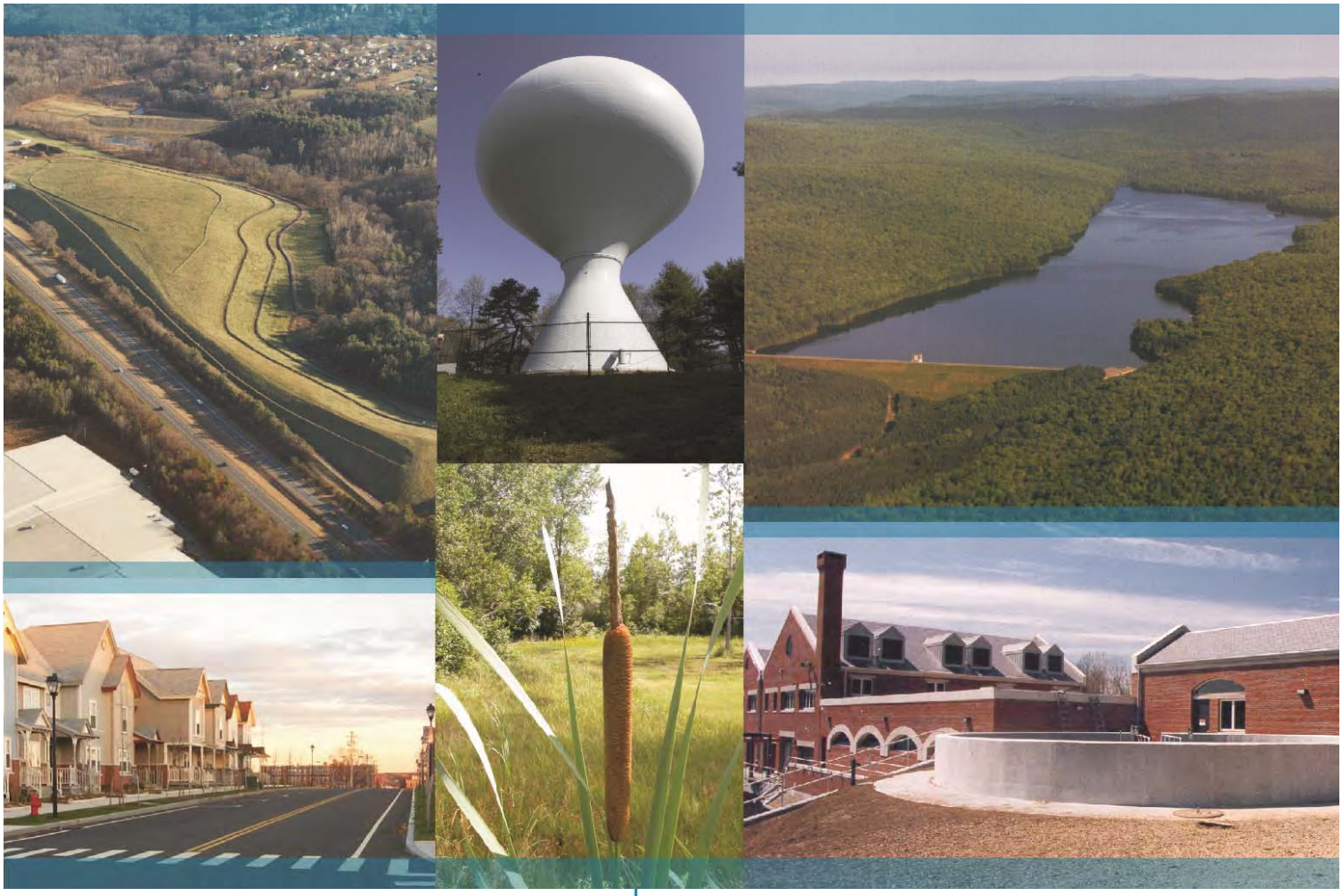

Tighe&Bond

NPDES Phase 2 Stormwater Management Plan

Prepared For:

Town of Trumbull
Trumbull, Connecticut

October 18, 2012

Section 1
Introduction

1.1 Program Background

In 1990, the United States Environmental Protection Agency (EPA) promulgated Phase I of its municipal stormwater program under the authority of the Clean Water Act (CWA). Phase I utilized National Pollutant Discharge Elimination System (NPDES) permit coverage to address stormwater runoff from large municipal separate storm sewer systems (MS4s) that served urbanized areas.

The Stormwater Phase II Final Rule promulgated on December 8, 1999 requires MS4 operators in smaller urbanized areas to implement programs and practices aimed at controlling polluted stormwater runoff through the NPDES permit program.

The EPA defines urbanized areas (UA) as "land comprising one or more places – central place(s) – and the adjacent densely settled surrounding area – urban fringe – that together have a residential population of at least 50,000 and an overall population density of at least 1,000 people per square mile". Based upon this criteria, the Town of Trumbull is located entirely within an urbanized area.

The program requires Phase II municipalities to develop a stormwater management plan outlining how the municipality intends to address the six minimum control measures set forth by EPA:

- Public Education and Outreach
- Public Involvement/Participation
- Illicit Discharge Detection and Elimination
- Construction Site Stormwater Runoff Control
- Post-Construction Stormwater Management in New Development and Redevelopment
- Pollution Prevention/Good Housekeeping for Municipal Operations

1.2 Statewide General Permit

The Connecticut Department of Energy and Environmental Protection (CTDEEP) administers NPDES permitting in Connecticut and has issued a General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4). Most municipalities in the state are required to register for the MS4 permit since they have urbanized areas, including Trumbull.

