

Structural BMPs

- Storage and/or detention BMPs. These include, but are not limited to wet ponds, dry basins, multi-chamber catch basins. The intent with these BMPs is to settle out the silt that carries the pollutants.
- Infiltration trenches of gravel, infiltration basins, dry wells. The pollutants are filtered out in the gravel and soil prior to reaching the groundwater.
- Grassy swales and filter strips. The vegetation in these BMPs will trap the silt.

Non-structural BMPs

- Review the existing comprehensive zoning plan to make certain that environmentally sensitive areas are protected from undesirable growth.
- Review existing codes and ordinance to ensure the environmentally sensitive areas are protected from undesirable growth.

- Review existing ordinance on maximum lot coverage and try to limit, to the extent practicable, the amount of impervious surfaces.

Measurable Goals

Year 1

1. Study and analyze the non-structural BMPs immediately. This will serve to provide the fastest action towards reduction of pollutant discharge.
2. Hold public hearings on the provide revisions due to the above.
3. Conduct preliminary discussion of the location of the structural BMPs.

Year 2

1. Implement the findings of the non-structural BMP proceedings.
2. Perform further study on locations available, areas that show need of and land acquisition for the structural BMPs.
3. Concentrate on the mapping for the structural BMPs.

Year 3

1. Building inspector shall continue vigilance on the revised code for maximum lot coverage on existing properties, not "grandfathered" and new building permit applications.
2. Concentrate on the mapping project and coordinate with the new tax maps.

Year 4

1. Building inspector to continue enforcement of maximum lot coverage regulations.
2. Locate the structural BMPs on the maps.
3. discuss land acquisition with the property owners.
4. Design the BMPs when, and if, the land is acquired. Note that property negotiation and, if necessary condemnation, takes a considerable amount of time.

Year 5

1. Building inspector to continue enforcement of maximum lot coverage regulations.
2. Design the BMPs.
3. Begin construction of the BMPs.

Section 6

Pollution Prevention / Good Housekeeping for Municipal Operations

Section 6

Pollution Prevention / Good Housekeeping for Municipal Operators

General

This section of the Town's NOI may be the most productive, and costly to the Town, of all the elements in the program. Removal of the silt, sand and debris from the road surfaces and the catch basins will prevent a great deal of pollutants from entering the receiving water bodies. However, this is done at an expense.

The Town's highway maintenance garage must be addressed in great detail. Discharge from truck washing, oil changes and floor drains from the truck bays must be addressed.

Sand and salt, used during the winter months to keep the streets clear, must be stored in an appropriate facility designed to not contribute to groundwater pollution.

Proposed Action

The street sweeping and catch basin cleaning operations will require many crews of Department of Public Works personnel, heavy equipment purchase, heavy equipment maintenance and out of pocket expense for disposal of materials. The alternate to this is contracting to an outside company for the sweeping, basin cleaning and disposal operations.

Towards this end, the Town of Ossining has joined with two (2) other communities to address these concerns. Those communities are the Village of Ossining and the Village of Briarcliff Manor. The geographic proximity and cooperative attitudes can work to the benefit of all parties. Each community may not be able to handle the purchase and operation costs independently. However, together, the costs can be shared and machine down time is minimized.

The Town Highway Department tries to clean each of the 400 +/- catch basins once annually. However, lack of a "Vactor" truck means that all the work is done by hand. The relatively small department is called upon to respond to emergencies of all types. Such as sanitary sewer blockages, overflows from sewage pump station failure and the like. The crews must respond to these emergencies, even if they are cleaning out a catch basin manually. Therefore, the cleaning is postponed to address more pressing issues.

This three community board may be able to purchase a "Vactor" truck in a more cost effective manor than any one (1) community alone.

Storage of salt and sand for winter operations is another matter that the three community board may be able to address and solve in a cost effective manor. The construction of one large facility may carry with it the economy as to scale frequently realized in these types of projects.

The Town's current highway garage dates back to the pre 1920's. It is insufficient in floor area and the equipment and structure are in questionable condition. Money is being spent to patch the roof and replace the concrete block walls with poured reinforced concrete. It is located in the same area, indeed one building is shared, as the police department. However, the police department will be moving to a new facility in the near future. The land has been acquired and facility design is underway. This will provide more room for the highway operations at the current site. Alternates to expansion within the existing confines are the acquisition of additional neighboring land or another site may be found.

Any new facility will have the appropriate oil-water separator attached to the wash bays and floor drains. The onsite catch basins might have oil hoods or another type of integral oil separator.

These are a small sampling of the many criteria necessary to address upon design of a new facility.

The Town has Engel Park on the shores of the Hudson River. The Ossining Boat and Canoe Club operates a clubhouse facility, owned by the Town of Ossining, near the park. The residents use Engel Park as passive recreation nearly every day and every evening. Music concerts are held in the summer, as well as other community functions. This is an excellent location to post informational signs, distribute literature during functions and inform the public that the river in front of them is the water body they will be protecting by adhering to pollution prevention policies.

Measurable Goals

Year 1

1. Review current street sweeping and catch basin maintenance schedule.
2. Prepare a listing of streets and catch basins for future reference.
3. Provide information to Town highway department employees on the types of pollutants found in highway sand and catch basins.
4. Begin exploration of best method to obtain a "Vactor" truck for cleaning catch basins.
5. Create or refine a recycling program.

Year 2

1. Create or purchase a computer program designed for DPW maintenance scheduling.
2. Install the program and train personnel in its use.
3. Continue employee training.
4. Perform cost effective analysis on the alternates found in obtaining a "Vactor" truck.
5. Investigate renovations to highway department yard, or relocation.
6. Investigate salt storage facility.

Year 3

1. Begin use of computer maintenance program to schedule manpower activities.
2. Make decision on truck to clean catch basins.
3. Make decision on highway department garage and yard.
4. Make decision on salt storage facility.

Year 4

1. Continue use of computer program.
2. Modify program as may be necessary.
3. Obtain truck to clean catch basins.
4. Design highway department garage and yard. Include oil-water separator. Include proper attachments to storm drainage system, such as, hoods on basins.
5. Design salt storage facility.

Year 5

1. Refine the computer program for maintenance.
2. Institute its use for other maintenance operations, as may be applicable.
3. Construct the highway garage.
4. construct the salt storage structure.

TOWN OF OSSINING

SUMMARY CHART FOR COMPLIANCE UNDER NYS DEC PHASE II GENERAL SPDES PERMIT NO. GP-02-02 MS4-SPDES No. NYR20A370

JJV, PE
Consulting Engineering
Site Development

James J. Viscusi, P.E.
Professional Engineer No. 1034
New York State
For NYR20A370

James J. Viscusi, P.E.
Professional Engineer No. 1034
New York State
For NYR20A370

SUMMARY CHART

Project
NYDEC
STORMWATER PHASE II
MS4-SPDES No. NYR20A370

Client
TOWN OF OSSINING
MUNICIPAL BUILDING
16 CROTON AVENUE
OSSINING, NY 10522

Date	1/1/04
Drawn by	NYA
Check by	JPV
Scale	AS SHOWN

	Section 1 Public Education and Outreach on Storm Water Impacts	Section 2 Public Involvement and Participation	Section 3 Illicit Discharge Detection and Elimination	Section 4 Construction Site Stormwater Runoff Control	Section 5 Post Construction Stormwater Management	Section 6 Pollution Prevention - Good Housekeeping for Municipal Operators
YEAR 1 3/1003 - 3/904	- Consult with other municipalities and organizations for currently available materials. - Develop potential programs with School Associations. - Discuss potential programs with Parent-Teacher Associations. - Create a section on the Town website dedicated to Storm Water Pollution.	- Compile a list of potential groups and individuals willing to participate in the Storm Water Program. - Develop a list of potential groups and individuals willing to participate in the Storm Water Program. - Provide public notice of this opportunity to the community.	- Investigate available existing resources for illicit discharge detection and elimination. - Develop a list of potential groups and individuals willing to participate in the Storm Water Program. - Provide public notice of this opportunity to the community.	- Review existing Town Code and regulations for stormwater management. - Adopt the Town Code and regulations for stormwater management. - Modify the existing documents as needed. This will include consulting with other municipalities and governmental agencies.	- Study and review the non-structural BMP's. Immediately, this will serve to provide the fastest action towards reduction of pollutant discharges. - Hold public hearings on the provided revisions due to the above. - Conduct preliminary discussion of the location of the structural BMP's.	- Review current street sweeping and catch basin maintenance schedule. - Prepare a list of new and catch basins for future replacement. - Provide information to Town Highway Department employees on the types of pollutants found in highway and wet catch basins. - Develop a schedule of best methods to obtain a "check" back for cleaning catch basins. - Create or refine a recycling program.
YEAR 2 3/1005 - 3/905	- Distribute the flyers and brochures to the schools. - Include the Storm Water Management Program information in the Town newsletter. - Mail the newsletter. - Start a public education program.	- Coordinate these groups and individuals into an effective force. - Provide for coordination of effort without duplication of efforts. - Provide the participants with flyers, pamphlets, and the like.	- Evaluate the several options that are expected to be implemented for the proposed project. Award bid for project as budget may allow. - Adopt the Illicit Discharge regulation and ordinance. - Direct the existing sewerage, or other named official to enforce the new regulation. - Distribute the flyers to schools, civic organization, scout troops, Rotary Club, etc. - Use the annual Village Fair to present the hazards of illicit discharge.	- Hold public hearings on the proposed modifications to the Town code and regulations. - Adopt the regulations as may be appropriate and appropriate. - Implement the new regulations, building, and engineering of the new regulations.	- Implement the findings of the non-structural BMP's. - Adopt the findings of the non-structural BMP's. - Conduct the mapping for the BMP's. - Investigate recommendations to highway department yard, or relocation. - Investigate a location for the vehicle and storage facility.	- Create or purchase a computer program designed for BMP maintenance scheduling. - Implement the program and train personnel in its use. - Perform cost effective analysis on the BMP's. - Attendees found in obtaining a "check" back. - Investigate recommendations to highway department yard, or relocation. - Investigate a location for the vehicle and storage facility.
YEAR 3 3/1006 - 3/906	Continue with the programs and activities established in Year 2.	- Continue to support the public participation effort. - Continue to support the public participation effort. - Continue to support the public participation effort.	- The consulting chosen to prepare the map will be completing the map. - Begin to assemble all information on existing sewer and storm drainage systems. In preparation for plotting the information on the map. - Continue to enforce the illicit discharge regulation.	- Implement and enforce the regulations. - The building inspector, or other duly authorized person, will be the field person. - Determine if the adopted codes are practical and workable. - Determine if the enforcement provisions are workable.	- Building Inspector shall continue to enforce on revised code for maximum lot coverage on existing properties, not "grandfathered" and new building permit applications. - Conduct the mapping for the BMP's. - Coordinate with the new tax map.	- Begin use of computer program to schedule maintenance activities. - Main decision regarding truck to clean catch basins. - Make decision on highway department yard and yard. - Make decision on the location of a salt storage facility.
YEAR 4 3/1007 - 3/907	- Evaluate the effectiveness of the programs that have been placed into effect. - Make modifications as needed. - Make modifications as needed.	- Implement the modifications to the program. - Continue to support the public participation effort. - Continue to support the public participation effort.	- Review the map in electronic digital file and make any necessary changes. - Review the map in electronic digital file and make any necessary changes. - Review the map in electronic digital file and make any necessary changes.	- Review the map in electronic digital file and make any necessary changes. - Review the map in electronic digital file and make any necessary changes. - Review the map in electronic digital file and make any necessary changes.	- Building Inspector shall continue to enforce on revised code for maximum lot coverage on existing properties, not "grandfathered" and new building permit applications. - Conduct the mapping for the BMP's. - Coordinate with the new tax map.	- Continue use of computer program to schedule maintenance activities. - Make program more efficient. - Obtain truck to clean catch basins. - Design highway department garage and yard. - Include off-water separator. Include proper attachments to storm drainage system, such as, hood on basins. - Design salt storage facility.
YEAR 5 3/1008 - 3/908	Include the modifications made to the program and narrative as modified in Year 4.	- Institute the revised program. - Continue to support the public action group.	- Complete the mapping of the existing sewer and storm drainage systems. - Identify and eliminate illicit discharges and any available. - Identify and eliminate illicit discharges and any available. - Identify and eliminate illicit discharges and any available.	Continue enforcement of regulations.	- Building Inspector shall continue to enforce on revised code for maximum lot coverage on existing properties, not "grandfathered" and new building permit applications. - Conduct the mapping for the BMP's. - Coordinate with the new tax map.	- Review the computer program for maintenance. - Institute it use for other maintenance operations, as may be applicable. - Obtain highway department. - Construct the salt storage structure.

CRITICAL PATH GUIDE TO COMPLIANCE: A SNAPSHOT DRAFT

The boxes below summarize the permit requirements and recommended target dates for initiation, implementation, or completion of key benchmarks that are presented in the *Critical Path to Compliance*. Municipalities received a draft copy of this in August 2005 during the public review period. The document is currently being finalized and will then be distributed to municipalities.

MINIMUM CONTROL MEASURE 1 PUBLIC EDUCATION AND OUTREACH	PERMIT REQUIREMENTS					
	- Plan and conduct an ongoing public education and outreach program that describes: - The impacts of stormwater discharges on waterbodies; - The pollutants of concern and their sources; and - Steps that contributors of stormwater and non-stormwater discharges can take to reduce the pollutants. - Develop measurable goals and select appropriate education and outreach activities to ensure the reduction of all pollutants of concern in stormwater discharges to the maximum extent practicable.					
	BENCHMARKS	RECOMMENDED TARGET DATE				
TIME LINE		3/05	3/06	3/07	1/08	
	Assess education and outreach needs	☐				
	Develop public education and outreach program	☐				
	Implement: Outreach to priority audiences underway	☐				
	Implement: Education and outreach activities for the general public underway		☐			
	Implement: Continued public education and outreach activities			☐		
	Implement on-going Public Education and Outreach Program fully					☐

MINIMUM CONTROL MEASURE 2 PUBLIC INVOLVEMENT / PARTICIPATION	PERMIT REQUIREMENTS					
	- Comply with state and local public notice requirements when implementing a public involvement/participation program. - Comply with public participation and involvement provisions of the Clean Water Act, as applicable. - Design and conduct a public involvement/participation program that: - Identifies key individuals and groups who are interested in or affected by the stormwater permitting program; - Identifies the type of input the MS4 will seek from them; and - Describes the activities the MS4 will undertake to provide program access and gather needed input. - Identify and publish the name of a contact person for the Stormwater Management Program (SWMP). - Prior to submitting the annual report, present the draft annual report at a meeting that is open to the public. Make public the agenda of the meeting, the opportunity for public comment, the date and time of the meeting, and the availability of the draft report for prior review. - Include a summary of comments and intended responses in the annual report and make the final report available for public inspection. - Develop measurable goals and select appropriate public involvement activities to ensure the reduction of all the pollutants of concern in stormwater discharges to the maximum extent practicable.					
	BENCHMARKS	RECOMMENDED TARGET DATE				
TIME LINE		3/05	3/06	3/07	1/08	
	Identify primary SWMP contact person and publish contact information	☐				
	Assess SWMP involvement and participation needs	☐				
	Plan Public Involvement / Participation Program	☐				
	Implement: Initial involvement activities with key stakeholders underway	☐				
	Implement: Stewardship activities underway		☐			
	Continued Public Involvement/Participation Program implementation			☐		
	Full Public Involvement / Participation Program implementation					☐

MINIMUM CONTROL MEASURE 3
ILLCIT DISCHARGE DETECTION AND ELIMINATION (IDDE)

PERMIT REQUIREMENTS

- Develop, implement and enforce a program to detect and eliminate illicit discharges into the MS4.
- Develop and maintain a map showing the location of all outfalls and the names and location of all waters of the U.S. that receive discharges from those outfalls.
- Prohibit, through an ordinance or other regulatory mechanism, illicit discharges into the storm sewer system and implement appropriate enforcement procedures and actions.
- Develop and implement a program to detect and address non-stormwater discharges to the system.
- Inform public employees, businesses and the general public of hazards associated with illegal discharges and improper disposal of waste.
- Address the following categories of non-stormwater discharges as necessary if they are determined by NYS DEC to be substantial contributors of pollutants.

Water line flushing	Springs
Landscape irrigation	Water from crawl space and basement sump pumps
Diverted stream flows	Footing drains
Rising groundwater	Lawn watering
Uncontaminated groundwater infiltration	Individual residential car washing
Uncontaminated pumped groundwater	Flows from riparian habitats and wetlands
Discharges from potable water sources	Dechlorinated swimming pool discharges
Foundation drains	Street wash water
Air conditioning condensation	Fire fighting activities
Irrigation water	

- 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.

TIME LINE

BENCHMARKS	RECOMMENDED TARGET DATE			
	3/05	3/06	3/07	1/08
Assess existing resources, programs, local laws, and staff	☐			
Plan: assign responsibility, compile information on drainage unit and outfall location; develop goals and strategies	☐			
Establish partnerships: roles, responsibilities, and training needs	☐			
Field activities underway: locate outfalls, begin locating and eliminating illicit discharges		☐		
Illicit discharge local law development underway		☐		
Prevent Illicit Discharges: Public outreach, education and training on the hazards of illicit discharges underway		☐		
Generate outfall map			☐	
Adopt local law			☐	
Achieve full compliance with permit requirements and continuing identification and elimination of illicit discharges				☐

MINIMUM CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

MEASURE 4

PERMIT REQUIREMENTS

- Develop, implement, and enforce a program to reduce pollutants in any stormwater runoff to the small MS4 from construction activities that result in a land disturbance of one acre or more.
- Include construction activities on less than one acre in the program if:
 - 1) It is part of a larger common plan of development or sale, or
 - 2) If controlling such activities in a particular watershed is required by the Department.
- Develop a program that, at a minimum, provides equivalent protection to the NYS SPDES General Permit for Stormwater Discharges from Construction Activities (GP-02-01). The program must include the development and implementation of:
 - An ordinance or other regulatory mechanism to require erosion and sediment controls;
 - Requirements for construction site operators to implement erosion and sediment control management practices;
 - Sanctions to ensure compliance;
 - Requirements for construction site operators to control waste (i.e., discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste) at the construction site that may cause adverse impacts to water quality;
 - Procedures for site plan review that incorporate consideration of potential water quality impacts and review of individual pre-construction site plans to ensure consistency with local sediment and erosion control requirements;
 - Procedures for receipt and consideration of information submitted by the public;
 - Procedures for site inspections and enforcement of control measures; and
 - Education and training measures for construction site operators about requirements.
- Develop measurable goals and select appropriate management practices to ensure the reduction of all pollutants of concern in construction stormwater discharges tributary to the MS4's system to the maximum extent practicable.

TIME LINE

BENCHMARKS

RECOMMENDED
TARGET DATE

3/05 3/06 3/07 1/08

Outreach and education to the construction industry underway	☐			
Assess local laws and initiate development of new law to ensure protection equivalent to SPDES Construction Permit GP-02-01	☐			
Procedures for receipt of information from the public underway	☐			
Plan for inspection of construction sites	☐			
Process to adopt local law underway		☐		
Develop procedures for site plan review, site inspections, and enforcement		☐		
Training of municipal staff for local law implementation underway		☐		
Complete adoption of local laws and implement			☐	
Full implementation of construction requirements including reviews, inspections, and enforcement				☐

MINIMUM CONTROL MEASURE 5
POST CONSTRUCTION STORMWATER MANAGEMENT

PERMIT REQUIREMENTS

- Develop and implement a program that:
 - Includes a combination of management practices that will reduce the discharge of pollutants to the maximum extent practicable;
 - Uses an ordinance or other regulatory mechanism to address post-construction runoff from development and redevelopment; and
 - Ensures adequate long-term operation and maintenance of management practices, including monitoring.
- Develop, implement, and enforce a program to address stormwater runoff from new development and redevelopment projects that disturb one or more acres of land that discharge into the small MS4.
- Include projects of less than one acre in the program:
 - 1) If it is part of a larger common plan of development or sale, or
 - 2) If it has been designated by the Department to protect water quality and to control water quantities that discharge into a small MS4.
- Ensure that controls are in place to protect water quality and reduce the discharge of pollutants to the maximum extent practicable.
- Develop, implement, and provide adequate resources for a program to inspect development and re-development sites and to enforce and penalize violators.
- Develop measurable goals and select appropriate management practices to ensure the reduction of all pollutants of concern in the post-development stormwater discharges to the maximum extent practicable.

TIME LINE

BENCHMARKS	RECOMMENDED TARGET DATE			
	3/05	3/06	3/07	1/08
Outreach and education to the construction industry underway	☐			
Assess local laws and initiate development of new law to ensure protection equivalent to SPDES Construction Permit GP-02-01	☐			
Process to adopt local law underway		☐		
Develop procedures for site plan review, site inspections, and enforcement		☐		
Training of municipal staff for local law implementation underway		☐		
Complete adoption of local laws and implement			☐	
Full implementation of post-construction requirements, including reviews, inspections, and enforcement				☐
Long term operation and maintenance plans for post-construction management practices in place				☐

MINIMUM CONTROL MEASURE 6
POLLUTION PREVENTION/GOOD HOUSEKEEPING

PERMIT REQUIREMENTS

- Develop and implement an operation and maintenance program that is designed to reduce and prevent the discharge of pollutants to the maximum extent practicable from activities such as park and open space maintenance, fleet and building maintenance, roadway maintenance, hydrologic habitat modification, and marine operations.
- Include a training component in the program.
- Follow management practices identified in the *NYS Management Practices Catalogue for Nonpoint Source Pollution Prevention* or other equivalent guidance materials available from the EPA, New York State, Tribe or other organization.
- Develop measurable goals and select appropriate management practices to ensure the reduction of all pollutants of concern in stormwater discharges to the maximum extent practicable.

TIME LINE

BENCHMARKS	RECOMMENDED TARGET DATE			
	3/05	3/06	3/07	1/08
Assess existing policies, procedures, equipment, staff, facilities, operations and training needs	☐			
Research water quality information	☐			
Design municipal pollution prevention program; priorities set; plan to keep records	☐			
Establish Intermunicipal partnerships	☐			
Design staff training component and get training underway		☐		
Implement: Pollution prevention practices underway		☐		
Planning to meet ongoing training needs underway			☐	
Achieve full implementation of municipal pollution prevention program				☐

APPENDIX C
TOWN OF OSSINING WEBSITE

Town of Ossining

~ The Volunteer-Spirited Town ~

16 Croton Ave
Ossining, NY 10562
914-762-6000



Site Search

January 22nd,

Town General

Assessment Review
Assessor
Environmental Advisory
Justice Court
Parks & Recreation
Receiver of Taxes
Recreation Advisory Board
Senior Services
Supervisor
Town Board
Town Clerk

Unincorporated

Town Depts
Building Inspector
Highway Superintendent
Police
Planning Board
Zoning Board

Find Your Government
and Community Service
Area on the Town Tax
Map



Town of Ossining Announcements

Ossining Community Calendar »
Department Contacts »
Forms & Publications »
Town Dates & Events »

Town Board – Meeting Agenda – Work Session – Meeting Archive
2010 Adopted Budget Info - Intro, Highlights, Facts & Figures
2010 Adopted Budget - Line-Item Spreadsheet [10/30/09 PDF, 410KB]
2010 Budget Presentation: PowerPoint Slideshow – PDF Document

WATCH LIVE
TOWN BOARD
MEETINGS

▼ Haiti Earthquake Relief Aid

Ossining resident, Mr. Luiz Carlos DaCosta, perished in the earthquake in Puerto Principe, Haiti.

He was an international civil servant working for the UN. Originally from Brazil, Mr. da Costa joined the United Nations in 1969 and stayed with the organization for the remainder of his life. His last assignment was as the Principal Deputy Special Representative of the Secretary-General for Haiti and second in command of the UN Stabilization Mission in Haiti.

He lived at 22 Quail Hollow Rd. Ossining with his wife, Maria Cristina da Costa. She is a teacher at Hackler School.

A mass will be celebrated at St. Teresa's in Tarrytown this Saturday at 11:00 AM.

Town Resources
2010 Adopted Budget
Comprehensive Plan
Emergency Contacts
GIS Map Viewer
Ossining Employee Secti
Parcel ID Database
Press Release Archive
Refuse/Recycle Collecti
Schedule of Fees
Stormwater Managemen
Town General Code

Pay Town &
School
Taxes
Online

Creating
Video Tour Sc



FIGURES:

Figure 4.1 Map of the Town of Ossining

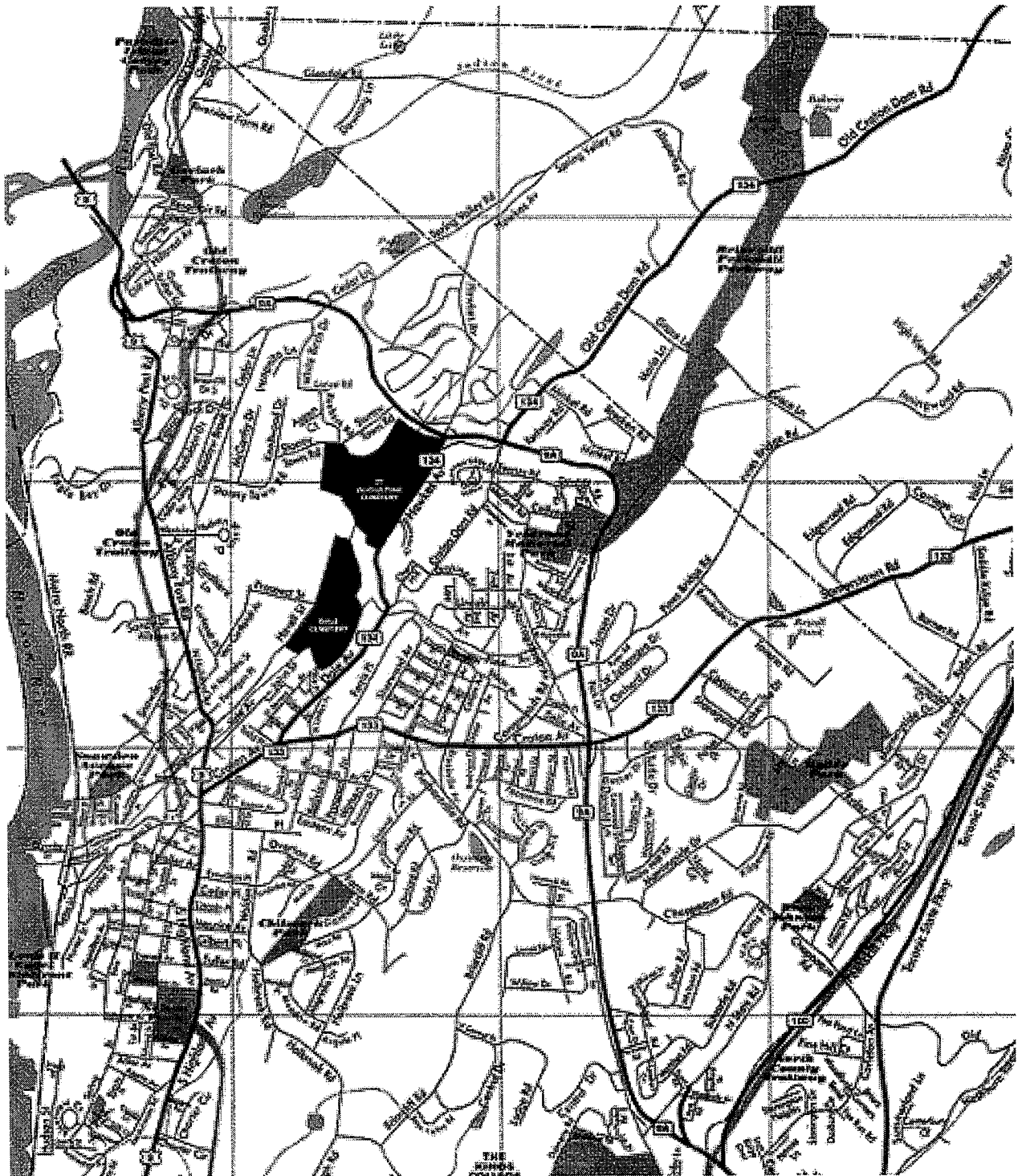


Figure 4.2.3 Zoning Map

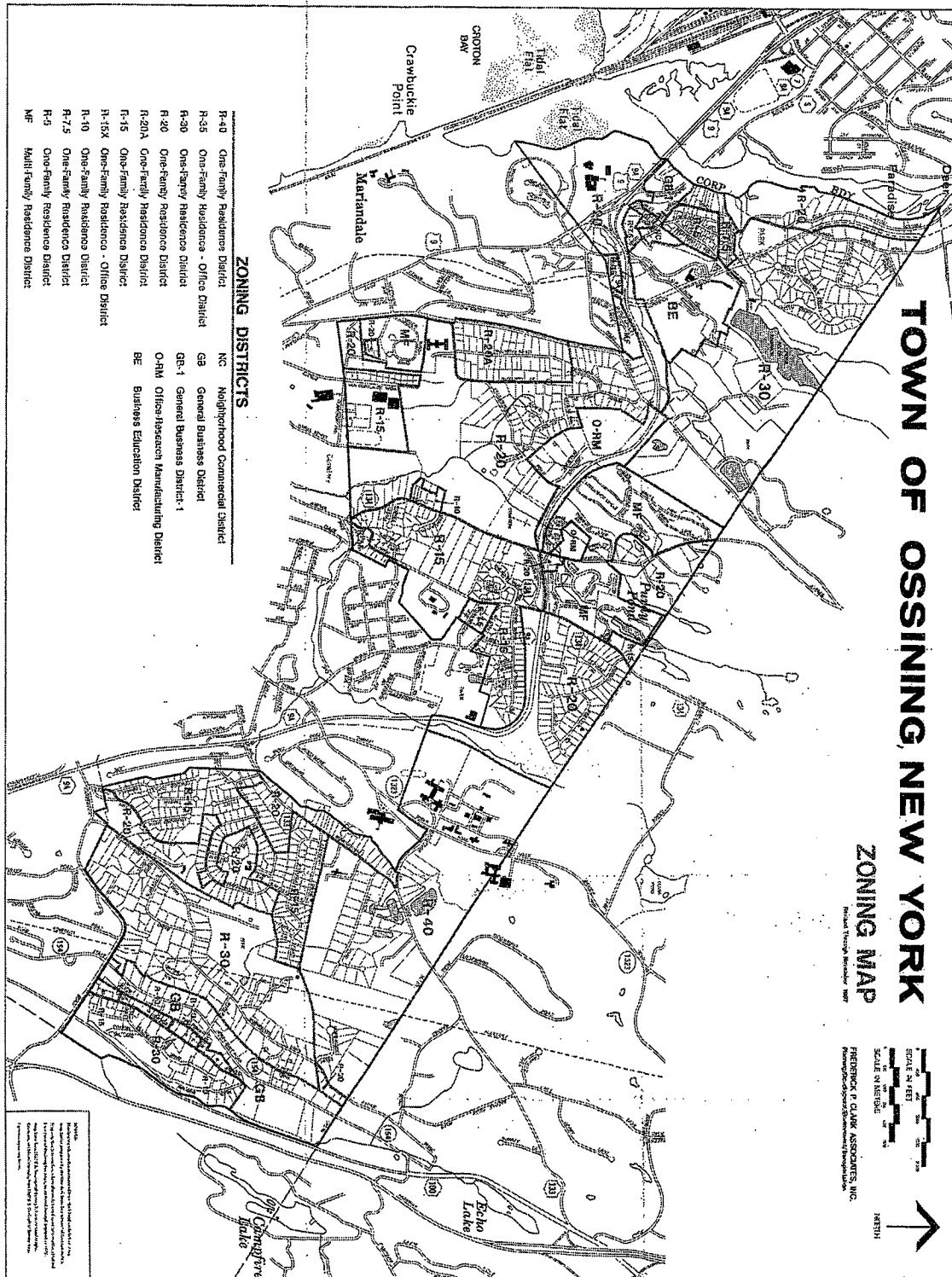


Figure 4.4 Steep Slopes

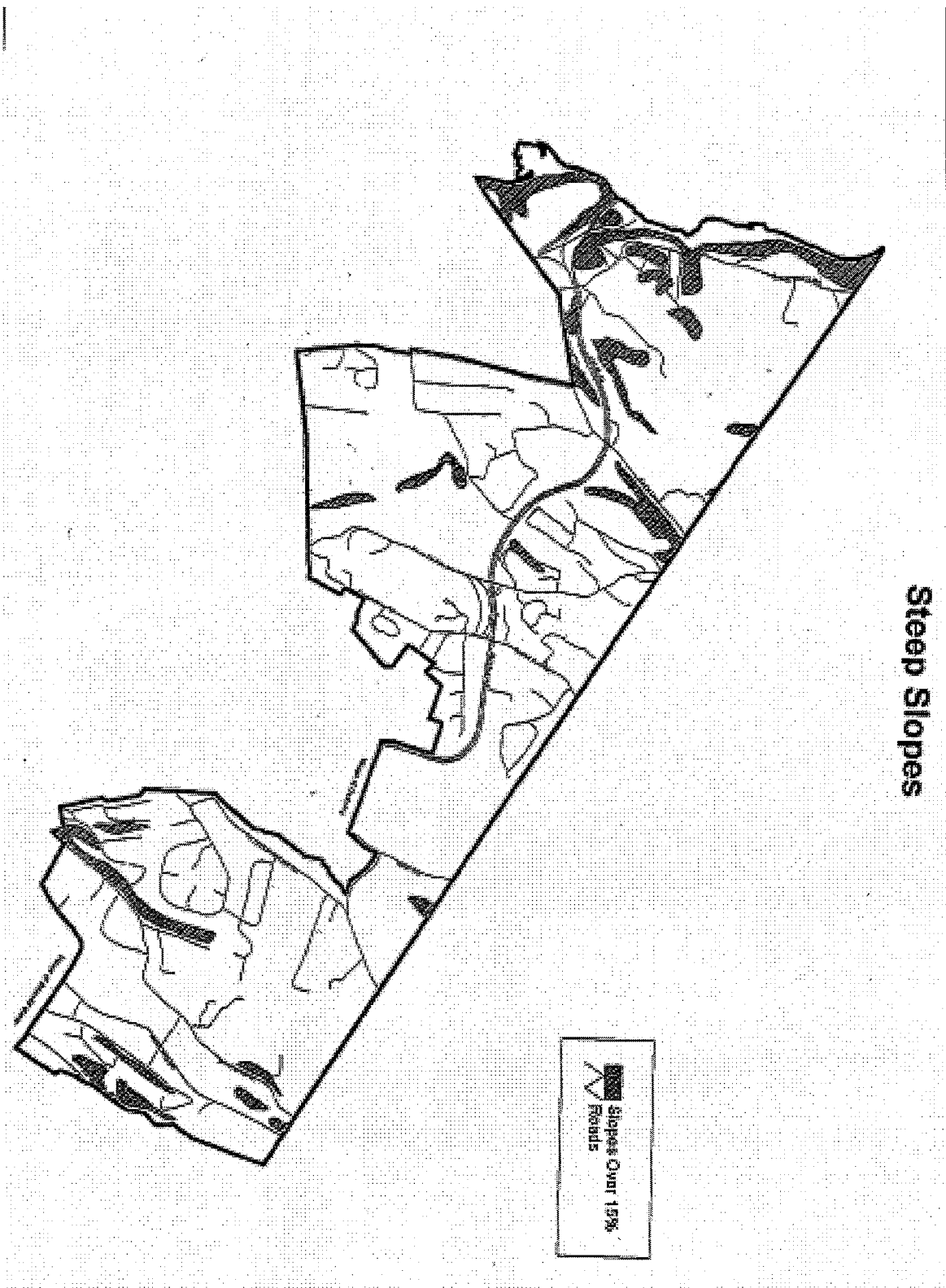
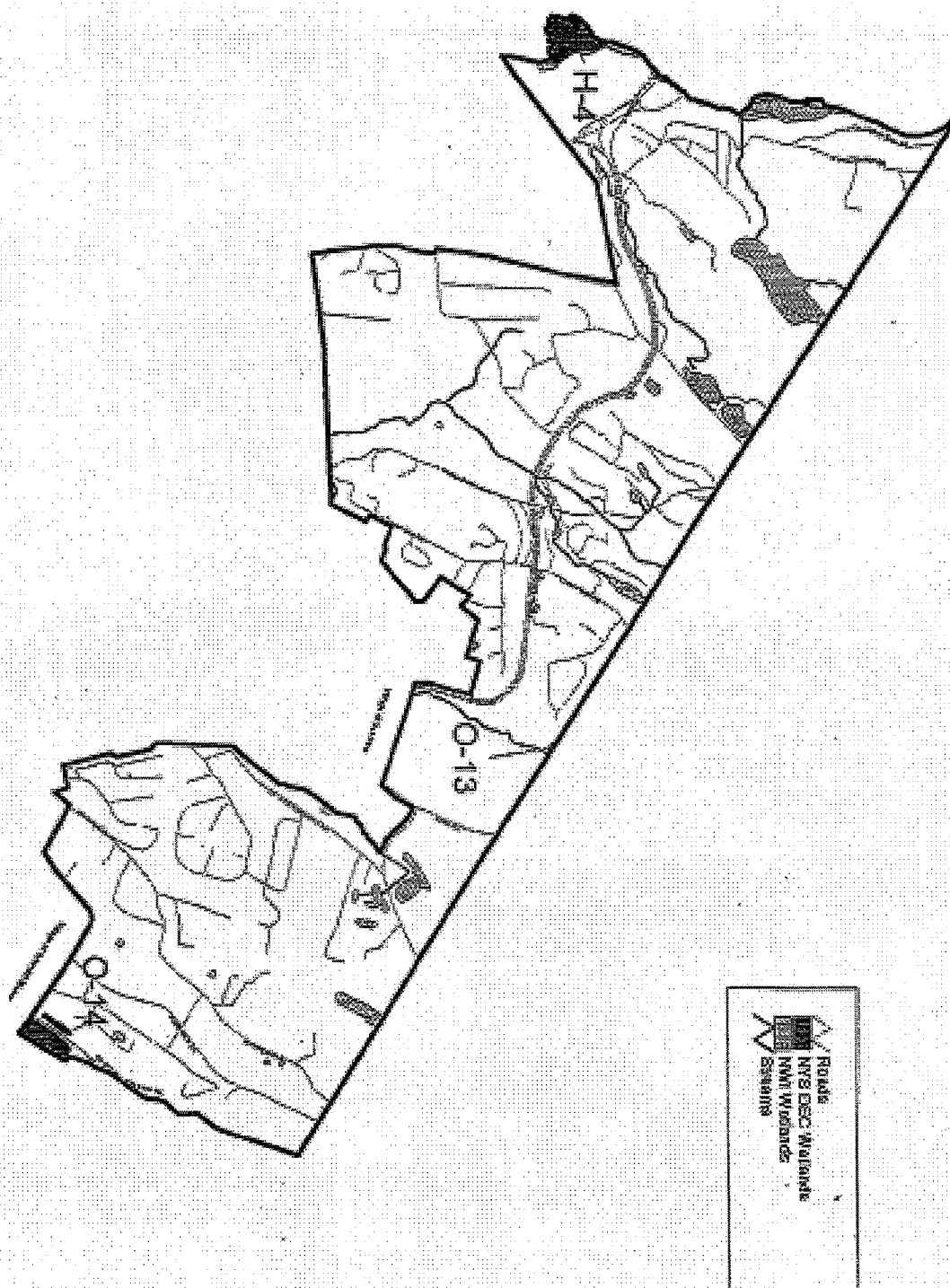


Figure 4.6 Wetlands



Wetlands

Town of Ossining
Stormwater Management Program

Contracted Entity Certification

“I _____
(name of firm providing services)
certify under penalty of law that I understand
and agree to comply with the terms and conditions of the Town of Ossining, New York
stormwater management program and agree to implement any corrective actions identified
by the Town of Ossining, New York or a representative. I also understand that the
Town of Ossining, New York must comply with the terms and conditions of the New
York State Pollution Discharge Elimination System (“SPDES”) general permit for stormwater
discharges from the Municipal Separate Storm Sewer Systems (MS4’s) and that it is unlawful
for any person to directly or indirectly cause or contribute to a violation of water quality
standards. I understand that any non-compliance by the Town of Ossining, New York
will not diminish, eliminate or lessen my own liability”

Name of Firm: _____

Address of Firm: _____

Telephone No. of Firm: _____

Date of this Agreement: _____

Term of this Agreement: _____

Officer of Firm (Signature and Title) _____

Signature of Municipal Department Head: _____

Services to be provided (List by Minimum Control Measure)

LOCAL LAW ____ OF THE YEAR 2006

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

Section 1. The Code of the Town of Ossining is hereby amended by adding thereto a new chapter to be designated "Chapter 168 (Stormwater Management and Erosion and Sediment Control)" and to read as follows:

Chapter 168

STORMWATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL

Article I. General Provisions

§ 168-1. Title.

This chapter shall be known and cited as the "Stormwater Management and Erosion and Sediment Control Law of the Town of Ossining."

§ 168-2. Definitions.

A. Unless specifically defined below, words and phrases used in this chapter shall be interpreted to have common English usage, to give effect to the purpose set forth in §168-3 and to provide reasonable application of this chapter.

B. As used in this chapter, the following terms shall have the meaning indicated:

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.

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 who 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.”

FACILITY OWNER - a person who owns stormwater control facilities as defined herein.

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.

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 (1) acre, or activities disturbing less than one (1) 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.

PERSON – Any person, firm, partnership, association, corporation, company, organization or other legal entity of any kind, including public agencies and municipal corporations.

PROJECT - land development activity.

RECHARGE - the replenishment of underground water reserves.

SEDIMENT CONTROL - measures that prevent eroded sediment from leaving the site.

SILVICULTURAL - of or relating to the management and care of forests.

SPDES GENERAL PERMIT FOR CONSTRUCTION ACTIVITIES GP-02-01 - A permit under the New York State Pollutant Discharge Elimination System (SPDES) issued to developers of construction activities to regulate disturbance of one or more acres of land.

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 by the duly authorized municipal authority which requires that all land development activity and other construction activity on a site be stopped.

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, officer or duly authorized representative 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 upon implementation.

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.

WETLAND - an area as defined in § 105-2B of this Code.

§ 168-3. Findings of fact.

It is hereby determined that:

- A. 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.
- B. This stormwater runoff contributes to increased quantities of water-borne pollutants, including siltation of aquatic habitat for fish and other desirable species.
- C. Clearing, grading, excavating, soil disturbance or placement of fill during construction tends to increase soil erosion and add to the loss of native vegetation necessary for terrestrial and aquatic habitat.

- D. Improper design, maintenance and construction of stormwater management practices can increase the velocity of stormwater runoff thereby increasing stream bank erosion and sedimentation.
- E. Impervious surfaces allow less water to percolate into the soil, thereby decreasing groundwater recharge and stream baseflow.
- F. Substantial economic losses can result from these adverse impacts on the waters of the municipality.
- G. Stormwater runoff, soil erosion and nonpoint source pollution can be controlled and minimized through the regulation of stormwater runoff from land development activities.
- H. 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.
- I. 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.

§ 168-4. Purpose.

The purpose of this chapter 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 § 168-3 hereof. This chapter seeks to meet those purposes by achieving the following objectives:

- A. Meet the requirements of minimum measures 4 and 5 of the SPDES General Permit for Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4 SPDES No. NYR20A370), Permit no. GP-02-02 or as amended or revised.
- B. 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 or as amended or revised.
- C. Minimize increases in the rate of stormwater runoff from land development activities in order to reduce flooding, siltation, increases in stream temperature, and streambank erosion and maintain the integrity of stream channels.
- D. Minimize increases in pollution caused by stormwater runoff from land development activities which would otherwise degrade local water quality.

- E. Minimize the total annual volume of stormwater runoff which flows from any specific site during and following development to the maximum extent practicable.
- F. 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.

§ 168-5. Statutory authority.

In accordance with Article 10 of the Municipal Home Rule Law of the State of New York, the Town Board 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 and for the protection and enhancement of its physical environment. The Town Board 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 chapter.

§ 168-6. Applicability.

- A. This chapter shall be applicable to all land development activities as defined in §168-2 of this chapter.
- B. 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 Officer may:
 - (1) review the plans;
 - (2) upon approval by the Town Board, 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 chapter.
- C. All land development activities subject to review and approval by the Planning Board shall be reviewed subject to the standards contained in this chapter.
- D. All land development activities not subject to review as stated in §168-6C 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 chapter.

§ 168-7. Exemptions.

The following activities may be exempt from review under this chapter:

- A. Agricultural activity as defined in this chapter.
- B. Silvicultural activity except that landing areas and log haul roads are subject to this chapter.
- C. Routine maintenance activities that disturb less than five (5) acres and are performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility.
- D. Repairs to any stormwater management practice or facility deemed necessary by the Stormwater Management Officer.
- E. Any part of a subdivision if a plat for the subdivision has been approved by the Town on or before the effective date of this chapter.
- F. Land development activities for which a building permit has been approved on or before the effective date of this chapter.
- G. Cemetery graves.
- H. Installation of fence, sign, telephone, and electric poles and other kinds of posts or poles.
- I. Emergency activity immediately necessary to protect life, property or natural resources.
- J. 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.
- K. Landscaping and horticultural activities in connection with an existing non-commercial structure.

Article II. Principles and General Requirements

§ 168-8. Stormwater Pollution Prevention Plans.

- A. Stormwater Pollution Prevention Plan requirement. No application for approval of a land development activity shall be reviewed until the appropriate board has received a Stormwater Pollution Prevention Plan (SWPPP) prepared in accordance with the specifications in this chapter.
- B. Contents of Stormwater Pollution Prevention Plans.
 - (1) All SWPPPs shall provide the following background information and erosion and sediment controls:
 - (a) Background information about the scope of the project, including location, type and size of project.