Please refer to **Appendix A** for a copy of the permit.

The permit authorizes discharge of stormwater and certain non-stormwater discharges from or associated with regulated MS4s, provided that the activity is conducted in accordance with the conditions set forth in the permit. The registration is a two-part process. The first part consists of contact information for the MS4 operator, its consultants, and the waterbodies to which the MS4 discharges. The second part of the registration consists of

the plan, which includes information as to which stormwater Best Management Practices (BMP) will be employed to fulfill each minimum control measure. Each BMP will include the name of the person responsible for ensuring the implementation of the BMP, the implementation schedule, and the measurable goals for the evaluation of the BMP.

1.3 Development of the Plan

Trumbull has participated in the reporting and monitoring requirements of the permit based on a plan outline. This stormwater management plan formalizes the outline that Trumbull had been following.

The steps followed in the development of this plan include the following:

1. Familiarize key staff with the program requirements of the Connecticut DEEP General Permit.

2. Evaluate the Municipality's current status toward addressing the minimum control measures, and identify gaps and opportunities.

3. Determine method of public involvement in the process of developing the Municipality's Stormwater Management.

4. Identify required BMPs and other suitable BMPs the Municipality has implemented and could implement.

5. Identify a team leader responsible for each BMP's implementation.

6. Determine a schedule for implementing each BMP.

7. Develop draft Storm Water Management Program (SWMP).

8. Determine resources, funding, and legal authority needed to implement the SWMP.

9. Submit SWMP to CTDEEP.

10. Prepare required Annual Reports documenting progress in implementing the SWMP.

Section 2
Watershed Resources

2.1 Watershed-Based Management

Watersheds are areas of land draining to a common point, such as rivers, lakes, and streams. Since watersheds are defined by topography, and land uses within the watershed have a direct impact on the quality of the watercourse to which they drain, they are the primary basis of water resource management.

According to EPA, a watershed approach is the most effective framework to address today's water resource challenges. Watersheds supply drinking water, provide recreation and respite, and sustain life. More than $450 billion in food and fiber, manufactured goods, and tourism depends on clean water and healthy watersheds.

Operating and coordinating programs on a watershed basis makes good sense for environmental, financial, social, and administrative reasons. For example, by jointly reviewing the results of assessment efforts for drinking water protection, pollution control, fish and wildlife habitat protection and other aquatic resource protection programs, managers from all levels of government can better understand the cumulative impacts of various human activities and determine the most critical problems within each watershed. Using this information to set priorities for action allows public and private managers from all levels to allocate limited financial and human resources to address the most critical needs. Establishing environmental indicators helps guide activities toward solving those high priority problems and measuring success in making real world improvements rather than simply fulfilling programmatic requirements.

The watershed approach strengthens teamwork between the public and private sectors at the federal, state, tribal and local levels to achieve the greatest environmental improvements with the resources available. This emphasis gives those people who depend on the aquatic resources for their health, livelihood or quality of life a meaningful role in the management of the resources. Through such active and broad involvement, the watershed approach can build a sense of community, reduce conflicts, increase commitment to the actions necessary to meet societal goals and, ultimately, improve the likelihood of sustaining long-term environmental improvements

2.2 Watershed Inventory

CTDEEP has identified major watershed throughout the state, identified on its map entitled “Natural Drainage Basins in Connecticut”, 1981.

The Town of Trumbull lies within two major basins, comprised of regional basins, which are divided into main stem basins. **Figure 2-1** graphically shows the division of these basins within Trumbull, while **Table 2-1** lists these basins.

Table 2-1
CTDEEP Natural Drainage Basins within the Town of Trumbull

Major Basin	Regional Basin	Main Stem Basin
6 – Housatonic Major Basin	60 – Housatonic	6025 – Farmill River
		6026 - Pumpkin Ground Brook
7 – Southwest Coast Major Basin	71- Southwest Eastern Regional Complex	7103 – Yellow Mill Channel
		7104 – Booth Hill Brook
		7105 – Pequonnock River
		7106 – Ash Creek
		7108 – Mill River

2.3 Water Quality

Section 305(b) of the Federal Clean Water Act (CWA) requires each State to monitor, assess and report on the quality of its waters relative to designated uses. Section 303(d) of the CWA requires each State to list waters not meeting water quality standards and prioritize those waters for Total Maximum Daily Load (TMDL) development or other management. Reporting for these waters is submitted to EPA every two years.

Connecticut has historically submitted the Water Quality Report to Congress (305(b) Report) and List of Waters Not Meeting Water Quality Standards (303(d) List) as separate documents. Since 2004, CTDEEP has consolidated the submittals into one report which developed into the Integrated Water Quality Report (IWQR).

Table 2-2 identifies the assessment results from CTDEEP's 2010 IWQR for watercourses within the Town.

Table 2-2
305(b) Watercourse Assessments

Description	Location	Miles	Aquatic Life	Recreation	Fish Consumption
Pequonnock River-02	From inlet to Bunnells (Beardsley Park) Pond (eastern side of Route 8, exit 6 area), Bridgeport, US to Daniels Farm Road crossing (US of Route 25 crossing), Trumbull.	2.92	NOT	U	FULL*
Pequonnock River-03	From Daniels Farm Road crossing (US of Route 25 crossing), Trumbull, US to Monroe Turnpike (Route 111) crossing (near intersection with Route 25), Trumbull.	4.19	NOT	FULL	FULL*
Pequonnock River-04	From Monroe Turnpike (Route 111) crossing (near intersection with Route 25), Trumbull, US to outlet of unnamed impoundment (US of Purdy Hill Road crossing, and US of Harsh Pond) Monroe.	1.83	U	FULL	FULL*

Farmill River-04	From Farmill (Isinglass) Reservoir inlet (in drinking water watershed), Shelton, US to headwaters (just US of Elm Street crossing, Monroe Turnpike (Route 111) area), Monroe.	3.05	U	U	FULL*
Mill River (Easton/Monroe)-03	From INLET to Easton Reservoir, Easton/Trumbull town border, US to headwaters at marsh (just US of Hattertown Road crossing), Monroe.	3.43	U	U	FULL*
Key:	FULL = Designated use fully supported FULL* = Refer to CTDEEP Angler's Guide for advisories NOT = Designated use not supported U = Unassessed				

CTDEEP has identified certain watercourses it has assessed as impaired because they do not meet minimum water quality standards for certain designated used. Table 2-3 lists watercourses within Trumbull CTDEEP has identified as impaired under Section 303(d).

Table 2-3
303(d) Impaired Waterbodies in Trumbull

Watercourse	Location	Miles	Description
Pequonnock River-02	From inlet to Bunnells (Beardsley Park) Pond (eastern side of Route 8, exit 6 area), Bridgeport, US to Daniels Farm Road crossing (US of Route 25 crossing), Trumbull.	2.92	Impaired Designated Use: Habitat for Fish, Other Aquatic Life, and Wildlife Cause: Unknown Potential Source: Unknown
Pequonnock River-03	From Daniels Farm Road crossing (US of Route 25 crossing), Trumbull, US to Monroe Turnpike (Route 111) crossing (near intersection with Route 25), Trumbull.	4.19	Impaired Designated Use: Habitat for Fish, Other Aquatic Life, and Wildlife Cause: Unknown Potential Source: Unknown

A draft Total Maximum Daily Load (TMDL) has been developed for these waters. The TMDL identifies the capacity of a surface water to assimilate pollutants without impacting its designated uses. Please refer to the Pequonnock River DRAFT TMDL in **Appendix B**.

Section 3
Public Education and Outreach

3.1 Regulatory Requirement

Federal Regulation

40 CFR 122.34 (b)(1) – Implement a public education program to distribute educational materials to the community of contact, equivalent outreach activities about the impacts of stormwater discharges on water bodies and the steps the public can take to reduce pollutants in the stormwater runoff.

Connecticut DEEP General Permit

Throughout the MS4:

(i) implement a public education program to distribute educational materials to the community or conduct equivalent outreach activities about the impacts of stormwater discharges on waterbodies and the steps that the public can take to reduce pollutants in stormwater runoff.

3.2 Applicable BMPs

The Town will undertake the following measures over the next five years to address the Public Education and Outreach measure:

3.2.1 Website Link to Town Stormwater Policy

The Town continues to provide links to its "Administrative Policy for Stormwater Management and Drainage Design Standards" from its website. This link allows homeowners and others proposing projects within the Town to better understand their obligations under the Town's policy. This policy was originally adopted in June 2007, and revised in June 2009, and continued to be enforced by the Town for all projects proposing 800 square feet or more of impervious surface. The intent of this policy is to better manage proposed connections to the Town's stormwater management system, and to improve stormwater quality, while achieving reductions in stormwater runoff quantity.

The link is located at:

http://www.trumbull-ct.gov/content/6279/74/173/202/default.aspx

In addition to the link to the design standards, additional links to stormwater related websites will also be included, such as the EPA stormwater program, and CTDEEP's stormwater manual.

Examples of additional links that may be worthy of inclusion include:

http://nemo.uconn.edu/tools/links.htm
http://www.stormwatercenter.net/
http://cfpub.epa.gov/npdes/stormwatermonth.cfm

Measurable Goal: Expand the number of stormwater-related links offered on the Town's website:

Schedule:

Permit Timeline	Activity
Year 1	Add additional stormwater-related links to the Town's website.
Year 1	**Implementation complete.**

Responsible Person: Town Engineer

3.2.2 Distribution of Educational Brochures

Brochures educating the public about the impacts of stormwater, dumping, and improper pet waste/lawn management upon waterbodies can be distributed to help fulfill the educational requirement. The brochures could be distributed at Town Hall, the library, and other public places.

In order to minimize costs, it is recommended to use existing brochures.

Examples of brochures include the following:

Farmington River Watershed Association's "Freedom Lawn: Letting Nature Do the Job" regarding reduction of pesticide usage:

http://www.frwa.org/publications/freedomlawntips.pdf

CTDEEP's "Something New is Happening in Your Neighborhood" regarding storm drain stenciling and stormwater pollution prevention tips for homeowners:

http://www.seymourct.org/pdf/DEP%20stormdrain%20program%20brochure.pdf

The Nature Conservancy's "Landscaping to Protect Water Quality":

http://conservect.org/LinkClick.aspx?fileticket=Z9L%2ba6uzTE4%3d&tabid=267

USEPA's "Make Your Home The Solution to Stormwater Pollution":

http://conservect.org/LinkClick.aspx?fileticket=jlpD7qw5%2b7s%3d&tabid=267

Measurable Goal: Distribute 200 copies of the brochures in Year 2.