- (b) 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); 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 discharges(s). The site map shall be at a scale no smaller than 1"=50' (e.g., 1"=500' is smaller than 1"=100').
- (c) Description of the soil(s) present at the site.
- (d) 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. The Town may opt to reduce the amount of land that may be exposed at any one time.
- (e) Description of the pollution prevention measures that will be used to control construction materials, chemicals and debris from becoming a pollutant source in stormwater runoff.
- (f) 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.
- (g) 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.
- (h) A site map/construction drawing(s) specifying the location(s), size(s) and length(s) of each erosion and sediment control practice.
- (i) Dimensions, material specifications and installation details for all erosion and sediment control practices, including the siting and sizing of any temporary sediment basins.
- (j) Temporary practices that will be converted to permanent control measures;
- (k) Implementation schedule for staging temporary erosion and sediment control practices, including the timing of initial placement and duration that each practice will remain in place until the site is stabilized.

- (l) Maintenance schedule to ensure continuous and effective operation of the erosion and sediment control practice.
 - (m) Name(s) of the receiving water(s) and NYSDEC classification(s), if applicable.
 - (n) Delineation of SWPPP implementation responsibilities for each part of the site.
 - (o) 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.
 - (p) Any existing data that describes the stormwater runoff at the site.
- (2) Land development activities as defined in §168-2 of this chapter 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 §168-8B(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 one (1) single-family residence and construction activities at agricultural properties.

- (3) SWPPP Requirements for Condition A, B and C:
- (a) All information in §168-8B(1) of this chapter.
 - (b) Description of each post-construction stormwater management practice;
 - (c) Site map/construction drawing(s) showing the specific location(s) and size(s) of each post-construction stormwater management practice;
 - (d) Hydrologic and hydraulic analysis for all structural components of the stormwater management system for the applicable design storms
 - (e) Comparison of post-development stormwater runoff conditions with pre-development conditions

- (f) Dimensions, material specifications and installation details for each post-construction stormwater management practice;
 - (g) Maintenance schedule to ensure continuous and effective operation of each post-construction stormwater management practice.
 - (h) 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.
 - (i) Inspection and maintenance agreement binding on all subsequent landowners served by the on-site stormwater management measures in accordance with §168-10 of this chapter. [Editorial note: Town Attorney input needed regarding possible covenants and restrictions.]
- (4) Plan certification.

The SWPPP shall be prepared by a landscape architect, certified professional or professional engineer and must be signed by the professional preparing the plan, who shall certify that the design of all stormwater management practices meet the requirements in this chapter.

- (5) 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.

- (6) Contractor certification. [Editorial note: Town Attorney input needed.]
- (a) Each contractor and subcontractor identified in the SWPPP and/or any successor or substitute contractor or subcontractor 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.” Copies of these statements shall be delivered to the duly authorized municipal authority.
 - (b) 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. The certification statement(s) shall become part of the SWPPP for the land development activity.

- (7) 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.

§ 168-9. 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:

A. Official guides.

For the purpose of this chapter, 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 chapter: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). See Schedule A of this chapter for stormwater management practices acceptable for water quality.
- (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). A copy of the manual is on file in the office of the Stormwater Management Officer.

B. Technical standards.

All development proposals disturbing less than one (1) acre of land are subject to the same requirements specified in the manuals in subsections A(1) and (2) above for land development activities disturbing between one (1) and five (5) acres of land. Such requirements shall include but not be limited to the following:

- (1) Grading, erosion control practices, sediment control practices, and waterway crossings shall meet the design criteria set forth in the most recent version of the Erosion Control Manual.
- (2) Clearing, except that necessary to establish sediment control devices, shall not begin until all erosion and sediment control devices have been installed and have been stabilized.

¹ Editorial note: The New York State technical guidance documents may be ordered from the Department. An order form as well as downloadable versions of the manuals are available on the internet at:

<http://www.dec.state.ny.us/website/dow/toolbox/escstandards/index.html>
<http://www.dos.state.ny.us/lgss/stormwaterpub/index.html>

- (3) Erosion control requirements shall include stabilization measures applied as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than fourteen (14) days after the construction activity in that portion of the site has temporarily or permanently ceased. This requirement does not apply in the following instances:
 - (a) Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures shall be initiated as soon as practicable;
 - (b) 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.
- (4) If seeding or other vegetative erosion control method does not germinate within two (2) weeks the Stormwater Management Officer may require the site to be reseeded, or a nonvegetative option employed.
- (5) Special techniques that meet the design criteria outlined in the Erosion Control Manual for steep slopes and/or drainage ways shall be used. Soil stockpiles must be stabilized. At the close of the construction season, the entire site must be stabilized using a heavy mulch layer or another method that does not require seed germination to control erosion (if seed germination will not occur due to climate limitations).
- (6) Techniques shall be employed to prevent the blowing of dust or sediment from the site.
- (7) Techniques that divert upland runoff past disturbed slopes shall be employed. Sediment control requirements shall include settling basins, sediment traps or tanks, and perimeter controls.
- (8) Settling basins that are designed for adaptation to long-term stormwater management require approval by the Stormwater Management Officer.
- (9) If a wet watercourse will be crossed regularly during construction, a temporary stream crossing practice approved by the Stormwater Management Officer will be installed. Stabilization of the watercourse channel and banks before, during and after any in-channel work will be completed.
- (10) Stabilization adequate to prevent erosion located at the outlets of all pipes, paved channels and on-site stormwater conveyance channels shall be designed according to the criteria outlined in the Erosion Control Manual.
- (11) Construction site access requirements shall include a temporary access road provided at all access points to ensure that sediment is not tracked onto public streets by construction vehicles or washed into storm drains or watercourses.

C. Water quality standards.

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.

§ 168-10. Maintenance and repair of stormwater facilities.

A. Maintenance during construction.

- (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 chapter. Sediment shall be removed from sediment traps or sediment ponds whenever their design capacity has been reduced by fifty (50) percent.
- (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 seven (7) days and within twenty-four (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.

B. Maintenance easement(s). [Editorial note: Town Attorney input needed.]

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 to ensure that the facility is maintained in proper working condition to meet design standards and any other provisions established by this chapter. The easement shall be recorded by the grantor in the office of the County Clerk after approval by the counsel for the Town.

C. Maintenance after construction.

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

- (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 chapter.

- (2) Written procedures for operation and maintenance and training new maintenance personnel.
- (3) Discharges from the SMPs shall not exceed design criteria or cause or contribute to water quality standard violations in accordance with §168-9C.

D. Maintenance agreements.

The Town 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 chapter entitled Sample Stormwater Control Facility Maintenance Agreement. The Town, 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 chapter and includes adequate and perpetual access and sufficient area, by easement or otherwise, for inspection and regular maintenance. [Editorial note: Town Attorney input needed regarding Schedule B.]

Article III. Administration and Enforcement

§ 168-11. Construction inspection.

A. Stormwater Management Practice inspections.

The Town 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 engineer.

B. 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.

C. Submission of reports.

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

D. 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 the right to enter the property at reasonable times and in a reasonable manner for the purpose of inspection as specified in §168-11B.

§ 168-12. Performance guarantee.

A. 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 in its approval of the Stormwater Pollution Prevention Plan, the Town may 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 as the beneficiary. The security shall be in an amount to be determined by the Town 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, 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 (1) year inspection has been conducted and the facilities have been found to be acceptable to the Town. Per annum interest on cash escrow deposits shall be reinvested in the account until the surety is released from liability.

B. Maintenance guarantee.

Where stormwater management and erosion and sediment control facilities are to be operated and maintained by the developer or by a corporation that owns or manages a commercial or industrial facility, the developer, prior to construction, may be required to provide the Town with an irrevocable letter of credit from an approved financial institution or surety 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 landowner fails to properly operate and maintain stormwater management and erosion and sediment control facilities, the Town may draw upon the account to cover the costs of proper operation and maintenance, including engineering and inspection costs. [Editorial note: Town Attorney input needed. Redraft to include tax lien by Town instead of letter of credit.]

C. Recordkeeping.

Entities subject to this chapter shall maintain records demonstrating compliance with this chapter.

§ 168-13. Enforcement and penalties.

A. Notice of violation.

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

- (1) the name and address of the landowner, developer or applicant;
- (2) the address when available or a description of the building, structure or land upon which the violation is occurring;
- (3) a statement specifying the nature of the violation;
- (4) a description of the remedial measures necessary to bring the land development activity into compliance with this chapter and a time schedule for the completion of such remedial action;
- (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;
- (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.

B. Stop work orders.

The Town 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 and other construction activities on the site, except those activities that address the violations leading to the stop work order. The stop work order shall be in effect until the Town 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 chapter.

C. Violations.

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

D. Penalties.

Any person who violates the provisions of this chapter shall be guilty of a violation punishable by a fine not less than five hundred dollars (\$500) nor more than one thousand dollars (\$1,000) 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 one thousand dollars (\$1,000) nor more than one thousand five hundred dollars (\$1,500) or imprisonment for a period not to exceed six (6) months, or both; and upon conviction for a third or subsequent offense all of which were committed within a period of five (5) years, punishable by a fine not less than one thousand five hundred dollars (\$1,500) nor more than two thousand dollars (\$2,000) or imprisonment for a period not to exceed six (6) months, or both. However, for the purposes of conferring jurisdiction upon courts and judicial officers generally, violations of this chapter 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.

E. Restoration of lands and mitigation of damage.

In addition to any penalty provided herein or by law, any person in violation of this chapter may be required to restore land to its undisturbed condition and/or mitigate on-site and off-site damage from stormwater runoff, sediment or pollutants resulting from the violator's activities. In the event that restoration is not undertaken within a reasonable time after notice, the Town may take necessary corrective action, the cost of which shall become a lien upon the property until paid.

F. Withholding of certificate of occupancy.

If any building or land development activity is installed or conducted in violation of this chapter the Stormwater Management Officer may prevent the occupancy of said building or land.

§ 168-14. Fees for services.

Any person undertaking land development activities regulated by this chapter shall pay the cost of services incurred by the Town for the review of SWPPPs, inspections, or SMP maintenance performed by the Town or performed by a third party for the Town. The Town may establish escrow accounts for this purpose prior to authorizing the performance of said services.

Schedule A

Stormwater Management Practices Acceptable for Water Quality <i>(From: New York State Stormwater Management Design Manual, Table 5.1)</i>		
Group	Practice	Description
Pond	Micropool Extended Detention Pond (P-1)	Pond that treats the majority of the water quality volume through extended detention, and incorporates a micropool at the outlet of the pond to prevent sediment resuspension.
	Wet Pond (P-2)	Pond that provides storage for the entire water quality volume in the permanent pool.
	Wet Extended Detention Pond (P-3)	Pond that treats a portion of the water quality volume by detaining storm flows above a permanent pool for a specified minimum detention time.
	Multiple Pond System (P-4)	A group of ponds that collectively treat the water quality volume.
	Pocket Pond (P-5)	A stormwater wetland design adapted for the treatment of runoff from small drainage areas that has little or no baseflow available to maintain water elevations and relies on groundwater to maintain a permanent pool.
Wetland	Shallow Wetland (W-1)	A wetland that provides water quality treatment entirely in a shallow marsh.
	Extended Detention Wetland (W-2)	A wetland system that provides some fraction of the water quality volume by detaining storm flows above the marsh surface.
	Pond/Wetland System (W-3)	A wetland system that provides a portion of the water quality volume in the permanent pool of a wet pond that precedes the marsh for a specified minimum detention time.
	Pocket Wetland (W-4)	A shallow wetland design adapted for the treatment of runoff from small drainage areas that has variable water levels and relies on groundwater for its permanent pool.
Infiltration	Infiltration Trench (I-1)	An infiltration practice that stores the water quality volume in the void spaces of a gravel trench before it is infiltrated into the ground.
	Infiltration Basin (I-2)	An infiltration practice that stores the water quality volume in a shallow depression before it is infiltrated into the ground.
	Dry Well (I-3)	An infiltration practice similar in design to the infiltration trench, and best suited for treatment of rooftop runoff.
	Surface Sand Filter (F-1)	A filtering practice that treats stormwater by settling out larger particles in a sediment chamber, and then filtering stormwater through a sand matrix.

Filtering Practices	Underground Sand Filter (F-2)	A filtering practice that treats stormwater as it flows through underground settling and filtering chambers.
	Perimeter Sand Filter (F-3)	A filter that incorporates a sediment chamber and filter bed as parallel vaults adjacent to a parking lot.
	Organic Filter (F-4)	A filtering practice that uses an organic medium such as compost in the filter in place of sand.
	Bioretention (F-5)	A shallow depression that treats stormwater as it flows through a soil matrix, and is returned to the storm drain system.
Open Channels	Dry Swale (O-1)	An open drainage channel or depression explicitly designed to detain and promote the filtration of stormwater runoff into the soil media.
	Wet Swale (O-2)	An open drainage channel or depression designed to retain water or intercept groundwater for water quality treatment.

Schedule B

SAMPLE STORMWATER CONTROL FACILITY MAINTENANCE AGREEMENT

WHEREAS, the Town of Ossining (the "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 year period, to determine the condition and integrity of the measures. 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).

8. This agreement shall be recorded in the Office of the County Clerk, County of Westchester together with the deed for the common property and shall be included in the offering plan and/or prospectus 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 is effective _____.

Local Law No. 6 of the Year 2007

Be it Enacted by the Town Board of the Town of Ossining as follows:

Section 1. The Code of the Town of Ossining is hereby amended by adding thereto a new chapter, Chapter 170 (Illicit Storm Sewer Discharges and Connections) to read as follows:

§ 170-1. Purpose/intent.

The purpose of this chapter is to provide for the health, safety, and general welfare of the citizens of the Town of Ossining through the regulation of nonstormwater discharges to the storm drainage system to the maximum extent practicable as required by federal and state law. This chapter establishes methods for controlling the introduction of pollutants into the municipal separate storm sewer system (MS4) in order to comply with requirements of the National Pollutant Discharge Elimination System (NPDES) process. The objectives of this chapter are:

- A. To regulate the contribution of pollutants to the MS4 by stormwater discharges by any user.
- B. To prohibit illicit connections and discharges to the MS4.
- C. To establish legal authority to carry out all inspection, surveillance, monitoring, and enforcement procedures necessary to ensure compliance with this chapter.

§ 170-2. Definitions.

For the purposes of this chapter, the following terms shall have the meanings indicated:

AUTHORIZED ENFORCEMENT AGENCY — Employees or designees of the director of the municipal agency designated to enforce this chapter.

BEST MANAGEMENT PRACTICES (BMPs) — Schedules of activities, prohibitions of practices, general good housekeeping 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.

CLEAN WATER ACT — The federal Water Pollution Control Act [33 U.S.C. § 1251 et seq.] and any subsequent amendments thereto.

CONSTRUCTION ACTIVITY — Activities subject to NPDES construction permits. These include construction projects resulting in land disturbance of one acre or more. Such activities include but are not limited to clearing and grubbing, grading, excavating and demolition.

HAZARDOUS MATERIAL — 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.

ILLEGAL DISCHARGE — Any direct or indirect nonstormwater discharge to the storm drain system, except as exempted in § 170-8 of this chapter.

ILLICIT CONNECTION — Either of the following:

- A. Any drain or conveyance, whether on the surface or subsurface, that allows an illegal discharge to enter the storm drain system, including but not limited to any conveyances that allow any nonstormwater discharge, including sewage, process wastewater, and wash water, to enter the storm drain system 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
- B. Any drain or conveyance connected from a commercial or industrial land use to the storm drain system that has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

INDUSTRIAL ACTIVITY — Activities subject to NPDES industrial stormwater permits as defined in 40 CFR 122.26(b)(14).

MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) — The system of conveyances (including sidewalks, roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) owned and operated by the Town of Ossining and designed or used for collecting or conveying stormwater and that is not used for collecting or conveying sewage.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORMWATER DISCHARGE PERMIT — A permit issued by the EPA [or by a state under authority delegated pursuant to 33 U.S.C. § 1342 (b)] that authorizes the discharge of a pollutant to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

NONSTORMWATER DISCHARGE — Any discharge to the storm drain system that is not composed entirely of stormwater.

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.

POLLUTANT — Anything that causes or contributes to pollution. Pollutants may include but are not limited to paints, varnishes, and solvents; oil and other automotive fluids; nonhazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordinances, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

PREMISES — Any building, lot, parcel of land, or portion of land, whether improved or unimproved, including adjacent sidewalks and parking strips.

STORM DRAINAGE SYSTEM — Publicly owned facilities by which stormwater is collected and/or conveyed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or -altered drainage channels, reservoirs, and other drainage structures.

STORMWATER — Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation and resulting from such precipitation.

STORMWATER MANAGEMENT PLAN — A document that describes the best management practices and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to stormwater, stormwater conveyance systems, and/or receiving waters to the maximum extent practicable.

SUPERINTENDENT — All references herein to "Superintendent" shall mean the Town of Ossining Superintendent of Highways.

WASTEWATER — Any water or other liquid, other than uncontaminated stormwater, discharged from a facility.

§ 170-3. Applicability.

This chapter shall apply to all water entering the storm drain system generated on any developed and undeveloped lands unless explicitly exempted by the Superintendent.

§ 170-4. Responsibility for administration.

The Superintendent shall administer, implement and provide for the enforcement of this chapter. Any powers granted or duties imposed upon the Superintendent, other than powers and duties in the areas of compliance monitoring (section 170-11) and enforcement (section 170-14) may be delegated by the Superintendent to persons employed by the Highway Department. Powers granted and duties imposed on the Superintendent in the aforementioned areas of compliance monitoring and enforcement shall be assigned by the Superintendent to, and such powers and duties shall be shared by the Superintendent with, the Building Inspector and/or the Code Compliance Officer of the Town of Ossining.

§ 170-5. Construal of provisions.

This chapter is not intended to modify or repeal any other ordinance, rule, regulation, or other provision of law.

The requirements of this chapter are in addition to the requirements of any other ordinance, rule, regulation, or other provision of law, and where any provision of this chapter imposes restrictions different from those imposed by any other ordinance, rule, regulation, or other provision of law, whichever provision is more restrictive or imposes higher protective standards for human health or the environment shall control.

§ 170-6. Severability.

The provisions of this chapter are hereby declared to be severable. If any provision, clause, sentence or paragraph of this chapter 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 chapter.

§ 170-7. Minimum standards.

The standards set forth herein and promulgated pursuant to this chapter are minimum standards; therefore, this chapter does not intend or imply that compliance by any person will ensure that there will be no contamination, pollution, or unauthorized discharge of pollutants.

§ 170-8. Discharge prohibitions.

A. Prohibition of illegal discharges; exemptions.

- (1) No person shall throw, drain, or otherwise discharge or cause or allow others under its control to throw, drain, or otherwise discharge into the MS4 any pollutants or waters containing any pollutants, other than stormwater.
- (2) The commencement, conduct or continuance of any illegal discharge to the storm drain system is prohibited, except as described as follows:
 - (a) The following discharges are exempt from discharge prohibitions established by this chapter: waterline flushing, landscape irrigation, diverted stream flows, rising groundwaters, uncontaminated groundwater infiltration, uncontaminated pumped groundwater, discharges from potable water sources, foundation drains, air-conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, and street wash water.
 - (b) Discharges or flow from fire fighting, and other discharges specified in writing by the Superintendent as being necessary to protect public health and safety.
 - (c) Discharges associated with dye testing; however, this activity requires a verbal notification to the Superintendent prior to the time of the test.
 - (d) The prohibition shall not apply to any nonstormwater discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the United States Environmental Protection Agency (EPA), 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 storm drain system.

B. Prohibition of illicit connections; redirection of improper connection; documentation of drain or conveyance.

- (1) The construction, use, maintenance or continued existence of illicit connections to the storm drain system is prohibited.
- (2) This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under the law or practices applicable or prevailing at the time of connection.
- (3) A person is considered to be in violation of this chapter if the person connects a line conveying sewage to the MS4 or allows such a connection to continue.
- (4) Improper connections in violation of this chapter must be disconnected and redirected, if necessary, to an approved on-site wastewater management system or the sanitary sewer system upon approval of the

appropriate authority.

- (5) Any drain or conveyance that has not been documented in plans, maps or equivalent and which may be connected to the storm sewer system shall be located by the owner or occupant of that property upon receipt of written notice of violation from the Superintendent requiring that such locating be completed. Such notice will specify a reasonable time period within which the location of the drain or conveyance is to be determined, that the drain or conveyance be identified as storm sewer, sanitary sewer or other, and that the outfall location or point of connection to the storm sewer system, sanitary sewer system or other discharge point be identified. Results of these investigations are to be documented and provided to the Superintendent.

§ 170-9. Watercourse protection.

Every person owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse within the property free of trash, debris, excessive vegetation, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse.

§ 170-10. Industrial or construction activity discharges.

- A. Compliance with NPDES permit. Any person subject to an industrial or construction activity NPDES 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 Superintendent prior to the allowing of discharges to the MS4.
- B. Submission of NOI.
 - (1) The operator of a facility, including construction sites, required to have an NPDES permit to discharge stormwater associated with industrial activity shall submit a copy of the notice of intent (NOI) to the Superintendent at the same time the operator submits the original notice of intent to the EPA as applicable.
 - (2) A person commits an offense if the person operates a facility that is discharging stormwater associated with industrial activity without having submitted a copy of the notice of intent to do so to the Superintendent.

§ 170-11. Compliance monitoring.

- A. Right of entry for inspection and sampling. The Superintendent shall be permitted to enter and inspect facilities subject to regulation under this chapter as often as may be necessary to determine compliance with this chapter.
 - (1) 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 representatives of the Superintendent.
 - (2) Facility operators shall allow the Superintendent ready access to all parts of the premises for the purposes of inspection, sampling, examination and copying of records that must be kept under the conditions of an NPDES permit to discharge stormwater and the performance of any additional duties as defined by state and federal law.
 - (3) The Superintendent shall have the right to set up on any permitted facility such devices as necessary in the opinion of the Superintendent to conduct monitoring and/or sampling of the facility's stormwater discharge.
 - (4) The Superintendent has the right to require the discharger to install monitoring equipment as necessary. 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.
 - (5) Any temporary or permanent obstruction to safe and easy access to the facility to be inspected and/or sampled shall be promptly removed by the operator at the written or oral request of the Superintendent and shall not be replaced. The costs of clearing such access shall be borne by the operator.

- (6) Unreasonable delays in allowing the Superintendent access to a permitted facility is a violation of a stormwater discharge permit and of this chapter. A person who is the operator of a facility with an NPDES permit to discharge stormwater associated with industrial activity commits an offense if the person denies the Superintendent reasonable access to the permitted facility for the purpose of conducting any activity authorized or required by this chapter.

C. Search warrants. If the Superintendent 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 chapter 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 chapter or any order issued hereunder or to protect the overall public health, safety, and welfare of the community, then the Superintendent may seek issuance of a search warrant from any court of competent jurisdiction.

§ 170-12. Responsibility to prevent, control and reduce stormwater pollutants.

The owner or operator of such activity, operation, or facility shall provide, at his/her own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the municipal storm drain system or watercourses. Compliance with all terms and conditions of a valid NPDES permit authorizing the discharge of stormwater associated with industrial activity shall be deemed compliance with the provisions of this section.