Schedule:

Permit Timeline	Activity
Year 1	Select brochure for distribution:
Year 2	Distribute 200 copies of the brochures.
Year 2	**Implementation complete.**

Responsible Person: Town Engineer

3.2.3 Pequonnock River Initiative

During the summer of 2010 the Pequonnock River Initiative (PRI) was formed as a partnership between the City of Bridgeport and the towns of Monroe and Trumbull to develop a watershed plan for the Pequonnock River watershed. The PRI issued a management plan for the Pequonnock River Watershed in July 2011.

The watershed plan is a comprehensive planning document for the protection and restoration of water resources in the Pequonnock River watershed. The plan details the existing conditions of the watershed, identifies current problems and sources of pollution.

The Town of Trumbull provided support to PRI for the development of the plan, as did the Trumbull Land Trust.

The full content of the study can be accessed at:

http://www.ct.gov/dep/lib/dep/water/watershed_management/wm_plans/pequonnock/pequonnock_draft_wbplan.pdf

Measurable Goal: Publish link to study on Town website.

Schedule:

Permit Timeline	Activity
Year 1	Publish link to PRI study on Town's website.
Year 1	**Implementation complete.**

Responsible Person: Town Engineer

3.2.4 Pinewood Lake Association

The Pinewood Lake Association maintains a website with a page regarding protecting the lake's water quality. The page discusses a number of strategies to protect the lake's water quality, including low-input fertilizers, pet waste management, impervious surfaces, and automobile maintenance.

http://pinewoodlake.org/

Measurable Goal: Publish link to association on Town website.

Schedule:

Permit Timeline	Activity
Year 1	Publish link to Pinewood Lake Association on Town's website.
Year 1	**Implementation complete.**

Responsible Person: Town Engineer

3.2.5 Storm Drain Marking/Stenciling

The Town began to collect brochures on various stencils for marking storm drains, beginning the evaluation of stencils to be placed on storm drain inlets in the future.

Measurable Goal: Select stencil, and stencil 50 catch basins per year.

Schedule:

Permit Timeline	Activity
Year 1	Review and evaluate stencils.
Year 2	Stencil 50 catch basins
Year 3	Stencil 50 catch basins
Year 4	Stencil 50 catch basins
Year 5	Stencil 50 catch basins
Year 5	**Implementation complete.**

Responsible Person: Town Engineer

3.2.6 Tax Bill Inserts

A small fact sheet which describes stormwater quality issues will be inserted into the annual tax bills. The fact sheet would identify the issues that affect residents and how they can help improve the quality of the Town's stormwater.

Measurable Goal: Enclose fact sheet in tax bills.

Schedule:

Permit Timeline	Activity
Year 2	Develop insert.
Year 3	Enclose insert in tax bills
Year 3	**Implementation complete.**

Responsible Person: Town Engineer

Section 4
Public Involvement and Participation

4.1 Regulatory Requirement

Federal Regulation

40 CFR 122.34 (b)(2) At a minimum, comply with state, tribal, and local public notice requirements when implementing a public involvement/participation program.

Connecticut DEEP General Permit

Throughout the MS4:

(i) **Comply with State and local public notice and Freedom of Information requirements when implementing a public involvement/participation program. Where notice requirements are inconsistent, the notice provisions providing for the most notice and opportunity for public comment shall be followed.**

(ii) **Develop a public involvement/participation program that includes the public in developing, implementing, and reviewing your stormwater management program.**

4.2 Applicable BMPs

The Town will undertake the following measures over the next five years to address the Public Education and Outreach measure:

4.2.1 Pequonnock River Clean-Up

The Town recognizes the impact of litter on our natural and aesthetic resources and in response encourages volunteer groups to participate in clean-up activities. Provide support such as clean-up materials to these organizations.

Measurable Goal: Provide support to at least one river clean-up effort per year.

Schedule:

Permit Timeline	Activity
ear 1	Provide support to one clean-up operation.
Year 2	Provide support to one clean-up operation.
Year 3	Provide support to one clean-up operation.
Year 4	Provide support to one clean-up operation.
Year 5	Provide support to one clean-up operation.
Year 5	**Implementation complete.**

Responsible Person: Town Engineer

4.2.2 Volunteer Monitoring

Volunteer monitoring programs help to provide data for waters that might not be monitored otherwise, and can keep the general public better informed about the quality of local waterbodies. Monitoring activities can include analyzing water samples for pollutants, and inventorying streamside conditions.

Measurable Goal: Provide sampling and assessment kits to volunteer monitors.

Schedule:

Permit Timeline	Activity
Year 2	Provide training, sampling and assessment kits to volunteer monitors.
Year 2	**Implementation complete.**

Responsible Person: Town Engineer

4.2.3 Public Information Meeting Space

Provide meeting space for private watershed volunteer organizations such as PRI in order to help facilitate public participation.

Measurable Goal: Provide meeting space for private watershed volunteer organizations.