§ 170-13. Notification of spills.

- A. Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation or responsible for the 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 stormwater, the storm drain system, or waters of the United States, 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 nonhazardous materials, said person shall notify the Superintendent in person or by phone or facsimile no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the Superintendent within five business days of the phone 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.
- B. Failure to provide notification of a release as provided above is a violation of this chapter.

§ 170-14. Violations; enforcement; penalties.

- A. Violations; abatement of immediate danger.
- (1) It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of this chapter. Any person who has violated or continues to violate the provisions of this chapter may be subject to the enforcement actions outlined in this section or may be restrained by injunction or otherwise abated in a manner provided by law.
 - (2) In the event the violation constitutes an immediate danger to public health or public safety, the Superintendent is authorized to enter upon the subject private property, without giving prior notice, to take any and all measures necessary to abate the violation and/or restore the property. The Superintendent is authorized to seek costs of the abatement as outlined in § 170-17.
- B. Warning notice. When the Superintendent finds that any person has violated, or continues to violate, any provision of this chapter or any order issued hereunder, the Superintendent may serve upon that person a written warning notice specifying the particular violation believed to have occurred and requesting the discharger to immediately investigate the matter and to seek a resolution whereby any offending discharge will cease. Investigation and/or resolution of the matter in response to the warning notice in no way relieves the alleged violator of liability for any violations occurring before or after receipt of the warning notice. Nothing in this subsection shall limit the authority of the Superintendent to take any action, including emergency action or any other enforcement action, without first issuing a warning notice.

C. Notice of violation.

(1) Whenever the Superintendent finds that a person has violated a prohibition or failed to meet a requirement of this chapter, the Superintendent may order compliance by written notice of violation to the responsible person. The notice of violation shall contain:

- (a) The name and address of the alleged violator;
- (b) The address, when available, or a description of the building, structure or land in or upon which the violation is occurring or has occurred;
- (c) A statement specifying the nature of the violation;
- (d) A description of the remedial measures necessary to restore compliance with this chapter and a time schedule for the completion of such remedial action;
- (e) A statement of the penalty or penalties that shall or may be assessed against the person to whom the notice of violation is directed;
- (f) A statement that the determination of a violation may be appealed to the Superintendent by filing a written notice of appeal within 10 days of service of notice of violation; and
- (g) A statement specifying that, should the violator fail to restore compliance within the established time schedule, the work will be done by a designated governmental agency or a contractor and the expense thereof shall be charged to the violator.

(2) Such notice may require without limitation:

- (a) The performance of monitoring analyses and reporting;
- (b) The elimination of illicit connections or discharges;
- (c) That violating discharges, practices, or operations shall cease and desist;
- (d) The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property; and
- (e) The implementation of source control or treatment.

D. Suspension of MS4 access.

(1) Emergency cease-and-desist orders.

- (a) When the Superintendent finds that any person has violated, or continues to violate, any provision of this chapter or any order issued hereunder or that the person's past violations are likely to recur and that the person's violation(s) has (have) caused or contributed to an actual or threatened discharge to the MS4 or waters of the United States which reasonably appears to present an imminent or substantial endangerment to the health or welfare of persons or to the environment, the Superintendent may issue an order to the violator directing it immediately to cease and desist all such violations and directing the violator to:
 - [1] Immediately comply with all ordinance requirements; and
 - [2] Take such appropriate preventive action as may be needed to properly address a continuing or threatened violation, including immediately halting operations and/or terminating the discharge.
- (b) Any person notified of an emergency order directed to it under Subsection D(1)(a) shall immediately comply and stop or eliminate its endangering discharge. In the event of a discharger's failure to immediately comply voluntarily with the emergency order, the Superintendent may take such steps as deemed necessary to prevent or minimize harm to the MS4 or waters of the United States and/or endangerment to persons or to the environment. The Superintendent may allow the person to recommence its discharge when it has demonstrated to the satisfaction of the Superintendent that the period of endangerment has passed, unless further termination proceedings are initiated against the discharger under this chapter. A person that is responsible in whole or in part for any discharge presenting imminent endangerment shall submit a detailed written statement, describing the causes of the harmful discharge and the measures taken to prevent any future occurrence, to the Superintendent within two days of receipt of the emergency order. Issuance of an emergency cease-and-desist order shall not be a bar against, or a prerequisite for, taking any other action against the violator.

- (2) Suspension due to illicit discharges in emergency situations. The Superintendent may, without prior notice, suspend MS4 discharge access to a person when such suspension is necessary to stop an actual or threatened discharge that presents or may present imminent and substantial danger to the environment or to the health or welfare of persons or to the MS4 or waters of the United States. If the violator fails to comply with a suspension order issued in an emergency, the Superintendent may take such steps as deemed necessary to prevent or minimize damage to the MS4 or waters of the United States or to minimize danger to persons.
- (3) Suspension due to the detection of illicit discharge.
 - (a) Any person discharging to the MS4 in violation of this chapter may have his/her MS4 access terminated if such termination would abate or reduce an illicit discharge. The Superintendent will notify a violator of the proposed termination of its MS4 access. The violator may petition the Superintendent for a reconsideration and hearing.
 - (b) A person commits an offense if the person reinstates MS4 access to premises terminated pursuant to this section, without the prior approval of the Superintendent.

§ 170-15. Penalties for offenses.

Any person that has violated or continues to violate this chapter shall be liable to criminal prosecution to the fullest extent of the law and shall be subject to a criminal penalty of \$100. to \$500. per violation per day and/or imprisonment for a period of time not to exceed 30 days. Each act of violation and each day upon which any violation shall occur shall constitute a separate offense.

§ 170-16. Enforcement following notice of violation.

If the violation has not been corrected pursuant to the requirements set forth in the notice of violation, then representatives of the Superintendent may enter upon the subject private property and are authorized to take any and all measures necessary to abate the violation and/or restore the property. It shall be unlawful for any person, owner, agent or person in possession of any premises to refuse to allow the government agency or designated contractor to enter upon the premises for the purposes set forth above.

§ 170-17. Responsibility for cost of abatement of violation.

Within 30 days after abatement of the violation, the owner of the property will be notified of the cost of abatement, including administrative costs. The property owner may file a written protest objecting to the amount of the assessment within 30 days to the Town Board. The Town Board, after a hearing, shall determine whether the assessment and the amount thereof is proper. Upon final determination of the assessment, the property owner shall have 10 days to pay the assessment. If not paid within that time, the charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment. The charges shall be added to the next Town tax levy against the property which was the source of the violation.

§ 170-18. Violations deemed 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 chapter 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.

§ 170-19. Remedies not exclusive.

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

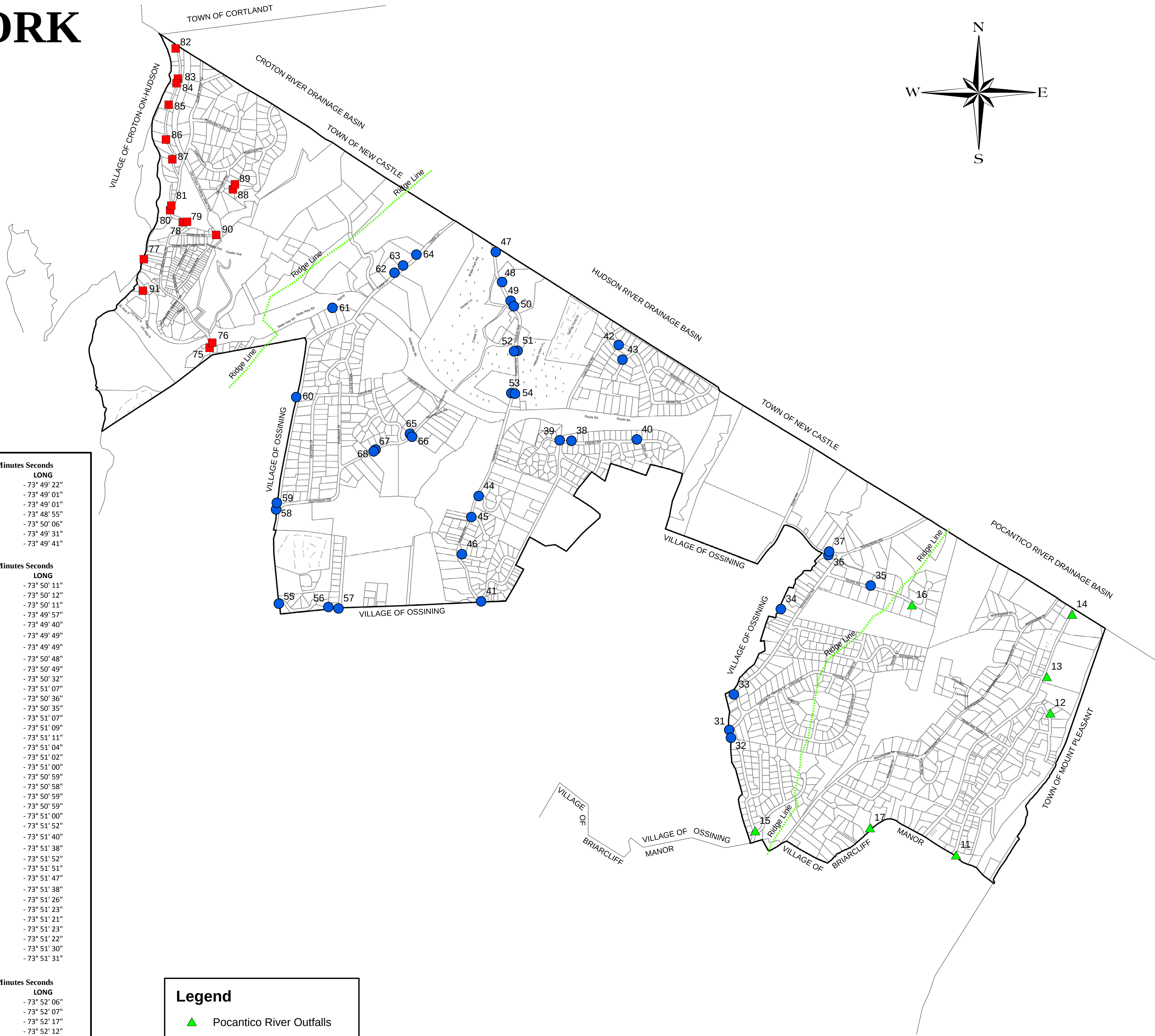
Section 2. This Local Law shall be effective immediately, as permitted by law.

TOWN OF OSSINING, NEW YORK

NYSDEC MS4 SPDES PERMIT NO.NYR20A 370

OUTFALL LOCATIONS STORM SEWERSHEDS (DRAINAGE BASIN)

Pocantico River									
Map-ID	TOF-ID	Description	Outfall From	Outfall To	Nearest Address	Decimal Degrees		Degrees Minutes Seconds	
			Culverts	Stream		LAT	LONG	LAT	LONG
11	GORA-001-A	(3) 48" CMP	Catch Basin	Stream	1 Gordon Ave	41.1612	-73.8228	41° 9' 40"	-73° 49' 22"
12	RIVP-001-A	18" CMP	Catch Basin	Catch Basin	1 River Parkway	41.1678	-73.8169	41° 10' 04"	-73° 49' 01"
13	NSTR-577-A	18" CMP	Catch Basin	Catch Basin	577 North State Road (opposite)	41.1695	-73.8171	41° 10' 10"	-73° 49' 01"
14	NOSR-593-A	18" CMP	Catch Basin	Stream	593 North State Road (opposite)	41.1724	-73.8155	41° 10' 20"	-73° 48' 55"
15	TAPA-004-A	18" CMP	Catch Basin	Catch Basin	6 Tappan Terrace	41.1624	-73.8352	41° 09' 44"	-73° 50' 06"
16	TAVR-020-A	15" CMP	Catch Basin	Wetlands	20 Tavano Road	41.1729	-73.8254	41° 10' 22"	-73° 49' 31"
17	CHAP-159-A	18" CMP	Pipe	Catch Basin	159 Chappaqua Road	41.1625	-73.8281	41° 09' 45"	-73° 49' 41"
Village of Ossining / Hudson River									
Map-ID	TOF-ID	Description	Outfall From	Outfall To	Nearest Address	Decimal Degrees		Degrees Minutes Seconds	
			Catch Basin	Catch Basin		LAT	LONG	LAT	LONG
31	DECR-005-A	18" CMP	Catch Basin	Catch Basin	5 Decker Rd	41.1672	-73.8365	41° 10' 01"	-73° 50' 11"
32	DECR-005-B	18" CMP	Catch Basin	Catch Basin	5 Decker Rd	41.1668	-73.8368	41° 10' 00"	-73° 50' 12"
33	GAND-002-A	24" CMP	Catch Basin	Stream	2 Ganung Dr (Opposite)	41.1689	-73.8364	41° 10' 08"	-73° 50' 11"
34	SOMR-031-A	26 x 26 Culvert	Catch Basin	Stream	24 Somerstown Road	41.1722	-73.8326	41° 10' 20"	-73° 49' 57"
35	TAVR-007-A	18" CMP	Catch Basin	Pond	7 Tavano Road	41.1737	-73.8279	41° 10' 25"	-73° 49' 40"
36	BRKL-003-A	Street Gutter	Street Gutter	Stream	3 Brookside Lane	41.1753	-73.8305	41° 10' 31"	-73° 49' 49"
37	BRKL-004-A	Street Gutter	Street Gutter	Stream	4 Brookside Lane	41.1754	-73.8305	41° 10' 31"	-73° 49' 49"
38	FENR-001-A	18" CMP	Catch Basin	Stream	1 Feeney Road	41.1806	-73.8468	41° 10' 50"	-73° 50' 48"
39	PHRR-002-A	18" CMP	Catch-Basin	Wetlands	2 Pheasant Ridge Road	41.1807	-73.8471	41° 10' 50"	-73° 50' 49"
40	DONR-005-A	18" CMP	Catch Basin	Stream	5 Downey Road	41.1806	-73.8423	41° 10' 50"	-73° 50' 32"
41	CRDR-002-A	18" CMP	Catch Basin	Stream	2 Croton Dam Road	41.1732	-73.852	41° 10' 23"	-73° 51' 07"
42	MINR-004-A	(2) 24" HDPE/ 24" CMP	Catch Basin	Stream	4 Minkel Road	41.1851	-73.8434	41° 11' 06"	-73° 50' 36"
43	REDR-004-A	18" CMP	Catch Basin	Stream	4 Redway Road	41.1841	-73.8433	41° 11' 03"	-73° 50' 35"
44	ROSL-002-A	18" CMP	Catch Basin	Stream	2 Roosa Lane	41.1781	-73.8521	41° 10' 41"	-73° 51' 07"
45	MAND-002-A	18" CMP	Catch Basin	Stream	2 Mancuso Drive	41.1771	-73.8526	41° 10' 37"	-73° 51' 09"
46	HAWC-001-A	18" CMP	Catch Basin	Catch Basin	1 Hawkes Close	41.1757	-73.8533	41° 10' 32"	-73° 51' 11"
47	HAWA-PW2-A	Street Gutter	Street Gutter	Pond	Con-Ed Pole (W2) on Hawkes Ave	41.1894	-73.8511	41° 11' 22"	-73° 51' 04"
48	HAWA-PW46-A	Street Gutter	Catch Basin	Stream	Con-Ed Pole (W46) on Hawkes Ave	41.1881	-73.8506	41° 11' 17"	-73° 51' 02"
49	HAWA-PW43-A	Street Gutter	Street Gutter	Stream	Con-Ed Pole (W43) on Hawkes Ave	41.1874	-73.8502	41° 11' 14"	-73° 51' 00"
50	HAWA-132-A	Street Gutter	Culvert	Stream	132 Hawkes Ave	41.1869	-73.8497	41° 11' 13"	-73° 50' 59"
51	HAWA-PW35-A	Street Gutter	Street Gutter	Stream	Con-Ed Pole (W35) on Hawkes Ave	41.1848	-73.8497	41° 11' 05"	-73° 50' 58"
52	HAWA-PW35-B	18" CMP	Catch Basin	Stream	Con-Ed Pole (W35) on Hawkes Ave	41.1847	-73.8498	41° 11' 04"	-73° 50' 59"
53	HAWA-PW29-A	18" CMP	Catch Basin	Stream	Con-Ed Pole (W29) on Hawkes Ave	41.1828	-73.8499	41° 10' 58"	-73° 50' 59"
54	HAWA-PW29-B	18" CMP	Catch Basin	Stream	Con-Ed Pole (W29) on Hawkes Ave	41.1828	-73.85	41° 10' 58"	-73° 51' 00"
55	GAUL-002-A	18" CMP	Catch Basin	Catch Basin	1 Gaultier Lane	41.1733	-73.8645	41° 10' 23"	-73° 51' 52"
56	VANA-069-A	Open Swale	(n) Culvert	Catch Basin	69 Van Cortlandt Ave	41.1729	-73.8613	41° 10' 22"	-73° 51' 40"
57	VANA-069-B	18" CMP	Manhole	Catch Basin	69 Van Cortlandt Ave	41.1729	-73.8608	41° 10' 22"	-73° 51' 38"
58	CEDL-131-A	Catch Basin	Catch Basin	Hillside	131 Cedar Lane	41.1776	-73.8645	41° 10' 39"	-73° 51' 52"
59	CEDL-131-B	24" CMP	Catch Basin	Hillside	131 Cedar Lane	41.1778	-73.8644	41° 10' 40"	-73° 51' 51"
60	CEDL-165-A	Box Culvert	Catch Basin	Hillside	165 Cedar Lane	41.1828	-73.8633	41° 10' 58"	-73° 51' 47"
61	CEDL-187-A	(2) 24" SDR	Manhole	Stream	187 Cedar Lane	41.186	-73.8607	41° 11' 09"	-73° 51' 38"
62	CEDL-PW31-A	Street Gutter	Catch Basin	Wetlands	Con-Ed Pole (W31) on Cedar Lane	41.1885	-73.8572	41° 11' 18"	-73° 51' 26"
63	CEDL-PW33-A	Street Gutter	Catch Basin	Wetlands	Con-Ed Pole (W33) on Cedar Lane	41.1889	-73.8566	41° 11' 20"	-73° 51' 23"
64	CEDL-PW34-A	Street Gutter	Catch Basin	Wetlands	Con-Ed Pole (W34) on Cedar Lane	41.1892	-73.856	41° 11' 21"	-73° 51' 21"
65	STMR-020-A	Street Gutter	Street Gutter	Stream	20 Stormytown Road	41.1809	-73.8564	41° 10' 51"	-73° 51' 23"
66	STMR-025-A	Street Gutter	Street Gutter	Stream	25 Stormytown Road	41.1809	-73.8563	41° 10' 51"	-73° 51' 22"
67	STMR-039-A	24" CMP	Catch Basin	Stream	39 Stormytown Road	41.1804	-73.8584	41° 10' 49"	-73° 51' 30"
68	STMR-039-B	56/(2) 18" CMP/24" CMP	Catch Basin	Stream	39 Stormytown Road	41.1803	-73.8587	41° 10' 49"	-73° 51' 31"
Croton River									
Map-ID	TOF-ID	Description	Outfall From	Outfall To	Nearest Address	Decimal Degrees		Degrees Minutes Seconds	
			Catch Basin	Stream		LAT	LONG	LAT	LONG
75	OAPR-011-A	18" CMP	Catch Basin	Stream	11 Old Albany Post Road	41.1852	-73.8685	41° 11' 06"	-73° 52' 06"
76	OAPR-012-A	18" CMP	Catch Basin	Stream	12 Old Albany Post Road	41.1852	-73.8686	41° 11' 06"	-73° 52' 07"
77	OAPR-055-A	18" HDPE	Catch Basin	Croton River	55 Old Albany Post Road	41.1892	-73.8715	41° 11' 21"	-73° 52' 17"
78	OAPR-075-A	18" CMP	Catch Basin	Stream	75 Old Albany Post Road	41.1911	-73.8702	41° 11' 28"	-73° 52' 12"
79	OAPR-075-B	18" CMP	Catch Basin	Stream	75 Old Albany Post Road	41.191	-73.8702	41° 11' 27"	-73° 52' 12"
80	OAPR-083-A	Culvert	Catch Basin	Hillside	Across from Town Park on O A P R	41.1915	-73.871	41° 11' 29"	-73° 52' 15"
81	OAPR-081-B	Culvert	Catch Basin	Hillside	Across from Town Park on O A P R	41.1917	-73.8709	41° 11' 30"	-73° 52' 15"
82	OAPR-134-A	18" CMP	Catch Basin	Hillside	134 Old Albany Post Road	41.1989	-73.8705	41° 11' 56"	-73° 52' 13"
83	OAPR-112-A	18" CMP	Catch Basin	Hillside	112 Old Albany Post Road	41.1978	-73.8704	41° 11' 52"	-73° 52' 13"
84	OAPR-112-B	18" CMP	Catch Basin	Hillside	112 Old Albany Post Road	41.1974	-73.8706	41° 11' 50"	-73° 52' 14"
85	OAPR-108-A	18" CMP	Catch Basin	Hillside	108 Old Albany Post Road	41.1965	-73.871	41° 11' 47"	-73° 52' 15"
86	OAPR-107-A	18" CMP	Catch Basin	Hillside	107 Old Albany Post Road	41.1949	-73.8712	41° 11' 41"	-73° 52' 16"
87	OAPR-103-A	18" CMP	Catch Basin	Hillside	103 Old Albany Post Road	41.1942	-73.8708	41° 11' 39"	-73° 52' 15"
88	APLW-008-A	18" CMP	Catch Basin	Open Swale	8 Applegate Way	41.1925	-73.8677	41° 11' 33"	-73° 52' 04"
89	KELC-015-A	18" CMP	Catch Basin	Open Swale	15 Kelly Court	41.1927	-73.8657	41° 11' 33"	-73° 51' 56"
90	RESR-015-A	(2) 18" CMP	Catch Basin	Open Swale	15 Reservoir Road	41.1904	-73.8682	41° 11' 25"	-73° 52' 05"
91	CRRR-105-A	Large Culvert	Large Culvert	Stream	105 Croton River Road	41.1878	-73.8728	41° 11' 16"	-73° 52' 22"



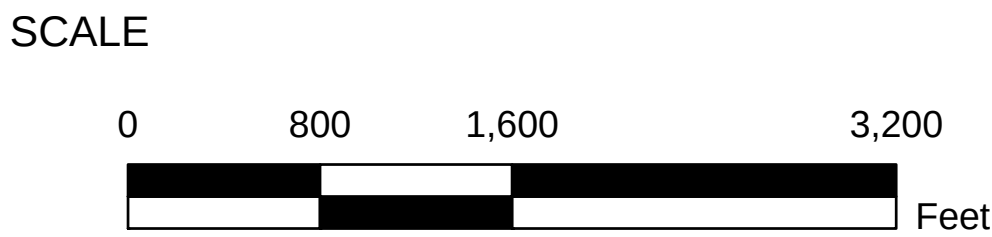
Notes:
Location of Outfalls shown hereon as per Latitude & Longitude information supplied by the Town of Ossining.
Planimetric data obtained from Westchester County photography flown spring 2004.