Schedule:

Permit Timeline	Activity
Year 1	Provide meeting space for private watershed volunteer organizations to meet.
Year 2	Provide meeting space for private watershed volunteer organizations to meet.
Year 3	Provide meeting space for private watershed volunteer organizations to meet.
Year 4	Provide meeting space for private watershed volunteer organizations to meet.
Year 5	Provide meeting space for private watershed volunteer organizations to meet.
Year 5	**Implementation complete.**

Responsible Person: Town Engineer

4.2.4 Household Hazardous Waste Collection Day

Trumbull recognizes the importance of educating our residents regarding the risk to ground and surface waters from improper disposal of hazardous materials and providing them with a responsible disposal method. Education is ongoing in the form of newsletter articles, press releases, and a well-established pre-collection promotion strategy. The Town sponsors household hazardous waste collection days at least once per yeat. In addition, Trumbull residents were also eligible to participate in household hazardous waste collection days held in neighboring towns throughout the year.

Measurable Goal: Conduct at least one household hazardous waste collection per year.

Schedule:

Permit Timeline	Activity
Year 1	Conduct one household hazardous waste collection day.
Year 2	Conduct one household hazardous waste collection day.
Year 3	Conduct one household hazardous waste collection day.
Year 4	Conduct one household hazardous waste collection day.
Year 5	Conduct one household hazardous waste collection day.
Year 5	**Implementation complete.**

Responsible Person: Town Engineer

4.2.5 Pet Waste Management

Improper disposal of pet waste results in its washing into storm drains and eventual contamination of waterbodies with bacteria and parasites. Where pets are permitted in public spaces, such as parks, the Town will add plastic disposal bag dispensers and refuse containers for the convenience of pet owners. Interpretive signage next to either one of these elements may outline the impact of pet waste upon water quality.

Measurable Goal: Install at least one bag dispense/refuse container combination.

Schedule:

Permit Timeline	Activity
Year 3	Install at least one bag dispenser/refuse container combination.
Year 3	**Implementation complete.**

Responsible Person: Town Engineer

Section 5
Illicit Discharge Detection and Elimination

5.1 Regulatory Requirement

Federal Regulation

40 CFR 122.34 (b)(3) - Develop, implement, and enforce a program to detect and eliminate illicit discharges into your small MS4. Develop a storm sewer system map, showing the location of all outfalls and the names and locations of all water of the U.S. that receive discharges from those outfalls. To the extent allowable under state, tribal or local law, effectively prohibit, through ordinance, or other regulatory mechanism, non-storm water discharges into your storm sewer system and implement appropriate enforcement procedures and actions. Develop and implement a plan to detect and address non-storm water discharges including illegal dumping to your system. Inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste. Address categories listed in 122.34(b)(3)(D)(iii) if you determine they are significant contributors of pollutants to MS4.

Connecticut DEEP General Permit

Required throughout the MS4:

(i) implement an ordinance or other regulatory mechanism to effectively prohibit non-stormwater discharges, except as provided in Section 3(a)(2), into the MS4, as well as sanctions to ensure compliance, to the extent allowable under state or local law.

(ii) inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste.

Required within the Urbanized Area:

(i) develop a map or series of maps at a minimum scale of 1"=2,000' and maximum scale of 1"=100' showing all stormwater discharges from a pipe or conduit with a diameter of 18" or greater (or equivalent cross-sectional area) operated by the MS4. For each discharge the following information shall be included:

a. Type, material, and size of conveyance, outfall or channelized flow (e.g. 24" concrete pipe);

b. The name of the immediate surface waterbody or wetland to which the stormwater runoff discharges;

c. If the outfall does not discharge directly to a named waterbody, the name of the nearest named waterbody to which the outfall eventually discharges;

d. The name of the watershed in which the discharge is located.

(ii)	develop, implement and enforce a program to detect and eliminate existing illicit discharges, as defined in 40 CFR 122.26(b)(2), into the MS4;
(iii)	develop and implement a plan to detect and address future non-stormwater discharges, including illegal dumping, to the MS4;
(iv)	address the following categories of non-stormwater discharges or flows (i.e., illicit discharges) only if the municipality or the Commissioner identify them as significant contributors of pollutants to the MS4: water lien flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)), uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, flows from riparian habitats and wetlands, and street wash water (discharges or flows from fire fighting activities are excluded from the effective prohibition against non-stormwater and need only be addressed where they are identified as significant sources of pollutants to waters of the United States.

5.2 Applicable BMPs

The Town shall implement the following measures to address illicit discharges to the stormwater system:

5.2.1 Town Stormwater Policy

Continue enforcement of its "Administrative Policy for Stormwater Management and Drainage Design Standards". This policy was originally adopted in June 2007, and revised in June 2009, and continues to be enforced by the Town for all projects proposing 800 square feet or more of impervious surface. The intent of this policy is to better manage proposed connections to the Town's stormwater management system, and to improve stormwater quality, while achieving reductions in stormwater runoff quantity.

Measurable Goal: Continue implementation of stormwater policy.

Schedule:

Permit Timeline	Activity
Year 1	Continue implementation of stormwater policy.
Year 2	Continue implementation of stormwater policy.
Year 3	Continue implementation of stormwater policy.
Year 4	Continue implementation of stormwater policy.
Year 5	Continue implementation of stormwater policy.
Year 5	**Implementation complete.**

Responsible Person: Town Engineer

5.2.2 Field Identification of Illicit Connections

The Town does not allow non-stormwater discharges into storm sewer systems that it owns and maintains. Town policy requires action by the Town for discharges of this type that are discovered. Town Highway staff is trained that when identifying a non-stormwater discharge, the source of the discharge shall be determined, and if found to be beyond or outside the Town's system, the owner of the property is notified. .

As part of routine maintenance work on the Town stormwater drainage system, Town public works employees have been trained to identify potential illicit connections, and track down the source as needed.

In certain instances, the Trumbull Health District samples suspect discharges to determine their composition.

Measurable Goal: Implementation of a program to detect and address illicit discharges.

Schedule:

Permit Timeline	Activity
Year 1	Evaluate existing programs and needs.
Year 2	Revise procedures if necessary.
Year 3	Enact revised plan.
Year 4	Continue implementation of plan.
Year 5	Continue implementation of plan.
Year 5	**Implementation complete.**

Responsible Person: Town Engineer

5.2.3 Town Stormwater Mapping

The Town maintains a hand-drawn master drawing showing location of pipes, inlets, outlets, and pipe diameters. The Town has recently deployed GIS software, and going forward will translate the master drawing into GIS format.

Measurable Goal: Perform annual monitoring.

Schedule:

Permit Timeline	Activity
Year 1	Initialize map on Town GIS system.
Year 2	Map 25% of outfalls.
Year 3	Map 25% of outfalls.
Year 4	Map 25% of outfalls.
Year 5	Map 25% of outfalls.
Year 5	**Implementation complete.**

Responsible Person: Town Engineer

5.2.4 Stormwater Monitoring

Conducted stormwater sampling from discharges resulting from a storm event greater than 0.1 inch in magnitude and occurring at least 72 hours after any previous storm event of 0.1 inch or greater. Runoff events resulting from snow or ice melt were not used to meet the minimum annual monitoring requirements. Grab samples were used for all monitoring. Grab samples were collected during the first (6) hours of a storm event discharge. A field sample of pH, turbidity and conductivity will be taken at the site.

The following information was collected for the storm events monitored:

- Date
- Air temperature
- Time of start of the discharge
- Time of sampling
- Magnitude (in inches) of the storm event samples
- Duration between the storm event samples and the end of the previous measurable (greater than 0.1 inch rainfall) storm event.

Pollutant parameters were tested according to methods prescribed in Title 40, CFR, Part 136 (1990). Testing of these parameters was at certified laboratories. The parameters tested at each discharge point included:

- pH (SU) (Taken with field equipment)
- Hardness (mg/L)
- Conductivity (µmos) (Taken with field equipment)
- Oil and grease (mg/L)
- Chemical Oxygen Demand (mg/L)
- Turbidity (ntu) (Taken with field equipment)
- Total Suspended Solids (mg/L)
- Total Phosphorous (mg/L)
- Ammonia (mg/L)
- Total Kjeldahl Nitrogen (mg/L)
- Nitrate plus Nitrite Nitrogen (mg/L)
- E. coli (col/100mL)
- In addition to this list of parameters, uncontaminated rainfall pH shall be measured at the time the runoff sample is taken (Taken with field equipment)

Sample six (6) outfalls: two from industrial areas, two from commercial areas, and two from residential areas.

The benefits associated with these BMPs include the identification and elimination of point sources of pollutant discharges and establishing a working database of information that will be useful in locating problematic areas.

Measurable Goal: Perform annual monitoring.

Schedule:

Permit Timeline	Activity
Year 1	Annual monitoring of 6 outfalls.
Year 2	Annual monitoring of 6 outfalls.
Year 3	Annual monitoring of 6 outfalls.
Year 4	Annual monitoring of 6 outfalls.
Year 5	Annual monitoring of 6 outfalls.
Year 5	**Implementation complete.**

Responsible Person: Town Engineer

5.2.5 Illicit Discharge Ordinance

The Town will develop a regulatory mechanism such as an ordinance to prohibit non-stormwater discharges into the storm sewer system, and implement enforcement procedures.

Measurable Goal: Develop and enact an illicit discharge ordinance.

Schedule:

Permit Timeline	Activity
Year 3	Draft illicit discharge ordinance.
Year 4	Finalize ordinance.
Year 4	**Implementation complete.**

Responsible Person: Town Engineer

Section 6
Construction Site Stormwater Controls

6.1 Regulatory Requirement

Federal Regulation

40 CFR 122.34 (b)(4) - Develop, implement and enforce a program to reduce pollutants in any storm water runoff to your small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Program must include: the development and implementation of (at a minimum) and ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, requirements for construction site operators to implement appropriated erosion and sediment control BMPs, requirements for construction site operators to control waste at the construction site, procedures for site plan review which incorporate consideration of potential water quality impacts, procedures for receipt and consideration of information submitted by the public.

Connecticut DEEP General Permit

Required throughout the MS4

(i) develop, implement, and enforce a program, or modify an existing program to reduce pollutants in any stormwater runoff to the MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of stormwater discharges from construction activity is party of a larger common plan of development or sale that would disturb one are or more. The program shall include, but not be limited to, the development and implementation of:

a. an ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions for non-compliance, to the extent allowable under State or local law;

b. procedures for notifying construction site developers and operators of the requirements for registration under the General Permit for Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities;

c. requirements for construction site operators to implement appropriate erosion and sediment control best management practices in accordance with the Guidelines;

d. requirements for construction site operators to control waste at the site such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste that may cause adverse impacts to water quality;

e. procedures for site plan review which incorporate consideration of potential water quality impacts;

f. procedures for receipt and consideration of information submitted by the public; and

g. procedures for site inspection and enforcement of control measures.