JJV, PE
CONSULTING ENGINEER
SITE DESIGN

James J. Vanoli, P.E.
752 Old Kensico Road
Thomwood, New York 10594
Telephone 914.769.0902
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THOMAS C. MERRITTS LAND SURVEYORS, P.C.
394 BEDFORD ROAD • PLEASANTVILLE • N.Y. 10570
(914) 769-8003 • (203) 622-8899



TOWN OF OSSINING OUTFALL MAP STORM SEWERSHED (DRAINAGE BASIN) MAP

Prepared: March 31, 2009
Revised: May 13, 2009

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[illegible]

[illegible]

Sample of Letter to Business Owners

D R A F T

Dear Town of Ossining Business Owner:

On March 10, 2003, the Town of Ossining began the development of its Stormwater Management Plan, mandated by the United States Department of Environmental Protection and administered by the New York State Department of Environmental Conservation. The plan requires that the Town make every effort to improve the water quality of its streams, lakes and rivers. The Town must implement six (6) minimum control measures including educating the public, soliciting participation and involvement of the public, detection and elimination of illicit discharges, control of construction site runoff, maintenance and operation of post construction structural Best Management Practices and pollution prevention and good housekeeping at municipal facilities.

Two of these measures have a direct impact on business owners who operate parking areas for there employees / patrons and visitors. Parking areas can collect dirt and floatable debris as well as hydrocarbons and heavy metals from parked / moving vehicles. Additionally, if your property / parking lot has had a Stormwater Best Management Practice installed such as median rain gardens, stormwater catch basin filter inserts, stone filter strips, retention or detention basins etc., it is the property owners responsibility to insure that these structures are properly operated and maintained.

Should you have any questions concerning property owner responsibilities with respect to the Town's Stormwater Management Program, please contact John Hamilton at 914-962-8419

Very truly yours,

Supervisor

Town of Ossining, New York

Stormwater Management Program

Dear Town Residents, Business Owners and Visitors:

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Recognizing the need for improving the quality of our surface waters, the Town passed legislation in the initial stages of its Stormwater Management Program, designed to control the quantity and quality of runoff from new development and redevelopment, and insure that stormwater runoff from a project, once completed, created minimal or no impact on water quality. The Town of Ossining has been a proponent of maintaining and improving water quality.

Learn what you can about improving stormwater quality by visiting the following websites:

U.S. Environmental Protection Agency at <http://www.epa.gov/ebtpages/water.html>
NYS Dept of Environmental Conservation at <http://www.dec.ny.gov/chemical/8468.html>
Center for Watershed Protection at <http://www.cwp.org>
Town of Ossining at <http://www.townofossining.com>

Sincerely,

Supervisor

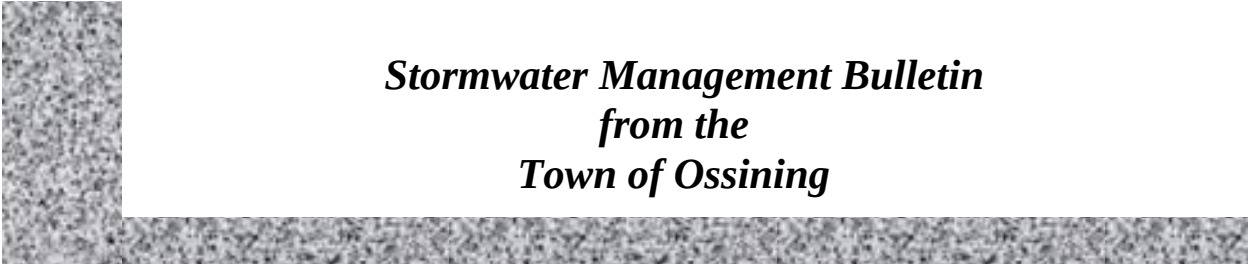
Supervisor

Honorable Susanne Donnelly

Town Board

Honorable Eric P. Blaha
Honorable Geoffrey J. Harter
Honorable Peter Tripodi IV
Honorable Northern Wilcher

For further information on Town efforts, or
to volunteer to assist the Town, contact
Stormwater Management Coordinator
Susanne Donnelly at 914-762-6001



Stormwater Management Bulletin **from the** **Town of Ossining**

In response to Federal and State water quality regulations and requirements, the Town has implemented a Stormwater Management Program.

The goal is to control discharges of pollutants to municipal storm drainage systems including, lakes, streams, and the Hudson River. The Town encourages using **BEST MANAGEMENT PRACTICES (BMP's)** to effectively eliminate illegal discharges and connections

The Storm Drain System was built to collect and transport rain to prevent flooding in urban areas. Anything that flows or is discharged into the storm drain system goes into local lakes, streams and the Hudson River without any treatment.

The Sanitary Sewer System collects and transports sanitary wastes from interior building plumbing systems to the wastewater treatment plant where the waste is treated.

Best Management Practices (BMP's) are methods and practices such as good housekeeping, spill prevention or treatment measures to prevent or minimize pollutant discharges to municipal storm drain systems.

Illicit Discharges or Illicit Connections

Discharges non-storm water to municipal storm drain systems and contributes to water pollution.

Urban Runoff is rain and other water that passes through and out of developed areas (streets, parking lots, roof tops etc.) into the storm drain system and eventually into local lakes, streams and the Hudson River.

Pet Waste

Pet waste left to decay on the sidewalk, or on grass near the street, may be washed into storm drains by rain and snow melt. Water entering storm drains does not receive treatment before it goes to our water resources. All stormwater in the Town eventually flows to the Hudson River. Many substances deposited on the land cause pollution of our waters including; pesticides, fertilizers, pet waste, household chemicals, oil and antifreeze. When pet waste is washed into storm drains, the waste decays, using up oxygen and sometimes releasing ammonia. Pet waste also contains nutrients that encourage weed and algae growth. Most importantly, pet waste may carry disease causing organisms, which make water unsafe. When pet waste is disposed of improperly, not only does water quality suffer, your health may be at risk to. Pets, children playing outside, and adults gardening are most at risk for infection from some of the bacteria found in pet waste.

You can make a difference by cleaning up after your pet using a plastic bag or pooper scooper. Double wrap the pet waste in a second plastic bag, securing it tightly and put it in either a street waste receptacle or your garbage can at home.

For further information, or to assist the Town in its efforts, contact **Stormwater Management Coordinator** Susanne Donnelly, at 914-762-6001 or visit the following websites:

<http://www.epa.gov/ebtpages/water.html>
<http://www.dec.ny.gov/chemical/8468.html>
<http://www.townofossining.com>
<http://www.cwp.org>

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Retail Gas and Diesel Fuel Outlets

Of any size are potential sources of stormwater pollution. Areas in retail fueling outlets for fuel dispensing, waste receptacles, vending machines and air / water supply areas can lead to the accumulation of automotive fluids, grease and other waste fluids on the ground. All owners and employees of retail fueling outlets can apply common sense practices to minimize or eliminate their contribution to stormwater pollution.

Best Management Practices

SPOT CLEAN ALL AREAS IMMEDIATELY

Use dry methods such as rags or absorbent materials to clean up leaks and drips. Leaks are not considered cleaned up until the absorbent is picked up and disposed of properly.

SPILL RESPONSE PLAN Maintain and update an acceptable Spill Response Plan.

TRAINING Regularly train all employees on proper methods of handling and disposing of waste. Ensure all employees are familiar with the Spill Response Plan. Educate employees on Best Management Practices (BMP's) and stormwater and wastewater discharge requirements and prohibitions.

LABELING Label all drains within the facility boundaries using paint or stencil, or indicate whether flow is to the storm drain, sewer or oil / water separator.

INSPECTION Annually inspect and clean storm drain inlets and catch basin.

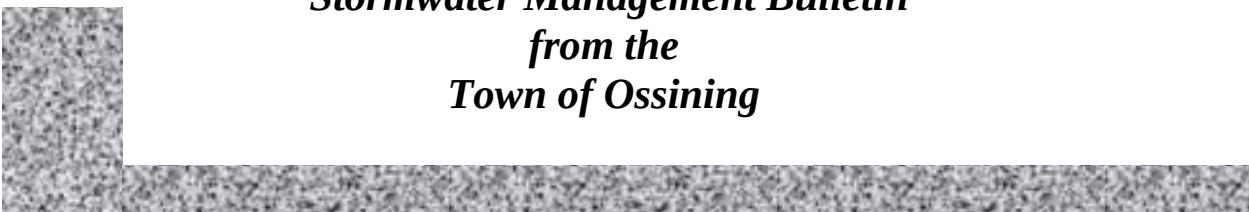
For further information, or to assist the Town in its efforts, contact **Stormwater Management Coordinator** Susanne Donnelly at 914-762-6001 or visit any of the following webpages:

http://cfpub.epa.gov/npdes/home.cfm?program_id=6

<http://www.dec.ny.gov/chemical/8468.html>

<http://www.townofossining.com>

<http://www.cwp.org>



Stormwater Management Bulletin from the Town of Ossining

What is Stormwater Pollution:

Stormwater pollution refers to many types of harmful materials that are carried by water (rain water, wash water or snow melt) through the storm drain system to our creeks and the Hudson River. These pollutants can include: sediments, nutrients, trash, metals, bacteria, oil and grease, phosphorus and organics.

Get Involved:

Volunteers are needed to assist with waterway and roadside cleanup efforts, beautification projects, storm drain stenciling and neighborhood cleanups. Put together a group of friends, plan to meet over coffee and help keep trash and other pollutants out of our waters. Contact the Town's Stormwater Management Coordinator for details.

Dispose of Household Products Carefully:

Many products under the sink or in the garage can harm water quality. Never pour paints, preservatives, brush cleaners and solvents down the drain. Sewers or septic tanks do not treat these materials and they can enter waterways untreated. Buy a product with the least amount of toxic materials. Read labels carefully for use and disposal instructions. Learn about Westchester County's Household Hazardous Waste Disposal Program. For information call 914-813-5425 or log onto the County website at <http://www.westchestergov.com>

Care for your lawn cautiously:

Lawns with trees and shrubs prevent erosion, soak up nutrients before they run off into waterways, and improve soil by adding organic materials. Plant the right grass by testing the soil annually. Use the proper fertilizer, and do not over-fertilize. Improper fertilizing can lead to disease, poor root growth and weed problems. Water your lawn and shrubs only when it is dry by soaking the soil thoroughly. If you have a lawn service, make sure it is customized to your needs.

Illicit Discharge Detection and Elimination:

Items which find their way into waterways and storm drains, either by accident or deliberately, decrease water quality and create unsightly conditions. Carelessly discarded trash, illegal connections of waste water and other products, household chemicals, oil, and nutrients from over fertilization of lawns can be washed into drains when it rains and eventually end up in our waterways. In 2007, the Town began a program to locate and identify discharges from illegal connections which decrease water quality and take enforcement action where appropriate. If you think your home or business may have an illegal connection to the storm drain, Contact the Town's Stormwater Management Coordinator to learn how to correct the condition.

For further information, or to assist the Town in its efforts, contact **Stormwater Management Coordinator** Susanne Donnelly. at 914-762-6001 or visit any of the following webpages:

http://cfpub.epa.gov/npdes/home.cfm?program_id=6
<http://www.dec.ny.gov/chemical/8468.html>

<http://www.townofossining.com>
<http://www.cwp.org>



Stormwater Management Bulletin **from the Town of Ossining**



In response to Federal and State water quality regulations and requirements, the Town has implemented a Stormwater Management Program.

The goal is to control discharges of pollutants to municipal storm drainage systems including, lakes, streams, and the Hudson River. The Town encourages using BEST MANAGEMENT PRACTICES (BMP's) to effectively eliminate illegal discharges and connections

The Storm Drain System was built to collect and transport rain to prevent flooding in urban areas. Anything that flows or is discharged into the storm drain system goes into local lakes, streams and the Hudson River without any treatment.

The Sanitary Sewer System collects and transports sanitary wastes from interior building plumbing systems to the wastewater treatment plant where the waste is treated.

Best Management Practices (BMP's) are methods and practices such as good housekeeping, spill prevention or treatment measures to prevent or minimize pollutant discharges to municipal storm drain systems.

Illicit Discharges or Illicit Connections

Discharges non-storm water to municipal storm drain systems and contributes to water pollution.

Urban Runoff is rain and other water that passes through and out of developed areas (streets, parking lots, roof tops etc.) into the storm drain system and eventually into local lakes, streams and the Hudson River.

Supermarkets, Restaurants, Fast Food Outlets and Grocery Stores

Businesses selling food products can conduct common sense practices that require modest changes to routine operations or maintenance practices to reduce or eliminate their contribution to stormwater pollution. Follow these Best Management Practices (BMP's) to control pollutant discharges:

PAVEMENT CLEANING: Sweep parking lots and other paved areas periodically to remove debris. Dispose of debris in the garbage.

EQUIPMENT CLEANING: Discharge wash water to the sanitary sewer only.

SPILL CLEANUP IN OUTDOOR AREAS: Have commercial spill containment kits in convenient locations for immediate access.

GREASE HANDLING AND DISPOSAL: Store grease in separate covered containers. Recycle.

WASTE DISPOSAL: Inspect dumpsters periodically and replace broken or leaking units. Keep dumpsters covered to prevent stormwater from entering the container. Never dispose of food wastes or liquids associates with food wastes in storm drains.

LITTER CONTROL: Provide an adequate number of trash receptacles for customers and employees. Pick up litter and other wastes daily from outside areas.

LANDSCAPING: Minimize the use of pesticides and fertilizers.

TRAINING: Train all employees on what to do in the event of a spill. Designate a person to insure BMP's are followed.

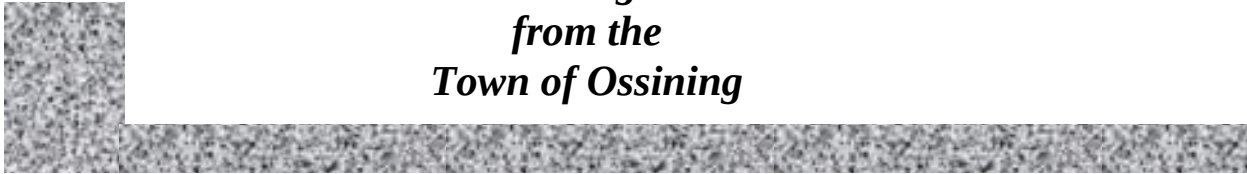
For further information, or to assist the Town in its efforts, contact **Stormwater Management Coordinator** Susanne Donnelly at 914-762-6001 or visit the following webpages:

http://cfpub.epa.gov/npdes/home.cfm?program_id=6

<http://www.dec.ny.gov/chemical/8468.html>

<http://www.townofossining.com>

<http://www.cwp.org>



Stormwater Management Bulletin from the Town of Ossining

In response to Federal and State water quality regulations and requirements, the Town has implemented a Stormwater Management Program.

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Illicit Discharges or Illicit Connections
Discharge non-storm water to municipal storm drain systems and contributes to water pollution.

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<http://www.townofossining.com>
<http://www.cwp.org>

Parking Lots

Keeping pollutants out of our storm drain system protects our creeks, streams and the Hudson River. Materials swept, blown or washed into the storm drains end up in these open waters where they degrade water quality and harm aquatic life. In general, wastewater discharged to storm drains is illegal.

In addition to reviewing their own practices, the Town will institute a business education campaign. Information will be provided to businesses owners and large residential facilities in an effort to control potential discharge of pollutants to the storm drain system. *Property and business owners are responsible not only for their own activities, but the activities of their contractors as well.*

Stormwater runoff from parking lots and sidewalk areas can contribute significantly to urban runoff pollution. Automotive fluids, food wastes, grease pesticides, litter, exhaust residue and rubber generated from friction between tires and paved surfaces, as well as landscape wastes are some of the pollutants that can get into the stormwater conveyance system which ultimately flows to the Hudson River.

Owners and operators of parking lots can apply common sense practices to minimize or eliminate their contribution to stormwater pollution. Whether your parking lot holds 5 cars or 1,000 cars, a scheduled maintenance program including repairs, sweeping, stormwater catch basin cleaning and debris removal is needed. Your efforts to maintain your parking lot in as clean a condition as possible, along with the efforts of your fellow business persons, will help in safeguarding our waters from pollutants and unsightly debris.

Best Management Practices (BMP's)

Follow these BMP's to control pollutant discharges. The objectives are: 1) to keep pollutants from contacting rain, and 2) to keep pollutants from being dumped or poured into storm drains. The goal is "only rain in the drain"

- Sweep parking lots frequently, at least weekly, daily is preferable. Small areas can be swept with a broom, whereas larger areas may need a vacuum truck or mechanical sweeper. Dispose of sweepings properly.
- Post signs to control litter and prevent patrons from working with automobile fluids in your parking lot (changing oil, adding transmission fluid, etc.). You could be liable for the mess on your property!
- Use absorbent material to clean up automotive fluids on the parking lot. Dispose of the absorbent properly. Read the instructions on the container or Material Safety Data Sheet for disposal instructions.
- Pick up litter daily, dispose of debris in the garbage.
- Keep dumpster and trash cans covered and areas free of litter.
- Wash water from all cleaning operations must be discharged to the sanitary sewer.
- If cleaning with water and detergent is needed, use a mobile washing unit that is self contained; do not allow wash water (whether or not it is soapy) to discharge to the storm drain system.
- If using a self-contained mobile cleaner is not possible, collect the washwater and dispose in indoor sinks or drains for discharge to the sanitary sewer. Contact the Westchester County Department of Environmental Facilities for approval.
- Stencil any storm drains on the property with "No Dumping"
- If you do not have one, prepare a plan of your parking area indicating where stormwater catch basins are located and where they flow to.
- Clean storm drains at least once a year, preferably in the Spring. Dispose of materials properly.

Stormwater Management Program Training Sign In Sheet

Training shall be performed as directed by the Stormwater Management Coordinator. A record shall be made of attendees present at the training session.

[illegible]

Town of Ossining Outfall Inspection

Outfall # _____

Inspection Data

Land Use: _____

Outfall Type: _____

Material: _____

Shape: _____

Quantity: _____

Size: _____

Inspection Data Date: _____ **Time:** _____

Submerged: ☐ No ☐ Yes

Comments: _____

Flow Present: ☐ No ☐ Yes: ☐ Light ☐ Moderate ☐ Heavy

Damage to outfall: ☐ ☐ Describe: _____

Deposits: ☐ ☐ Describe: _____

Abnormal Vegetation: ☐ ☐ Describe: _____

Pool Quality: ☐ ☐ Describe: _____

Pipe Benthic Growth: ☐ ☐ Describe: _____

Comments: _____

Inspectors Name (Print) _____

Signature: _____

Stormwater Management Program
Construction Project Stormwater Pollution Prevention Plan Inventory (SWPPP)

(Page 1 of 2)

Item	Project	Project	Project
Project Name			
Project Owner			
Project Address			
Site Size (in acres)			
Telephone No. Owner			
Telephone No. Engineer			
Telephone No. Contractor			
Telephone No. (24 hour emergency))			
Start Date			
Estimated Completion Date			
List of BMP's During Construction			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Stormwater Management Program
Construction Project Stormwater Pollution Prevention Plan Inventory (SWPPP)**

(Page 2 of 2)

Item	Project	Project	Project
List of Post Construction BMP's Inspection and Maintenance Criteria Received and on File			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Access Needed for Post BMP's			
Maintenance in Perpetuity Agreement(s) Received			
Project Completed, All Documentation Received and Filed Certificate of Occupancy Issued (DATE)			

Stormwater Management Program
Best Management Practices Inventory

	A	B	C	D	E	F	G	H	I
1	Owner/Maintenance	Street Address	Telephone	Sec/Bl/Lt	BMP Type	Inspection Date	Date	Municipal	Maintenance
2	Responsibility		Number			Annual Requirement	Installed	Easement	Manual
3									On File
4									
5									
6									
7									
8									
9									
10									
11									
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New York State Department of Environmental Conservation

Division of Water, Region 3

100 Hillside Avenue – Suite 1W, White Plains, New York 10603-2860

Phone: (914) 428-2505 • Fax: (914) 428-0323

Website: www.dec.ny.gov



Alexander B. Grannis
Commissioner

February 19, 2010

Catherine Borgia, Supervisor
Town of Ossining
16 Croton Avenue
Ossining, NY 10562

RE: **Municipal Separate Storm Water System (MS4) Audit**
SPDES No: GP-0-08-002

Dear Ms. Borgia:

The Department of Environmental Conservation (DEC) conducted an audit of the Town's Municipal Separate Storm Sewer System (MS4) on February 11, 2010. Attached is the audit form for your reference. The audit team included Ms. Jennifer Zunino-Smith and myself. The purpose of the program evaluation was to determine the Town's compliance with the terms of their State Pollutant Discharge Elimination System (SPDES) MS-4 permit and to evaluate the current implementation status of the Town's storm water management program. Please refer to the attached inspection report form for more detailed information.

During our audit it was noted that the Town only documented the number of volunteers involved in the "Trash and Trash" event. The logs for all other participatory events were not maintained. The town didn't maintain a separate document related to dry weather screening and didn't maintain an inventory for the post construction control practices. The Highway Superintendent inspects the Highway Garage every day and verbally trains to each individual of the facility, but no inspection checklist or training records were maintained on site. In addition, salt storage in Highway Garage was not properly addressed. Runoff from the salt storage area has the potential to reach nearby catch basin.

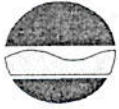
The Town needs to maintain a log book for the participants for each participatory or stewardship activities. It is required to maintain documents related to dry weather screening, maintain an inventory of the post construction control practices and impose requirement for each applicant to maintain an O&M manual for post construction control practices. The Town shall maintain an inspection check list, O& M manual and training records for each of the facilities owned by the Town. Salt storage deficiencies should be addressed immediately.

If you have questions or comments, please I can be reached at 914 428-2505, ext. 362.

Sincerely,

Aparna Roy
Environmental Engineer I

ecc: Natalie Browne, NYS DEC, Division of Water



**NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF WATER**



Pilot Municipal Separate Storm Sewer System (MS4) Audit Report (for SPDES General Permit GP-0-08-002)

MS4 Name		
T o w n o f O s s i n i n g		
MS4 County	Date	Permit Number
W e s t c h e s t e r	0 2 / 1 1 / 2 0 1 0	N Y R 2 0 A 3 7 0
Rep First Name		Rep Last Name
C a t h e r i n e		B o r g i a
Rep Phone		
9 1 4 - 7 6 2 - 6 0 0 1		
Permittee Name		
C a t h e r i n e B o r g i a		
Permittee Title		
S u p e r v i s o r		
Permittee Phone		Permittee Fax
9 1 4 - 7 6 2 - 6 0 0 1		9 1 4 - 7 6 2 - 0 8 3 3

INSPECTION CHECKLIST

Program Management - Individual MS4s and Intermunicipal MS4s:

1. Which geographic areas, waterbodies, pollutants, and audiences have been identified as stormwater program priorities?

Hudson, Croton and Pocantico rivers; Floatable; Homeowners
2. ☐ Yes ☒ No ☐ N/A Are regular meetings conducted during which SWMP management/planning/coordination is discussed by pertinent operating departments, the Mayor, Supervisor, Planning Board, Trustees, etc?
3. ☒ ☐ ☐ Are adequate formal record keeping procedures in place in relevant operating departments and at facilities?
4. ☐ ☐ ☐ How/when are new staff and new officials kept advised and up-to-date concerning NY Phase II requirements and the MS4s SWMP?