6.2 Applicable BMPs

The Town plans to undertake the following measures to address the Construction Site Stormwater Controls measure:

6.2.1 Evaluate and Update Regulatory Authority and Procedures

Trumbull has existing sedimentation and erosion control regulations and procedures. These regulations and procedures will be reviewed for conformance with the Phase II regulations, and updated as necessary.

Measurable Goal: Review and update sedimentation and erosion control ordinances and procedures.

Schedule:

Permit Timeline	Activity
Year 2	Evaluate existing ordinances, regulations and procedures.
Year 3	Update ordinances, regulations and procedures.
Year 3	**Implementation complete.**

Responsible Person: Town Engineer

6.2.2 Site Developers and Operators of Requirements for Sediment and Erosion Controls

Town Planning and Zoning Regulations require the following:

- Sediment and Erosion Control Permitting Process – Procedure requires the applicant to submit a plan detailing sediment and erosion control for any project disturbing over ½ acre of land. Plan becomes a condition of the issued permit.
- Scheduled Department Inspections/Site Monitoring – Applicant must contact the Planning and Zoning Department prior to commencement of development activity. Sediment and erosion control measures are inspected by the Planning and Zoning Department on a periodic basis.
- Enforcement Proceedings – The Planning and Zoning Department through its Zoning Regulations, is authorized to bring enforcement actions against parties who violate provisions of the Sediment and Erosion Control Permit.

Town Inland Wetland and Watercourses Regulations

- In accordance with the terms of the permit, the Erosion and Sedimentation Control Plan is part of the permit and must be adhered to.

- Applicants must provide 24 hour advance notice prior to beginning implementation of the Erosion and Sediment Control Plan.

- Following the issuance of a permit, town staff conducts routine inspections and as warranted requires enhancements to the erosion and sedimentation controls.

These regulations and procedures will be reviewed for conformance with the Phase II regulations, and updated as necessary

Measurable Goal: Review and update sedimentation and erosion control ordinances and procedures.

Schedule:

Permit Timeline	Activity
Year 2	Evaluate existing ordinances, regulations and procedures.
Year 3	Update ordinances, regulations and procedures.
Year 3	**Implementation complete.**

Responsible Person: Town Engineer

6.2.3 On-Site Waste Controls

In accordance with the Town of Trumbull's Planning and Zoning Regulations, Inland Wetland and Watercourses Regulations and Road Opening permit requirements, building materials and other construction site wastes including discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site, shall be properly managed and disposed of to reduce the risk of pollution from materials such as surplus or refuse building materials or hazardous wastes. Practices such as trash disposal, recycling, proper material handling, and spill prevention and cleanup measures can reduce the potential for stormwater runoff to mobilize construction site wastes and contaminate surface or groundwater.

The operators of the site are required to control the above mentioned waste by contract specifications, the Town of Trumbull standard regulations and all pertinent local, state and federal regulations.

The following are examples of steps that the Town typically requires to ensure proper storage and disposal of construction site wastes:

Waste Collection

Designate a waste collection area onsite that does not receive a substantial amount of runoff from upland areas and does not drain directly to a waterbody.

- Ensure that containers have lids so they can be covered before periods of rain, and keep containers in a covered area whenever possible.

- Schedule waste collection to prevent the containers from overfilling.
- Clean up spills immediately. For hazardous materials, follow cleanup instructions on the package. Use an absorbent material such as sawdust or cat litter to contain the spill. Reporting, handling, and disposal of all hazardous material shall be in accordance with all state and federal regulations.
- During the demolition phase of construction, provide extra containers and schedule more frequent pick-ups.
- Collect, remove, and dispose of all construction site wastes at authorized disposal areas. The CTDEEP can be contacted to identify these disposal sites.

Contaminated / Hazardous Materials

Private contractors shall dispose of materials as solid waste in accordance with all applicable federal, state and local regulations. Excavation, transporting, stockpiling, securing, disposal of contaminated/hazardous materials and decontamination of equipment will include but not be limited to the following:

- Environmental Health and Safety
- Contaminated/Hazardous Materials Excavation
- Securing, Construction and Dismantling of a Waste Stockpile and Treatment Area
- Disposal of Hazardous Waste
- Environmental Work – Solidification
- Disposal of Contaminated Railroad Ties
- Controlled Materials Handling
- Disposal of Contaminated Timber Piles
- Disposal of Controlled Materials
- Management of Reusable Controlled Material
- Abandonment of Wells
- Handling and Disposal of Contaminated Concrete
- Handling Contaminated Groundwater

Pesticides

The following practices are required to reduce risks associated with pesticides or to reduce the amount of pesticides that come in contact with stormwater. To the extent pesticides are being used by the town, the subsequent practices will be followed:

- Follow all federal, state and local regulations that apply to the use, handling or disposal of pesticides
- Do not handle the materials any more than necessary
- Store pesticides in a dry, covered area.
- Construct curbs or dikes to contain pesticides in case of spillage.
- Follow the recommended application rates and methods
- Have equipment and absorbent materials available in areas where pesticides are stored and used in order to contain and clean up any spills that occur.

Further, town staff inspections are used to monitor/encourage responsible use of pesticides on private property.

Petroleum

The following management practices should be followed to reduce the contamination risk associated with petroleum products:

- Store petroleum products and fuel for vehicles in covered areas with dikes in place to contain any spills.
- Immediately contain and clean up any spills with absorbent materials.
- Have equipment available in fuel storage areas and in vehicles to contain and clean up any spills that occur.