Program Management - Intermunicipal/Third Party MS4s:

5. ☒ Yes ☐ No ☐ N/A Are the permittees' intermunicipal/third party SWMP initiatives, roles, and responsibilities formalized through a written agreement?
6. ☐ ☐ ☐ How is delivery/implementation of the BMPs that are being provided by another MS4/third party being ensured within the permittees' jurisdictions?

Westchester County Department of Planning
 Town provides additional activities

Yes No N/A
7. ☐ ☐ ☒

Have the individual permittees completed the follow-up that may be needed to fully satisfy Phase II requirements within their jurisdiction if only partial BMP implementation is provided by another party?

8. How are annual reports prepared? How is individual permittee progress reported?

Annual Report is presented in public meeting and is televised. The meeting is the source of communication between departments.

Public Education & Outreach:

Yes No N/A

9. ☒ ☐ ☐ Has the MS4 identified its pollutants of concern (POC's)?

List POC's:

Floatable

10. ☒ ☐ ☐ Has the MS4 identified waterbodies of concern?

List waterbodies of concern:

Hudson, Croton and Pocantico rivers

11. ☒ ☐ ☐ Has the MS4 identified geographic areas of concern?

List geographic areas of concern:

North State Road

12. Which target audiences is the MS4s education and outreach program directed at? (i.e. homeowners, industry, developers/contractors, etc.)

Homeowners, Ossining School District

13. Describe the components of the outreach and education program and how the MS4 is measuring their effectiveness:

Village fair, mails, annual report sent to library, TV shows, literature on IDDE program in website, school program, handout included to the building permit, standard marker "No dumping to river"

Yes No N/A

14. ☐ ☒ ☐ Do the materials disseminated relate to priority pollutants?

15. ☒ ☐ ☐ Did they reach the target audience?

16. How much material was disseminated and how frequently?

15,000 mails to homeowners in Town and Village; 2200 pamphlets distributed at village fair; 200 units of biodegradable bags sent to residents last year

Public Education & Outreach:

17. ☒ Yes ☐ No ☐ N/A Has the MS4 identified and published the name of the stormwater contact?
18. How was the annual report presented?
- Public meeting: 05/12/2009
- Internet: (Identify website): www.townofossining.com
19. What participatory/stewardship activities (i.e. water body cleanups, stormwater advisory groups, hotlines, storm drain stenciling) did the MS4 implement? Do they relate to priority pollutants and waterbodies of concern? How was their effectiveness evaluated?
- Yearly Hudson river shoreline cleanup, annual stash and trash by Recreation Dept. , web based illicit discharge detection complaint form, annual storm drain stenciling
20. How many people participated in the MS4s stormwater program activities? (Including annual report meeting, cleanups, etc.)
- Around 400 Boys Scouts participated in stash and trash day

IDDE Audit Criteria:

21. ☒ Yes ☐ No ☐ N/A Have local laws been evaluated and certified to be equivalent to the State model law?
22. ☒ Yes ☐ No ☐ N/A Has outfall mapping been completed?
23. ☒ Yes ☐ No ☐ N/A Is there a plan for additional mapping?
- Showing (Check applicable):
- ☐ Outfalls
 - ☐ Stormwater Management Practices
 - ☒ Catch basins/storm drain inlets
 - ☒ Storm Sewer Lines
 - ☐ Receiving Water Bodies
 - ☐ Storm Sewer Shed
24. ☐ Yes ☒ No ☐ N/A Are there written procedures in place for conducting the IDDE program? (Ask for a copy)
25. ☒ Yes ☐ No ☐ N/A Is dry weather screening conducted?
- What is the frequency of inspection for major and minor outfalls?
- 20% annually. No separate record maintained for dry weather screening
- Are inspections adequately documented (attach copy of inspection form)?
- Outfalls are inspected during site inspection. No documents available

Yes No N/A
26. ☒ ☐ ☐

Is a reporting mechanism in use for illicit discharges (hotline, website, other)?
How many have been reported during this reporting period (March 10-March 9)?

Hotline 914-762-6000 and 914-760-6007. Complaint form on website
None reported

How many have been responded to?

None

How many have been eliminated?

None

27. ☒ ☐ ☐

Is a training/education program in-place for:

☒ ☐ ☐

MS4 Employees?

Spill Prevention & Response:

IDDE Procedures (response, investigation, elimination, prevention):

☐ ☐ ☒

Industry/Commercial?

Hazards of illegal dumping & illicit discharges:

☒ ☐ ☐

Public?

Hazards of illegal dumping & illicit discharges:

Used oil & household hazardous waste educational materials:

Recycling & disposal facilities:

IDDE reporting procedures:

☐ ☐ ☐

Other:

28.

During this reporting period (March 10 - March 9), what is the number of illicit discharges:

	Detected?	Eliminated?
By Public:	0	0
By Industry/Commercial:	0	0
By Private:	0	0
By MS4 Employee:	0	0
By Other:	0	0

Yes No N/A
29. ☐ ☐ ☒

Have any enforcement actions been taken?

Describe:

Construction Site Stormwater Runoff Control:

Yes No N/A
30. ☐ ☒ ☐

Have any enforcement actions been taken?

☐ ☐ ☒

Are they being implemented?

31. ☒ ☐ ☐

Have local laws been evaluated and certified to be equivalent to the State model law?

32. ☒ ☐ ☐

Are procedures in place to receive public comments on construction activities? What are the procedures?

During public hearing

SWPPP Review:

Yes No N/A
 33. ☐ ☐ ☐

Are procedures for reviewing SWPPPs in writing? What is the procedure?

Review guidance: NYS Design Manual; Discussion on SWPPP review in Public meeting

34.

What department/personnel are responsible for SWPPP review? What are their qualifications?

Planning Board and Consulting Engineer James J. Valoni P.E.

35.

Number of SWPPPs reviewed during this reporting period (March 10 - March 9)?

4

36.

Number of SWPPPs approved/disapproved during this reporting period (March 10 - March 9)?

2/2

37. ☒ ☐ ☐

Does the SWPPP review process insure that SWPPPs meet state technical standards or demonstrate to be equivalent to state standards?

Construction Site Stormwater Runoff Control:

38.

List the Department/Personnel responsible for construction site inspections.

Building inspector: John Hamilton (95%) and Consulting Engineer: James J. Valoni (5%)

Yes No N/A
 39. ☒ ☐ ☐

Have inspectors received training? If so, what type of training and when?

NYS mandate 24 hours code & Enforcement training-01/10/2010; ESF outreach-regulation of stormwater management: Tele-conferences

40. ☒ ☐ ☐

Are there adequate procedures in place for conducting inspections? (See DEC Inspection Manual)

41. ☒ ☐ ☐

Is a standardized inspection form used (obtain a copy of form)?

42. ☐ ☐ ☐

What is the number of active construction sites requiring inspection?

1

43. ☐ ☐ ☐

What is the number of inspections performed and the frequency over the past 12 months?

45 inspections

44. ☒ ☐ ☐

Are procedures in place for tracking inspections? What are the procedures?

Checklist kept with building permits

45. ☐ ☐ ☐

How many violations were found in the prior year?

1

46. ☐ ☐ ☐

What are the procedures if violations are found?

Formal Notice-NOV-Court appearance ticket-Court subjects fine

47. ☐ ☐ ☐

How were violations handled?

48. ☐ ☐ ☐

How were violations handled?

Post Construction Control Practices:

49. ☐ Yes ☒ No ☐ N/A Is there an inventory in place for post construction control practices?
50. ☐ Yes ☒ No ☐ N/A Is there an effective procedure (O&M Manuals) for inspecting/maintaining post construction control practices?
51. Who is responsible for inspecting/maintaining the post construction control practices?
52. What is the frequency of inspection? (Proactive/Response to emergencies)
53. ☐ Yes ☒ No ☐ N/A Is there a mechanism to obtain and maintain O/M manuals for different types of facilities?

Pollution Prevention and Good Housekeeping for Municipal Operations**Infrastructure and Stormwater Management Facilities Inspection:**

54. ☒ Yes ☐ No ☐ N/A Is there a schedule for inspection and cleaning of catch basins and conveyance system established?
55. What is the frequency of inspection? (Proactive/Response to emergencies)
56. How are the spoils disposed of?

Facilities Operation and Maintenance:

57. Identify the facilities which need Operation and Maintenance.
58. ☒ Yes ☐ No ☐ N/A Is there a designated stormwater person/facility? Identify.
59. What type of maintenance operations are performed (List Facility, Frequency, Guidance & Procedures, Resources)?
60. ☐ Yes ☒ No ☐ N/A Is there a checklist for inspection?
61. ☐ Yes ☐ No ☒ N/A Is there a SWPPP for facilities that would otherwise (if not covered under the MS4 General Permit) require a Multi-Sector General Permit?

Road Maintenance:

62. ☒ Yes ☐ No ☐ N/A Is there a road maintenance plan established? (Attach copy)

63. ☐ Yes ☒ No ☐ N/A Are roads prioritized based on their water quality impacts?

64. How often does street sweeping occur?

5 times a year

65. How are the street sweeping spoils disposed of?

Stockpile in parks and use as fill

Pesticide, Herbicide, Fertilizer, & other chemicals:

66. ☐ Yes ☒ No ☐ N/A Is there an Integrated Pest Management (IPM) practice in place?

67. ☒ Yes ☐ No ☐ N/A Are storage locations identified for chemicals?

68. ☒ Yes ☐ No ☐ N/A Does the municipality adequately address road salt storage?

69. ☐ Yes ☒ No ☐ N/A Are there procedures for chemical applications?

70. How many Household Hazardous Waste pick-up events are there annually?

Quarterly County's household hazardous waste pick up events. Town advertises by sending e-mails to 200 residents each quarter.

Standards, Guidance, & Outreach:

71. ☐ Yes ☒ No ☐ N/A Is there technical guidance designated and made available for maintenance staff?

72. What types of training have been received?

"Tail gate" training

73. How many of the staff have been trained? (List by facility)

11 employees in Highway, 3 in Building, 3 in Park Departments

74. ☐ Yes ☐ No ☒ N/A Do maintenance contracts include language on stormwater impact and appropriate BMPs?

Additional Watershed Requirements:

75. ☐ Yes ☐ No ☒ N/A Is the MS4 complying with their additional watershed requirements?

Wrap-Up

76. ☒ Yes ☐ No ☐ N/A

Are program goals being achieved? If not, why not? What corrective measures have been taken?

Are program goals being achieved? If not, why?

77. How is effectiveness evaluation of program components addressed?

How is effectiveness evaluation of program components addressed?

78. ☐ ☒ ☐ Are Best Management Practices (BMPs) for each Minimum Control Measure effectively being implemented?

See Additional Comments section

See Additional Comments section

Overall Audit Rating: ☒ Satisfactory ☐ Marginal ☐ Unsatisfactory

Name/Agency of
Lead Auditor:

Signature of
Lead Auditor:

Auditor First Name

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Auditor Last Name										

[illegible]

Aparna Reddy

Names/Agencies of
Other Auditors:

Auditor First Name

J	e	n	n	i	f	e	r				2
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Auditor Last Name							

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Auditor First Name

[illegible]

Auditor Last Name							

[illegible]

Additional Comments:

MCM 1 & 2: Materials relate to priority pollutants shall be disseminated. Needs to maintain a log book for the participants/volunteers for each of the participatory/stewardship activities

MCM 3: Town shall maintain separate record keeping for dry weather screening and provide training on priority pollutants & IDDE program to public

MCM 5: required to maintain an inventory of the post construction control practices. Recommend to impose requirement for each applicant to maintain an O&M manual for post construction control practices.

MCM 6: shall maintain an inspection check list, O& M manual and training records for each of the facilities

Note: Salt storage in DPW should be properly managed

Chapter 13: Tracking Discharges To A Source

Once an illicit discharge is found, a combination of methods is used to isolate its specific source. This chapter describes the four investigation options that are introduced below.

Storm Drain Network Investigation

Field crews strategically inspect manholes within the storm drain network system to measure chemical or physical indicators that can isolate discharges to a specific segment of the network. Once the pipe segment has been identified, on-site investigations are used to find the specific discharge or improper connection.

Drainage Area Investigation

This method relies on an analysis of land use or other characteristics of the drainage area that is producing the illicit discharge. The investigation can be as simple as a “windshield” survey of the drainage area or a more complex mapping analysis of the storm drain network and potential generating sites. Drainage area investigations work best when prior indicator monitoring reveals strong clues as to the likely generating site producing the discharge.

On-site Investigation

On-site methods are used to trace the source of an illicit discharge in a pipe segment, and may involve dye, video or smoke testing within isolated segments of the storm drain network.

Septic System Investigation

Low-density residential watersheds may require special investigation methods if they are not served by sanitary sewers and/or

storm water is conveyed in ditches or swales. The major illicit discharges found in low-density development are failing septic systems and illegal dumping. Homeowner surveys, surface inspections and infrared photography have all been effectively used to find failing septic systems in low-density watersheds.

13.1 Storm Drain Network Investigations

This method involves progressive sampling at manholes in the storm drain network to narrow the discharge to an isolated pipe segment between two manholes. Field crews need to make two key decisions when conducting a storm drain network investigation—where to start sampling in the network and what indicators will be used to determine whether a manhole is considered clean or dirty.

Where to Sample in the Storm Drain Network

The field crew should decide how to attack the pipe network that contributes to a problem outfall. Three options can be used:

- Crews can work progressively up the trunk from the outfall and test manholes along the way.
- Crews can split the trunk into equal segments and test manholes at strategic junctions in the storm drain system.
- Crews can work progressively down from the upper parts of the storm drain network toward the problem outfall.

The decision to move up, split, or move down the trunk depends on the nature and land use of the contributing drainage area. Some guidance for making this decision is provided in Table 53. Each option requires different levels of advance preparation. Moving up the trunk can begin immediately when an illicit discharge is detected at the outfall, and only requires a map of the storm drain system. Splitting the trunk and moving down the system require a little more preparation to analyze the storm drain map to find the critical branches to strategically sample manholes. Accurate storm drain maps are needed for all three options. If good mapping is not available, dye tracing

can help identify manholes, pipes and junctions, and establish a new map of the storm drain network.

Option 1: Move up the Trunk

Moving up the trunk of the storm drain network is effective for illicit discharge problems in relatively small drainage areas. Field crews start with the manhole closest to the outfall, and progressively move up the network, inspecting manholes until indicators reveal that the discharge is no longer present (Figure 50). The goal is to isolate the discharge between two storm drain manholes.

Table 53: Methods to Attack the Storm Drain Network

Method	Nature of Investigation	Drainage System	Advance Prep Required
Follow the discharge up	Narrow source of an individual discharge	Small diameter outfall (< 36") Simple drainage network	No
Split into segments	Narrow source of a discharge identified at outfall	Large diameter outfall (> 36"), Complex drainage Logistical or traffic issues may make sampling difficult.	Yes
Move down the storm drain	Multiple types of pollution, many suspected problems – possibly due to old plumbing practices or number of NPDES permits	Very large drainage area (> one square mile).	Yes

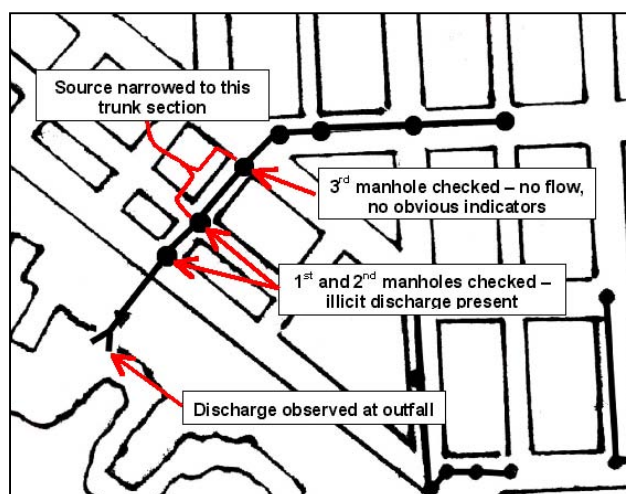


Figure 50: Example Investigation Following the Source up the Storm Drain System

Option 2: Split the storm drain network

When splitting the storm drain network, field crews select strategic manholes at junctions in the storm drain network to isolate discharges. This option is particularly suited in larger and more complex drainage areas since it can limit the total number of manholes to inspect, and it can avoid locations where access and traffic are problematic.

The method for splitting the trunk is as follows:

1. Review a map of the storm drain network leading to the suspect outfall.
2. Identify major contributing branches to the trunk. The trunk is defined as the largest diameter pipe in the storm drain network that leads directly to the outfall. The “branches” are networks of smaller pipes that contribute to the trunk.
3. Identify manholes to inspect at the farthest downstream node of each contributing branch and one immediately upstream (Figure 51).
4. Working up the network, investigate manholes on each contributing branch and trunk, until the source is narrowed to a specific section of the trunk or contributing branch.
5. Once the discharge is narrowed to a specific section of trunk, select the appropriate on-site investigation method to trace the exact source.

6. If narrowed to a contributing branch, move up or split the branch until a specific pipe segment is isolated, and commence the appropriate on-site investigation to determine the source.

Option 3: Move down the storm drain network

In this option, crews start by inspecting manholes at the “headwaters” of the storm drain network, and progressively move down pipe. This approach works best in very large drainage areas that have many potential continuous and/or intermittent discharges. The Boston Water and Sewer Commission has employed the headwater option to investigate intermittent discharges in complex drainage areas up to three square miles (Jewell, 2001). Field crews certify that each upstream branch of the storm drain network has no contributing discharges before moving down pipe to a “junction manhole” (Figure 52). If discharges are found, the crew performs dye testing to pinpoint the discharge. The crew then confirms that the discharge is removed before moving farther down the pipe network. Figure 53 presents a detailed flow chart that describes this option for analyzing the storm drain network.

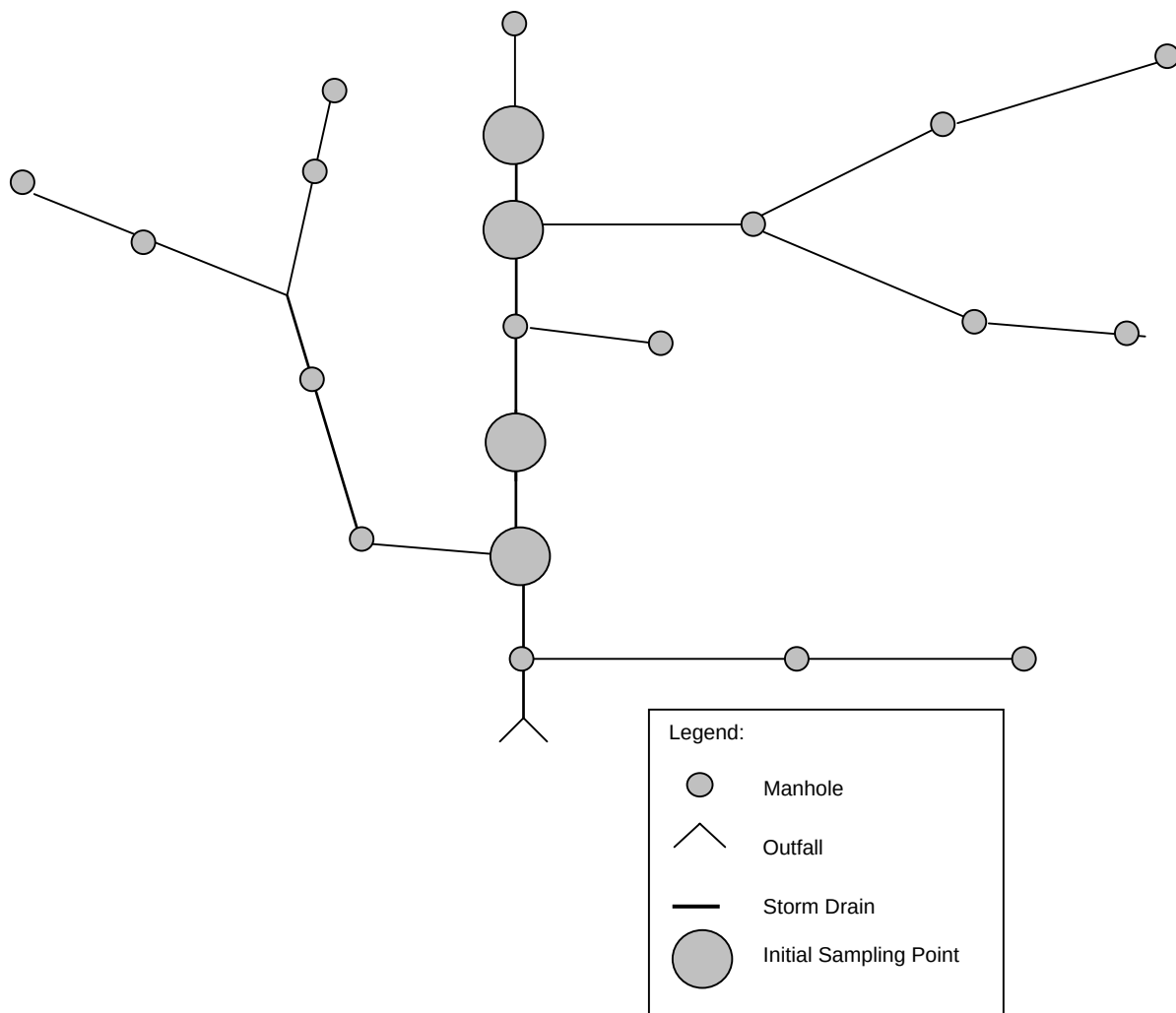


Figure 51: Key initial sampling points along the trunk of the storm drain

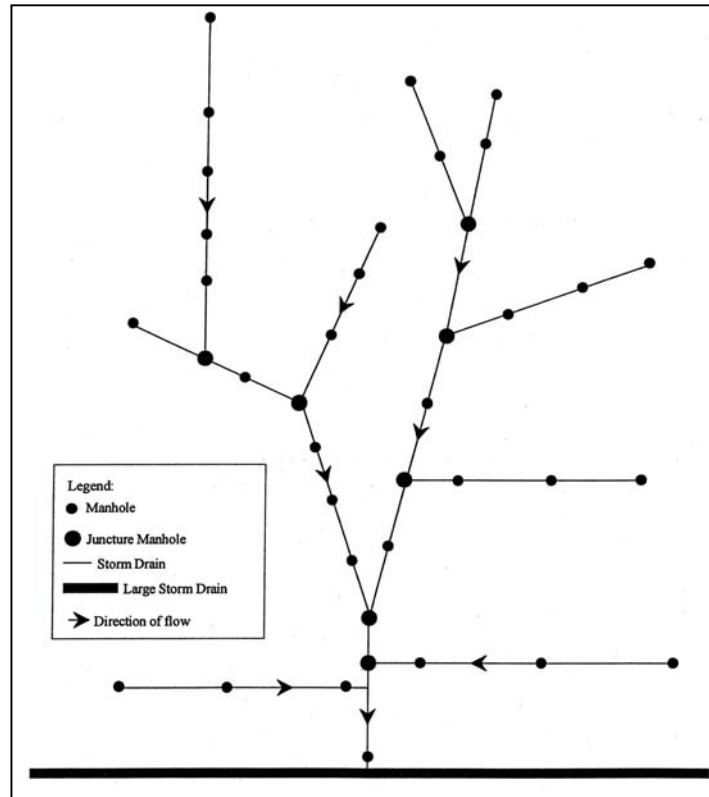


Figure 52: Storm Drain Schematic Identifying “Juncture Manholes” (Source: Jewell, 2001)

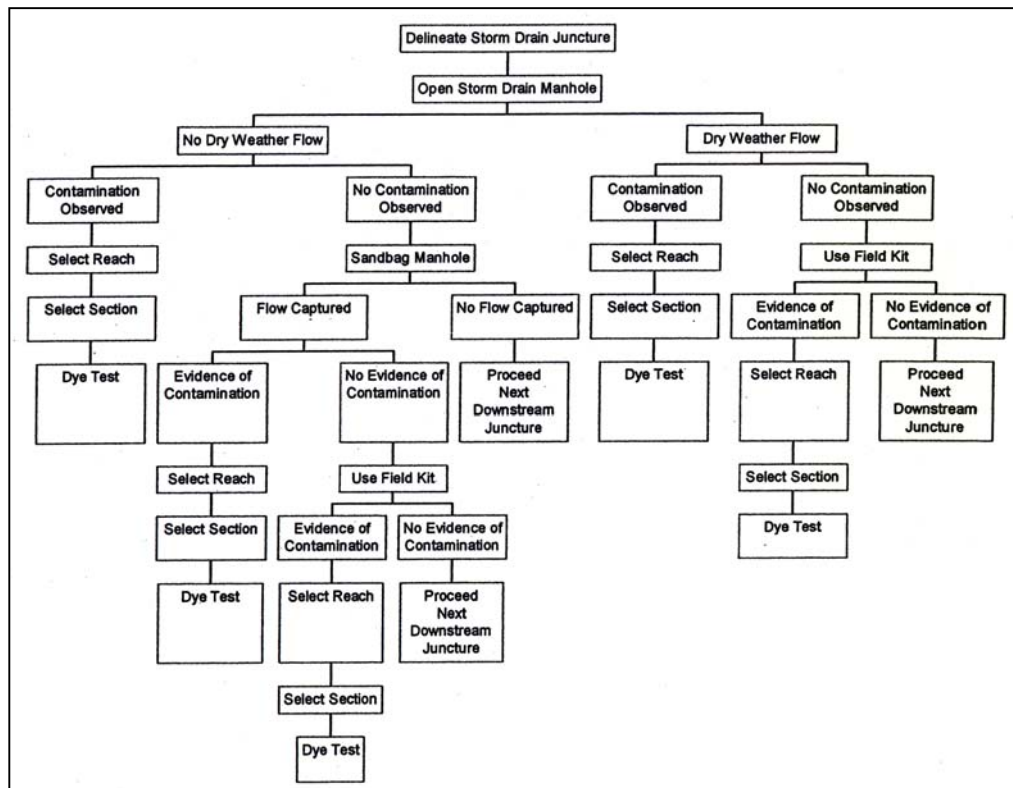


Figure 53: A Process for Following Discharges Down the Pipe (Source: Jewell, 2001)

Dye Testing to Create a Storm Drain Map

As noted earlier, storm drain network investigations are extremely difficult to perform if accurate storm drain maps are not available. In these situations, field crews may need to resort to dye testing to determine the flowpath within the storm drain network. Fluorescent dye is introduced into the storm drain network and suspected manholes are then inspected to trace the path of flow through the network (U.S. EPA, 1990). Two or three member crews are needed for dye testing. One person drops the dye into the trunk while the other(s) looks for evidence of the dye down pipe.

To conduct the investigation, a point of interest or down pipe “stopping point” is identified. Dye is then introduced into manholes upstream of the stopping point to determine if they are connected. The process continues in a systematic manner until an upstream manhole can no longer be determined, whereby a branch or trunk of the system can be defined, updated or corrected. More information on dye testing methods is provided in Section 13.3.

Manhole Inspection: Visual Observations and Indicator Sampling

Two primary methods are used to characterize discharges observed during manhole inspections—visual observations and indicator sampling. In both methods, field crews must first open the manhole to determine whether an illicit discharge is present. Manhole inspections require a crew of two and should be conducted during dry weather conditions.

Basic field equipment and safety procedures required for manhole inspections are outlined in Table 54. In particular, field

crews need to be careful about how they will safely divert traffic (Figure 54). Other safety considerations include proper lifting of manhole covers to reduce the potential for back injuries, and testing whether any toxic or flammable fumes exist within the manhole before the cover is removed. Wayne County, MI has developed some useful operational procedures for inspecting manholes, which are summarized in Table 55.

Table 54: Basic Field Equipment Checklist

• Camera and film or digital camera	• Storm drain, stream, and street maps
• Clipboards	• Reflective safety vests
• Field sheets	• Rubber / latex gloves
• Field vehicle	• Sledgehammer
• First aid kit	• Spray paint
• Flashlight or spotlight	• Tape measures
• Gas monitor and probe	• Traffic cones
• Manhole hook / crow bar	• Two-way radios
• Mirror	• Waterproof marker/pen
• Hand held global positioning satellite (GPS) system receiver (best resolution available within budget, at least 6' accuracy)	



Figure 54: Traffic cones divert traffic from manhole inspection area

Table 55: Field Procedure for Removal of Manhole Covers*(Adapted from: Pomeroy et al., 1996)***Field Procedures:**

1. Locate the manhole cover to be removed.
2. Divert road and foot traffic away from the manhole using traffic cones.
3. Use the tip of a crowbar to lift the manhole cover up high enough to insert the gas monitor probe. Take care to avoid creating a spark that could ignite explosive gases that may have accumulated under the lid. Follow procedures outlined for the gas monitor to test for accumulated gases.
4. If the gas monitor alarm sounds, close the manhole immediately. Do not attempt to open the manhole until some time is allowed for gases to dissipate.
5. If the gas monitor indicates the area is clear of hazards, remove the monitor probe and position the manhole hook under the flange. Remove the crowbar. Pull the lid off with the hook.
6. When testing is completed and the manhole is no longer needed, use the manhole hook to pull the cover back in place. Make sure the lid is settled in the flange securely.
7. Check the area to ensure that all equipment is removed from the area prior to leaving.

Safety Considerations:

1. Do not lift the manhole cover with your back muscles.
2. Wear steel-toed boots or safety shoes to protect feet from possible crushing injuries that could occur while handling manhole covers.
3. Do not move manhole covers with hands or fingers.
4. Wear safety vests or reflective clothing so that the field crew will be visible to traffic.
5. Manholes may only be entered by properly trained and equipped personnel and when all OSHA and local rules are followed.

Visual Observations During Manhole Inspection

Visual observations are used to observe conditions in the manhole and look for any signs of sewage or dry weather flow. Visual observations work best for obvious illicit discharges that are not masked by groundwater or other “clean” discharges, as shown in Figure 55. Typically, crews progressively inspect manholes in the storm

drain network to look for contaminated flows. Key visual observations that are made during manhole inspections include:

- Presence of flow
- Colors
- Odors
- Floatable materials
- Deposits or stains (intermittent flows)



Figure 55: Manhole observation (left) indicates a sewage discharge. Source is identified at an adjacent sewer manhole that overflowed into the storm drain system (right).

Indicator Sampling

If dry weather flow is observed in the manhole, the field crew can collect a sample by attaching a bucket or bottle to a tape measure/rope and lowering it into the manhole (Figure 56). The sample is then immediately analyzed in the field using probes or other tests to get fast results as to whether the flow is clean or dirty. The most common indicator parameter is ammonia, although other potential indicators are described in Chapter 12.

Manhole indicator data is analyzed by looking for “hits,” which are individual samples that exceed a benchmark concentration. In addition, trends in indicator concentrations are also examined throughout the storm drain network.



Figure 56: Techniques to Sample from the Storm Drain

Figure 57 profiles a storm drain network investigation that used ammonia as the indicator parameter and a benchmark concentration of 1.0 mg/L. At both the outfall and the first manhole up the trunk, field crews recorded finding “hits” for ammonia of 2.2 mg/L and 2.3 mg/L, respectively. Subsequent manhole inspections further up the network revealed one manhole with no flow, and a second with a hit for ammonia (2.4 mg/L). The crew then tracked the discharge upstream of the second manhole, and found a third manhole with a low ammonia reading (0.05 mg/L) and a fourth with a much higher reading (4.3 mg/L). The crew then redirected its effort to sample above the fourth manhole with the 4.3 mg/L concentration, only to find another low reading. Based on this pattern, the crew concluded the discharge source was located between these two manholes, as nothing else could explain this sudden increase in concentration over this length of pipe.

The results of storm drain network investigations should be systematically documented to guide future discharge investigations, and describe any infrastructure maintenance problems encountered. An example of a sample manhole inspection field log is displayed in Figure 58.

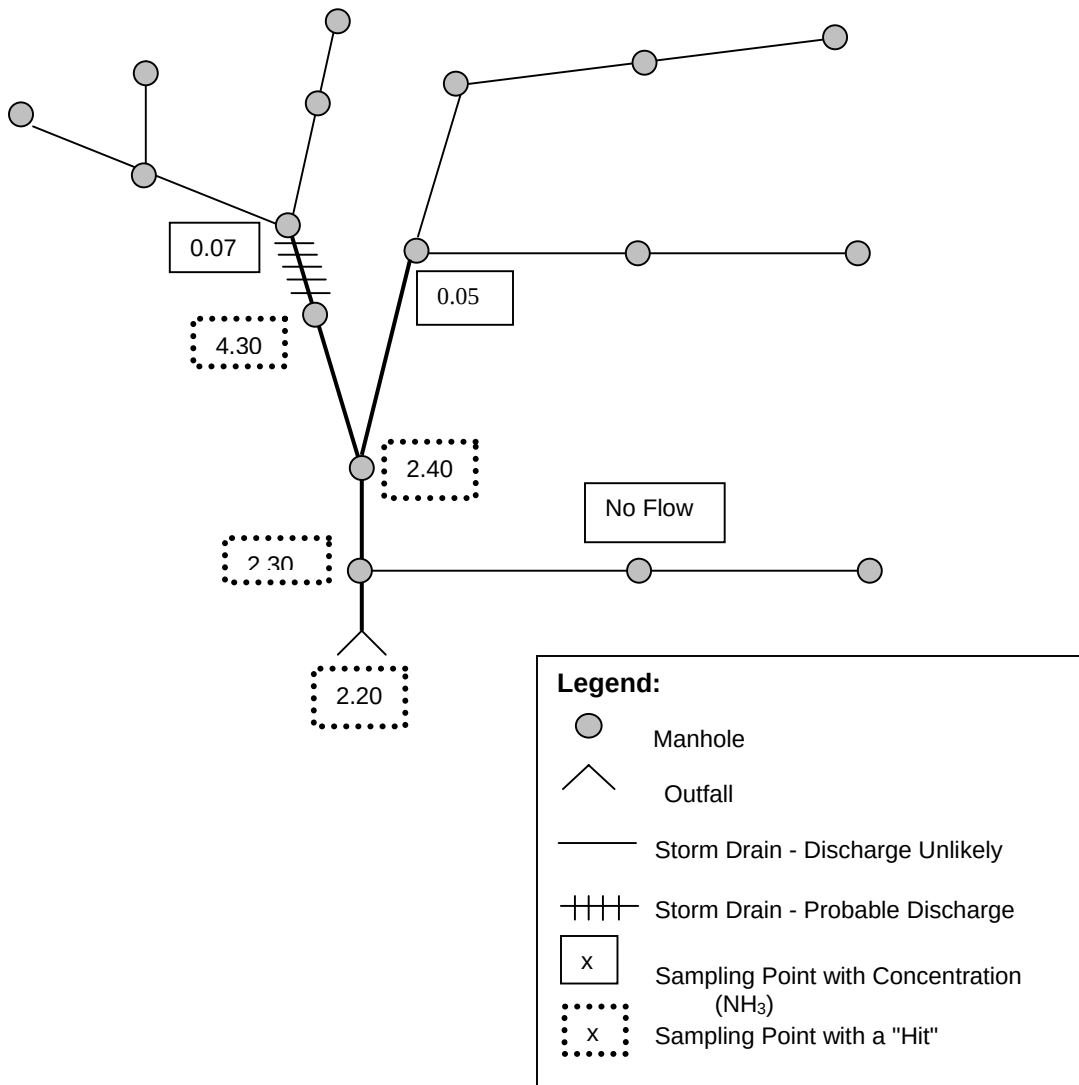


Figure 57: Use of Ammonia as a Trace Parameter to Identify an Illicit Discharge

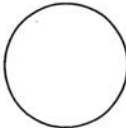
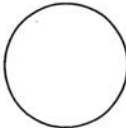
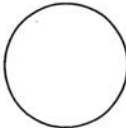
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Figure 58: Boston Water and Sewer Commission Manhole Inspection Log (Source: Jewell, 2001)

Methods to isolate intermittent discharges in the storm drain network

Intermittent discharges are often challenging to trace in the storm drain network, although four techniques have been used with some success.

Sandbags

This technique involves placement of sandbags or similar barriers within strategic manholes in the storm drain network to form a temporary dam that collects any intermittent flows that may occur. Any flow collected behind the sandbag is then assessed using visual observations or by indicator sampling. Sandbags are lowered on a rope through the manhole to form a dam along the bottom of the storm drain, taking care not to fully block the pipe (in case it rains before the sandbag is retrieved). Sandbags are typically installed at junctions in the network to eliminate contributing branches from further consideration (Figure 59). If no flow collects behind the sandbag, the upstream pipe network can be ruled out as a source of the intermittent discharge.

Sandbags are typically left in place for no more than 48 hours, and should only be installed when dry weather is forecast. Sandbags should not be left in place during a heavy rainstorm. They may cause a blockage in the storm drain, or, they may be washed downstream and lost. The biggest downside to sandbagging is that it requires at least two trips to each manhole.

Optical Brightener Monitoring (OBM)

Traps

Optical brightener monitoring (OBM) traps, profiled in Chapter 12, can also be used to detect intermittent flows at manhole junctions. When these absorbent pads are anchored in the pipe to capture dry weather flows, they can be used to determine the presence of flow and/or detergents. These OBM traps are frequently installed by lowering them into an open-grate drop inlet or storm drain inlet, as shown in Figure 60. The pads are then retrieved after 48 hours and are observed under a fluorescent light (this method is most reliable for undiluted washwaters).

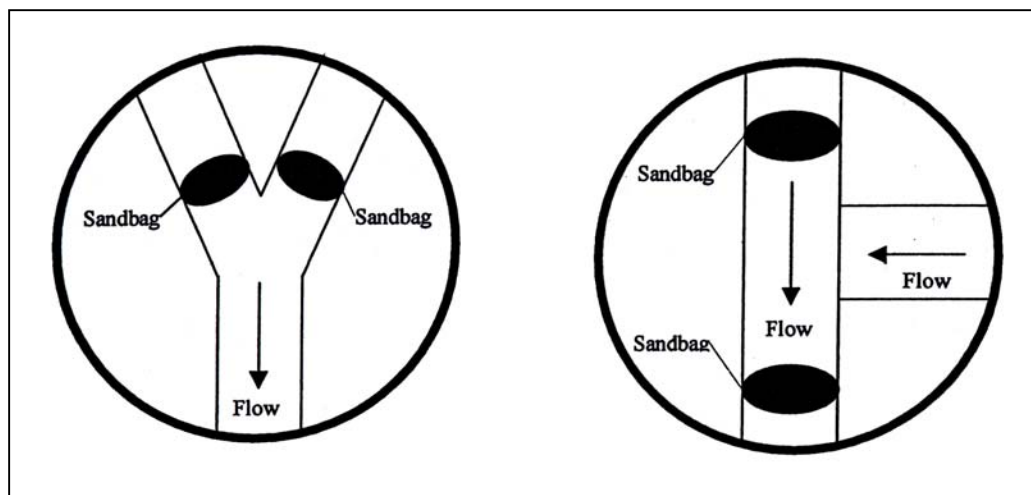


Figure 59: Example Sandbag Placement (Source: Jewell, 2001)



Figure 60: Optical Brightener Placement in the Storm Drain

(Source: Sargent and Castonguay, 1998)

Automatic Samplers

A few communities have installed automated samplers at strategic points within the storm drain network system that are triggered by small dry weather flows and collect water quality samples of intermittent discharges. Automated sampling can be extremely expensive, and is primarily used in very complex drainage areas that have severe intermittent discharge problems. Automated samplers can pinpoint the specific date and hours when discharges occur, and characterize its chemical composition, which can help crews fingerprint the generating source.

Observation of Deposits or Stains

Intermittent discharges often leave deposits or stains within the storm drain pipe or manhole after they have passed. Thus, crews should note whether any deposits or stains are present in the manhole, even if no dry weather flow is observed. In some cases, the origin of the discharge can be surmised by collecting indicator samples in the water ponded within the manhole sump. Stains and deposits, however, are not always a conclusive way to trace intermittent discharges in the storm drain network.

13.2 Drainage Area Investigations

The source of some illicit discharges can be determined through a survey or analysis of the drainage area of the problem outfall. The simplest approach is a rapid windshield survey of the drainage area to find the potential discharger or generating sites. A more sophisticated approach relies on an analysis of available GIS data and permit databases to identify industrial or other generating sites. In both cases, drainage area investigations are only effective if the discharge observed at an outfall has distinct or unique characteristics that allow crews to quickly ascertain the probable operation or business that is generating it. Often, discharges with a unique color, smell, or off-the-chart indicator sample reading may point to a specific industrial or commercial source. Drainage area investigations are not helpful in tracing sewage discharges, since they are often not always related to specific land uses or generating sites.

Rapid Windshield Survey

A rapid drive-by survey works well in small drainage areas, particularly if field crews are already familiar with its business operations. Field crews try to match the characteristics of the discharge to the most likely type of generating site, and then inspect all of the sites of the same type within the drainage area until the culprit is found. For example, if fuel is observed at an outfall, crews might quickly check every business operation in the catchment that stores or dispenses fuel. Another example is illustrated in Figure 61 where extremely dense algal growth was observed in a small stream during the winter. Field crews were aware of a fertilizer storage site in the drainage area, and a quick inspection identified it as the culprit.



Figure 61: Symptom (left): Extreme algal growth; Diagnosis (right): Cracked fertilizer storage is the phosphorus source

A third example of the windshield survey approach is shown in Figure 62, where a very thick, sudsy and fragrant discharge was noted at a small outfall. The discharge appeared to consist of wash water, and the only commercial laundromat found upstream was confirmed to be the source. On-site testing may still be needed to identify the specific plumbing or connection generating the discharge.

Detailed Drainage Area Investigations

In larger or more complex drainage areas, GIS data can be analyzed to pinpoint the source of a discharge. If only general land use data exist, maps can at least highlight suspected industrial areas. If more detailed SIC code data are available digitally, the GIS can be used to pull up specific hotspot

operations or generating sites that could be potential dischargers. Some of the key discharge indicators that are associated with hotspots and specific industries are reviewed in Appendix K.

13.3 On-site Investigations

On-site investigations are used to pinpoint the exact source or connection producing a discharge within the storm drain network. The three basic approaches are dye, video and smoke testing. While each approach can determine the actual source of a discharge, each needs to be applied under the right conditions and test limitations (see Table 56). It should be noted that on-site investigations are not particularly effective in finding *indirect* discharges to the storm drain network.



Figure 62: The sudsy, fragrant discharge (left) indicates that the laundromat is the more likely culprit than the florist (right).

Table 56: Techniques to Locate the Discharge		
Technique	Best Applications	Limitations
Dye Testing	- Discharge limited to a very small drainage area (<10 properties is ideal) - Discharge probably caused by a connection from an individual property - Commercial or industrial land use	May be difficult to gain access to some properties
Video Testing	- Continuous discharges - Discharge limited to a single pipe segment - Communities who own equipment for other investigations	- Relatively expensive equipment - Cannot capture non-flowing discharges - Often cannot capture discharges from pipes submerged in the storm drain
Smoke Testing	- Cross-connection with the sanitary sewer - Identifying other underground sources (e.g., leaking storage techniques) caused by damage to the storm drain	- Poor notification to public can cause alarm - Cannot detect all illicit discharges

TIP

The Wayne County Department of the Environment provides excellent training materials on on-site investigations, as well as other illicit discharge techniques. More information about this training can be accessed from their website:
[Http://www.wcdoe.org/Watershed/Programs/Srvcs/IDEP/idep.htm](http://www.wcdoe.org/Watershed/Programs/Srvcs/IDEP/idep.htm).



Figure 63: Dye Testing Plumbing (NIWPC, 2003)

Dye Testing

Dye testing is an excellent indicator of illicit connections and is conducted by introducing non-toxic dye into toilets, sinks, shop drains and other plumbing fixtures (see Figure 63). The discovery of dye in the storm drain, rather than the sanitary sewer, conclusively determines that the illicit connection exists.

Before commencing dye tests, crews should review storm drain and sewer maps to identify lateral sewer connections and how they can be accessed. In addition, property owners must be notified to obtain entry permission. For industrial or commercial properties, crews should carry a letter to

document their legal authority to gain access to the property. If time permits, the letter can be sent in advance of the dye testing. For residential properties, communication can be more challenging. Unlike commercial properties, crews are not guaranteed access to homes, and should call ahead to ensure that the owner will be home on the day of testing.

Communication with other local agencies is also important since any dye released to the storm drain could be mistaken for a spill or pollution episode. To avoid a costly and embarrassing response to a false alarm,

crews should contact key spill response agencies using a “quick fax” that describes when and where dye testing is occurring (Tuomari and Thomson, 2002). In addition, crews should carry a list of phone numbers to call spill response agencies in the event dye is released to a stream.

At least two staff are needed to conduct dye tests – one to flush dye down the plumbing fixtures and one to look for dye in the downstream manhole(s). In some cases,

three staff may be preferred, with two staff entering the private residence or building for both safety and liability purposes.

The basic equipment to conduct dye tests is listed in Table 57 and is not highly specialized. Often, the key choice is the type of dye to use for testing. Several options are profiled in Table 58. In most cases, liquid dye is used, although solid dye tablets can also be placed in a mesh bag and lowered into the manhole on a rope (Figure 64).

Table 57: Key Field Equipment for Dye Testing

(Source: Wayne County, MI, 2000)

Maps, Documents

- Sewer and storm drain maps (sufficient detail to locate manholes)
- Site plan and building diagram
- Letter describing the investigation
- Identification (e.g., badge or ID card)
- Educational materials (to supplement pollution prevention efforts)
- List of agencies to contact if the dye discharges to a stream.
- Name of contact at the facility

Equipment to Find and Lift the Manhole Safely (small manhole often in a lawn)

- Probe
- Metal detector
- Crow bar
- Safety equipment (hard hats, eye protection, gloves, safety vests, steel-toed boots, traffic control equipment, protective clothing, gas monitor)

Equipment for Actual Dye Testing and Communications

- 2-way radio
- Dye (liquid or “test strips”)
- High powered lamps or flashlights
- Water hoses
- Camera



Figure 64: Dye in a mesh bag is placed into an upstream manhole (left); Dye observed at a downstream manhole traces the path of the storm drain (right)

If a longer pipe network is being tested, and dye is not expected to appear for several hours, charcoal packets can be used to detect the dye (GCHD, 2002). Charcoal packets can be secured and left in place for a week or two, and then analyzed for the presence of dye. Instructions for using charcoal packets in dye testing can be accessed at the following website:

<http://bayinfo.tamug.tamu.edu/gbeppubs/ms4.pdf>.

The basic drill for dye tests consists of three simple steps. First, flush or wash dye down the drain, fixture or manhole. Second, pop open downgradient sanitary sewer manholes and check to see if any dye appears. If none is detected in the sewer manhole after an hour or so, check downgradient storm drain manholes or outfalls for the presence of dye. Although dye testing is fairly straightforward, some tips to make testing go more smoothly are offered in Table 59.

Table 58: Dye Testing Options	
Product	Applications
Dye Tablets	• Compressed powder, useful for releasing dye over time • Less messy than powder form • Easy to handle, no mess, quick dissolve • Flow mapping and tracing in storm and sewer drains • Plumbing system tracing • Septic system analysis • Leak detection
Liquid Concentrate	• Very concentrated, disperses quickly • Works well in all volumes of flow • Recommended when metering of input is required • Flow mapping and tracing in storm and sewer drains • Plumbing system tracing • Septic system analysis • Leak detection
Dye Strips	• Similar to liquid but less messy
Powder	• Can be very messy and must dissolve in liquid to reach full potential • Recommended for very small applications or for very large applications where liquid is undesirable • Leak detection
Dye Wax Cakes	• Recommended for moderate-sized bodies of water • Flow mapping and tracing in storm and sewer drains
Dye Wax Donuts	• Recommended for large sized bodies of water (lakes, rivers, ponds) • Flow mapping and tracing in storm and sewer drains • Leak detection

Table 59: Tips for Successful Dye Testing
(Adapted from Tuomari and Thompson, 2002)

Dye Selection

- Green and liquid dyes are the easiest to see.
- Dye test strips can be a good alternative for residential or some commercial applications. (Liquid can leave a permanent stain).
- Check the sanitary sewer before using dyes to get a “base color.” In some cases, (e.g., a print shop with a permitted discharge to the sanitary sewer), the sewage may have an existing color that would mask a dye.
- Choose two dye colors, and alternate between them when testing multiple fixtures.

Selecting Fixtures to Test

- Check the plumbing plan for the site to isolate fixtures that are separately connected.
- For industrial facilities, check most floor drains (these are often misdirected).
- For plumbing fixtures, test a representative fixture (e.g., a bathroom sink).
- Test some locations separately (e.g., washing machines and floor drains), which may be misdirected.
- If conducting dye investigations on multiple floors, start from the basement and work your way up.
- At all fixtures, make sure to flush with plenty of water to ensure that the dye moves through the system.

Selecting a Sewer Manhole for Observations

- Pick the closest manhole possible to make observations (typically a sewer lateral).
- If this is not possible, choose the nearest downstream manhole.

Communications Between Crew Members

- The individual conducting the dye testing calls in to the field person to report the color dye used, and when it is dropped into the system.
- The field person then calls back when dye is observed in the manhole.
- If dye is not observed (e.g., after two separate flushes have occurred), dye testing is halted until the dye appears.

Locating Missing Dye

- The investigation is not complete until the dye is found. Some reasons for dye not appearing include:
- The building is actually hooked up to a septic system.
- The sewer line is clogged.
- There is a leak in the sewer line or lateral pipe.

Video Testing

Video testing works by guiding a mobile video camera through the storm drain pipe to locate the actual connection producing an illicit discharge. Video testing shows flows and leaks within the pipe that may indicate an illicit discharge, and can show cracks and other pipe damage that enable sewage or contaminated water to flow into the storm drain pipe.

Video testing is useful when access to properties is constrained, such as residential neighborhoods. Video testing can also be expensive, unless the community already owns and uses the equipment for sewer inspections. This technique will not detect all types of discharges, particularly when the illicit connection is not flowing at the time of the video survey.

Different types of video camera equipment are used, depending on the diameter and condition of the storm sewer being tested.

Field crews should review storm drain maps, and preferably visit the site before selecting the video equipment for the test. A field visit helps determine the camera size needed to fit into the pipe, and if the storm drain has standing water.

In addition to standard safety equipment required for all manhole inspections, video testing requires a Closed-Circuit Television (CCTV) and supporting items. Many commercially available camera systems are specifically adapted to televise storm sewers, ranging from large truck or van-mounted systems to much smaller portable cameras. Cameras can be self-propelled or towed. Some specifications to look for include:

- The camera should be capable of radial view for inspection of the top, bottom, and sides of the pipe and for looking up lateral connections.
- The camera should be color.
- Lighting should be supplied by a lamp on the camera that can light the entire periphery of the pipe.

When inspecting the storm sewer, the CCTV is oriented to keep the lens as close as possible to the center of the pipe. The camera can be self-propelled through the pipe using a tractor or crawler unit or it may be towed through on a skid unit (see Figures 65

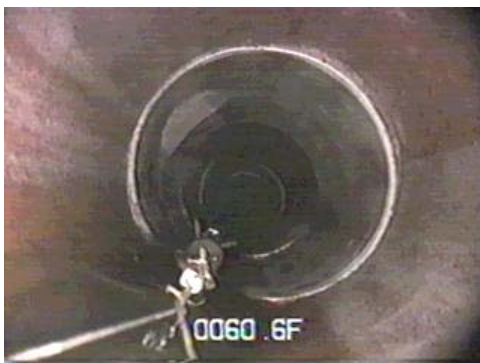


Figure 65: Camera being towed

and 66). If the storm drain has ponded water, the camera should be attached to a raft, which floats through the storm sewer from one manhole to the next. To see details of the sewer, the camera and lights should be able to swivel both horizontally and vertically. A video record of the inspection should be made for future reference and repairs (see Figure 67).

Smoke Testing

Smoke testing is another “bottom up” approach to isolate illicit discharges. It works by introducing smoke into the storm drain system and observing where the smoke surfaces. The use of smoke testing to detect illicit discharges is a relatively new application, although many communities have used it to check for infiltration and inflow into their sanitary sewer network. Smoke testing can find improper connections, or damage to the storm drain



Figure 66: Tractor-mounted Camera



Figure 67: Review of an Inspection Video

system (Figure 68). This technique works best when the discharge is confined to the upper reaches of the storm drain network, where pipe diameters are too small for video testing and gaining access to multiple properties renders dye testing infeasible.

Notifying the public about the date and purpose of smoke testing before starting is critical. The smoke used is non-toxic, but can cause respiratory irritation, which can be a problem for some residents. Residents should be notified at least two weeks prior to testing, and should be provided the following information (Hurco Technologies, Inc., 2003):

- Date testing will occur
- Reason for smoke testing
- Precautions they can take to prevent smoke from entering their homes or businesses
- What they need to do if smoke enters their home or business, and any health concerns associated with the smoke
- A number residents can call to relay any particular health concerns (e.g., chronic respiratory problems)

Program managers should also notify local media to get the word out if extensive smoke testing is planned (e.g., television,

newspaper, and radio). On the actual day of testing, local fire, police departments and 911 call centers should be notified to handle any calls from the public (Hurco Technologies, Inc., 2003).

The basic equipment needed for smoke testing includes manhole safety equipment, a smoke source, smoke blower, and sewer plugs. Two smoke sources can be used for smoke testing. The first is a smoke “bomb,” or “candle” that burns at a controlled rate and releases very white smoke visible at relatively low concentrations (Figure 69). Smoke bombs are suspended beneath a blower in a manhole. Candles are available in 30 second to three minute sizes. Once opened, smoke bombs should be kept in a dry location and should be used within one year.

The second smoke source is liquid smoke, which is a petroleum-based product that is injected into the hot exhaust of a blower where it is heated and vaporized (Figure 70). The length of smoke production can vary depending on the length of the pipe being tested. In general, liquid smoke is not as consistently visible and does not travel as far as smoke from bombs (USA Blue Book).

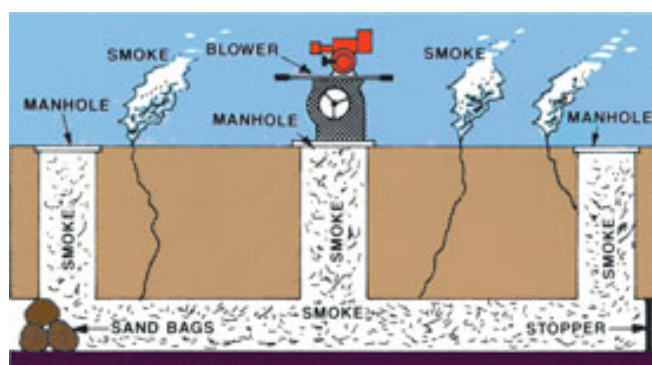


Figure 68: Smoke Testing System Schematic



Figure 69: Smoke Candles



Figure 70: Smoke Blower

Smoke blowers provide a high volume of air that forces smoke through the storm drain pipe. Two types of blowers are commonly used: “squirrel cage” blowers and direct-drive propeller blowers. Squirrel cage blowers are large and may weigh more than 100 pounds, but allow the operator to generate more controlled smoke output. Direct-drive propeller blowers are considerably lighter and more compact, which allows for easier transport and positioning.

Three basic steps are involved in smoke testing. First, the storm drain is sealed off by plugging storm drain inlets. Next, the smoke is released and forced by the blower through the storm drain system. Lastly, the crew looks for any escape of smoke above-ground to find potential leaks.

One of three methods can be used to seal off the storm drain. Sandbags can be lowered into place with a rope from the street surface. Alternatively, beach balls that have a diameter slightly larger than the drain can be inserted into the pipe. The beach ball is then placed in a mesh bag with a rope attached to it so it can be secured and retrieved. If the beach ball gets stuck in the pipe, it can simply be punctured, deflated and removed. Finally, expandable plugs are

available, and may be inserted from the ground surface.

Blowers should be set up next to the open manhole after the smoke is started. Only one manhole is tested at a time. If smoke candles are used, crews simply light the candle, place it in a bucket, and lower it in the manhole. The crew then watches to see where smoke escapes from the pipe. The two most common situations that indicate an illicit discharge are when smoke is seen rising from internal plumbing fixtures (typically reported by residents) or from sewer vents (Figure 71). Sewer vents extend upward from the sewer lateral to release gas buildup, and are not supposed to be connected to the storm drain system.



Figure 71: Smoke Rising from Sewer Vent

13.4 Septic System Investigations

The techniques for tracing illicit discharges are different in rural or low-density residential watersheds. Often, these watersheds lack sanitary sewer service and storm water is conveyed through ditches or swales, rather than enclosed pipes. Consequently, many illicit discharges enter the stream as indirect discharges, through surface breakouts of septic fields or through

straight pipe discharges from bypassed septic systems.

The two broad techniques used to find individual septic systems -- on-site investigations and infrared imagery -- are described in this section.

On-Site Septic Investigations

Three kinds of on-site investigations can be performed at individual properties to determine if the septic system is failing, including homeowner survey, surface condition analysis and a detailed system inspection. The first two investigations are rapid and relatively simple assessments typically conducted in targeted watershed areas. Detailed system inspections are a much more thorough investigation of the functioning of the septic system that is conducted by a certified professional. Detailed system inspections may occur at time of sale of a property, or be triggered by poor scores on the rapid homeowner survey or surface condition analysis.

Homeowner Survey

The homeowner survey consists of a brief interview with the property owner to determine the potential for current or future failure of the septic system, and is often done in conjunction with a surface condition analysis.

Table 60 highlights some common questions to ask in the survey, which inquire about resident behaviors, system performance and maintenance activity.

Surface Condition Analysis

The surface condition analysis is a rapid site assessment where field crews look for obvious indicators that point to current or potential production of illicit discharges by the septic system (Figure 72). Some of the key surface conditions to analyze have been described by Andrews *et al.*, (1997) and are described below:

- Foul odors in the yard
- Wet, spongy ground; lush plant growth; or burnt grass near the drain field
- Algal blooms or excessive weed growth in adjacent ditches, ponds and streams
- Shrubs or trees with root damage within 10 feet of the system
- Cars, boats, or other heavy objects located over the field that could crush lateral pipes
- Storm water flowing over the drain field
- Cave-ins or exposed system components
- Visible liquid on the surface of the drain field (e.g., surface breakouts)
- Obvious system bypasses (e.g., straight pipe discharges)

Table 60: Septic System Homeowner Survey Questions
(Adapted from Andrews *et al.*, 1997 and Holmes Inspection Services)

- | |
|---|
| <ul style="list-style-type: none"> • How many people live in the house?¹ • What is the septic tank capacity?² • Do drains in the house empty slowly or not at all? • When was the last time the system was inspected or maintained? • Does sewage back up into the house through drain lines? • Are there any wet, smelly spots in the yard? • Is the septic tank effluent piped so it drains to a road ditch, a storm sewer, a stream, or is it connected to a farm drain tile? |
|---|

¹ Water usage ranges from 50 to 100 gallons per day per person. This information can be used to estimate the wastewater load from the house (Andrews *et al.*, 1997).

² The septic tank should be large enough to hold two days' worth of wastewater (Andrews *et al.*, 1997).



Figure 72: (a) Wet, spongy ground. Grass may be bright green or burnt due to high nutrient loading. (b) Straight pipe discharge to nearby stream. (c) Algal bloom in a nearby pond.

(Sources: a- Anish Jantrania; b- Snohomish County, WA c- King County, WA)

Detailed System Inspection

The detailed system inspection is a much more thorough inspection of the performance and function of the septic system, and must be completed by a certified professional. The inspector certifies the structural integrity of all components of the system, and checks the depth of solids in the septic tank to determine if the system needs to be pumped out. The inspector also sketches the system, and estimates distance to groundwater, surface water, and drinking water sources. An example septic system inspection form from Massachusetts can be found at

<http://www.state.ma.us/dep/brp/wwm/soilsys.htm>.

Although not always incorporated into the inspection, dye testing can sometimes point to leaks from broken pipes, or direct discharges through straight pipes that might be missed during routine inspection. Dye can be introduced into plumbing fixtures in the home, and flushed with sufficient running water. The inspector then watches the septic field, nearby ditches, watercourses and manholes for any signs of the dye (Figure 73). The dye may take several hours to appear, so crews may want to place charcoal packets in adjacent waters to capture dye until they can return later to retrieve them.



Figure 73: Dye surfacing in a septic field

Infrared Imagery

Infrared imagery is a special type of photography with gray or color scales that represent differences in temperature and emissivity of objects in the image (www.stocktoninfrared.com), and can be used to locate sewage discharges. Several different infrared imagery techniques can be used to identify illicit discharges. The following discussion highlights two of these: aerial infrared thermography¹³ and color infrared aerial photography.

Infrared Thermography

Infrared thermography is increasingly being used to detect illicit discharges and failing septic systems. The technique uses the

¹³ Infrared thermography is also being used by communities such as Mecklenburg County and the City of Charlotte in NC to detect illicit discharges at outfalls.

temperature difference of sewage as a marker to locate these illicit discharges. Figure 74 illustrates the thermal difference between an outfall discharge (with a higher temperature) and a stream.

The equipment needed to conduct aerial infrared thermography includes an aircraft (plane or helicopter); a high-resolution, large format, infrared camera with appropriate mount; a GPS unit; and digital recording equipment. If a plane is used, a higher resolution camera is required since it must operate at higher altitudes. Pilots should be experienced since flights take place at night, slowly, and at a low altitude. The camera may be handheld, but a mounted camera will provide significantly clearer results for a larger area. The GPS can be combined with a mobile mapping program and a video encoder-decoder that encodes and displays the coordinates, date, and time (Stockton, 2000). The infrared data are analyzed after the flight by trained analysts to locate suspected discharges, and field crews then inspect the ground-truthed sites to confirm the presence of a failing septic system.

Late fall, winter, and early spring are typically the best times of year to conduct these investigations in most regions of the country. This allows for a bigger difference



Figure 74: Aerial Thermography Showing Sewage Leak

between receiving water and discharge temperatures, and interference from vegetation is minimized (Stockton, 2004b). In addition, flights should take place at night to minimize reflected and direct daylight solar radiation that may adversely affect the imagery (Stockton, 2004b).

Color Infrared Aerial Photography

Color infrared aerial photography looks for changes in plant growth, differences in soil moisture content, and the presence of standing water on the ground to primarily identify failing septic systems (Figure 75).

The Tennessee Valley Authority (TVA) uses color infrared aerial photography to detect failing septic systems in reservoir watersheds. Local health departments conduct follow-up ground-truthing surveys to determine if a system is actually failing (Sagona, 1986). Similar to thermography, it is recommended that flights take place at night, during leaf-off conditions, or when the water table is at a seasonal high (which is when most failures typically occur (U.S. EPA, 1999)).



Figure 75: Dead vegetation and surface effluent are evidence of a septic system surface failure.
(Source: U.S. EPA, 1999)

13.5 The Cost to Trace Illicit Discharge Sources

Tracing illicit discharges to their source can be an elusive and complex process, and precise staffing and budget data are difficult to estimate. Experience of Phase I NPDES communities that have done these investigations in the past can shed some light on cost estimates. Some details on unit costs for common illicit discharge investigations are provided below.

Costs for Dye, Video, and Smoke Testing

The cost of smoke, dye, and video testing can be substantial and staff intensive, and often depend on investigation specific factors, such as the complexity of the drainage network, density and age of buildings, and complexity of land use. Wayne County, MI, has estimated the cost of dye testing at \$900 per facility. Video testing costs range from \$1.50 to \$2.00 per foot, although this increases by \$1.00 per foot if pipe cleaning is needed prior to testing.

Table 61 summarizes the costs of start-up equipment for basic manhole entry and inspection, which is needed regardless of which type of test is performed. Tables 62 through 64 provide specific equipment costs for dye, video and smoke testing, respectively.

Table 61: Common Field Equipment Needed for Dye, Video, and Smoke Testing	
Item	Cost
1 Digital Camera	\$200
Clipboards, Pens, Batteries	\$25
1 Field vehicle	\$15,000 - \$35,000
1 First aid kit	\$30
1 Spotlight	\$40
1 Gas monitor and probe	\$900 - \$2,100
1 Hand-held GPS Unit	\$150
2 Two-way radios	\$250 - \$750
1 Manhole hook	\$80 - \$130
1 Mirror	\$70 - \$130
2 Reflective safety vests	\$40
Rubber/latex gloves (box of 100)	\$25
1 Can of Spray Paint	\$5
4 Traffic Cones	\$50

Table 62: Equipment Costs for Dye Testing

Product	Water Volume	Cost
Dye Strips	1 strip / 500 gallons	\$75 - \$94 per 100 strips
Dye Tablets	0 – 50,000 gallons	\$40 per 200 tablets
Liquid Concentrate (Rhodamine WT)	0 – 50,000 gallons	\$80 - \$90 per gallon \$15 - \$20 per pint
Powder	50,000 + gallons	\$77 per lb
Dye Wax Cakes	20,000 – 50,000 gallons	\$12 per one 1.25 ounce cake
Dye Wax Donuts	50,000 + gallons	\$104 - \$132 per 42 oz. donut
Price Sources: Aquatic Eco-Systems http://www.aquaticeco.com/ Cole Parmer http://www.coleparmer.com USA Blue Book http://www.usabluebook.com		

Table 63: Equipment Costs for Video Testing

Equipment	Cost
GEN-EYE 2™ B&W Sewer Camera with VCR & 200' Push Cable	\$5,800
100' Push Rod and Reel Camera for 2" – 10" Pipes	\$5,300
200' Push Rod and Reel Camera for 8" – 24" Pipes	\$5,800
Custom Saturn III Inspection System 500' cable for 6-16" Lines	\$32,000 (\$33,000 with 1000 foot cable)
OUTPOST - Box with build-out - Generator - Washdown system	\$6,000 \$2,000 \$1,000
Video Inspection Trailer 7'x10' trailer & build-out - Hardware and software package - Incidentals	\$18,500 \$15,000 \$5,000
Sprinter Chassis Inspection Vehicle - Van (with build-out for inspecting 6" – 24" pipes) - Crawler (needed to inspect pipes >24") - Software upgrade (optional but helpful for extensive pipe systems)	\$130,000 \$18,000 \$8,000
Sources: USA Blue Book and Envirotech	

Table 64: Equipment Costs for Smoke Testing

Equipment	Cost
Smoke Blower	\$1,000 to \$2,000 each
Liquid Smoke	\$38 to \$45 per gallon
Smoke Candles, 30 second (4,000 cubic feet)	\$27.50 per dozen
Smoke Candles, 60 Second (8,000 cubic feet)	\$30.50 per dozen
Smoke Candles, 3 Minute (40,000 cubic feet)	\$60.00 per dozen
Sources: Hurco Tech, 2003 and Cherne Industries, 2003	

Costs for Septic System Investigations

Most septic system investigations are relatively low cost, but factors such as private property access, notification, and the total number of sites investigated can increase costs. Unit costs for the three major septic system investigations are described below.

Homeowner Survey and Surface Condition Analysis

Both the homeowner survey and the surface condition analysis are relatively low cost investigation techniques. Assuming that a staff person can investigate one home per hour, the average cost per inspection is approximately \$25. A substantial cost savings can be realized by using interns or volunteers to conduct these simple investigations.

Detailed System Inspection

Septic system inspections are more expensive, but a typical unit cost is about \$250, and may also include an additional cost of pumping the system, at roughly \$150, if pumping is required to complete the inspection (Wayne County, 2003). This cost is typically charged to the homeowner as part of a home inspection.

Aerial Infrared Thermography

The equipment needed to conduct aerial infrared thermography is expensive; cameras alone may range from \$250,000 to \$500,000 (Stockton, 2004a). However, private contractors provide this service. In general, the cost to contract an aerial infrared thermography investigation depends on the length of the flight (flights typically follow streams or rivers); how difficult it will be to fly the route; the number of heat anomalies expected to be encountered; the expected post-flight processing time (typically, four to five hours of analysis for every hour flown); and the distance of the site from the plane's "home" (Stockton, 2004a). The cost range is typically \$150 to \$400 per mile of stream or river flown, which includes the flight and post-flight analyses (Stockton, 2004a).

As an alternative, local police departments may already own an infrared imaging system that may be used. For instance, the Arkansas Department of Health used a state police helicopter with a Forward Looking Infrared (FLIR) imaging system, GPS, video equipment, and maps (Eddy, 2000). The disadvantage to this is that the equipment may not be available at optimal times to conduct the investigation. In addition, infrared imaging equipment used by police departments may not be sensitive enough to detect the narrow range of temperature difference (only a few degrees) often expected for sewage flows (Stockton, 2004a).