Fertilizers

Phosphorous-containing and nitrogen-containing fertilizers are used on construction sites to provide nutrients necessary for plant growth, and are found in detergents used in vehicle cleaning areas. Excess of these nutrients can be a major source of water pollution. Management practices the Town encourages to reduce risks of nutrient pollution may include the following:

- Apply fertilizers at the minimum rate and to the minimum area needed.
- Work the fertilizer deeply into the soil to reduce exposure of nutrients to stormwater runoff.
- Ensure that erosion and sediment controls are in place to prevent fertilizers and sediments from being transported off-site.

- Use detergents only as recommended, and limit their use on-site. Wash water containing detergents should not be dumped into the storm drain system. It should be directed to a sanitary sewer or otherwise contained so that it can be treated at a wastewater treatment plant.

Maintenance Considerations

Equipment or containers that may malfunction and cause leaks or spills are to be identified through regular inspection or storage and use areas. Owners shall inspect equipment and containers regularly for leaks, corrosion, support, or foundation failure, or any other signs of deterioration and should be tested for soundness. Any equipment or containers found to be defective shall be repaired or replaced immediately.

Measurable Goal: Review and update waste control control ordinances and procedures.

Schedule:

Permit Timeline	Activity
Year 2	Evaluate existing ordinances, regulations and procedures.
Year 3	Update ordinances, regulations and procedures.
Year 3	**Implementation complete.**

Responsible Person: Town Engineer

6.2.4 Procedures for Site Plan Review

Procedures for site plan review that incorporate consideration of potential water quality impacts are utilized by the Town. Construction plans and specifications are reviewed by the Town departments for conformance to the Town's requirements relating to construction site runoff control.

Town Planning and Zoning

All development activity must comply with the Zoning Regulations of the Town of Trumbull and, unless otherwise specified, all development activity is subject to the submittal of a site plan and the issuance of a Zoning Permit. Such required measures include:

- *Soil Erosion and Sedimentation Plan* – The applicant shall submit a Soil Erosion and Sedimentation Plan to the Planning and Zoning Department prepared in accordance with the 2002 Connecticut Guidelines with the Standards for Soil Erosion and Sediment Control, DEP Bulletin 34 and supplements thereto. Unless otherwise stated, no development activity shall commence until a Soil Erosion and Sedimentation Permit has been issued and execution of the Soil

Erosion and Sedimentation Plan has been field-verified by representatives of the Planning and Zoning Department. The Town, by way of its Zoning Regulations, maintains the authority to pursue corrective action so as to insure adherence with the approved plan.

- *Stormwater Management* – Any development activity requiring the submittal of a site plan shall, as part of the proposal, include a storm water management plan. Said plan shall be depicted on or accompany a site plan. A storm water management system shall be sized in accordance with the Town's stormwater policy. The storm water management plan shall be prepared by and possess the original seal of a Connecticut-licensed professional engineer.

- *Environmental Considerations* – The development of the site shall conserve as much of the natural terrain and existing vegetation as possible. Disturbance to steep slopes, wetlands, other land features that potentially impact the quality of storm water discharge shall be avoided, whenever possible.

- *Bond Requirements* – The Planning and Zoning Department may require the submittal of a performance bond for all site plan applications. Said bond is to insure that all site features, including but not limited to storm water facilities, are constructed in accordance with the approved design specifications.

Inland Wetlands and Watercourses Regulations

All development activity must comply with the Inland Wetlands and Watercourses Regulations of the Town of Trumbull.

- *Soil Erosion and Sedimentation Plan* – The applicant shall submit a Soil Erosion and Sedimentation Plan to the Environmental Affairs Department prepared in accordance with the 2002 Connecticut Guidelines with the Standards for Soil Erosion and Sediment Control, DEP Bulletin 34 and supplements thereto. Unless otherwise stated, no development activity shall commence until a Soil Erosion and Sedimentation Permit has been issued, and execution of the Soil Erosion and Sedimentation Plan has been field-verified by representatives of the Environmental Affairs Department. The Town, by way of its Inland Wetlands and Watercourses Regulations, maintains the authority to pursue corrective action so as to insure adherence with the approved plan.

- *Stormwater Management* – Any development activity requiring the submittal of an application for a "Significant Regulated Activity" shall, as part of the proposal, include a storm water management plan. The goals of the plan shall strive to minimize increases in the peak flow and its duration, attenuate suspended sediments, floatables, petroleum products, soluble pollutants, and minimize thermal pollution.

- *Environmental Considerations* – The development of the site shall conserve as much of the natural terrain and existing vegetation as

possible. Disturbance to steep slopes, wetlands, other land features that potentially impact the quality of storm water discharge shall be avoided, whenever possible.

- *Bond Requirements* – The Inland Wetlands and Watercourses Commission may require the submittal of a performance bond for all site plan applications. Said bond is to insure that all site features, including but not limited to storm water facilities, are constructed in accordance with the approved design specifications.

Projects requiring registration under the General Permit for the Discharge of Stormwater Associated with Construction Activities shall include site plans along with the permit application and a site specific stormwater pollution control plan for review and registration by the CTDEEP.

Measurable Goal: Review and update Zoning ordinances and procedures.

Schedule:

Permit Timeline	Activity
Year 2	Evaluate existing ordinances, regulations and procedures.
Year 3	Update ordinances, regulations and procedures.
Year 3	**Implementation complete.**

Responsible Person: Town Engineer

Section 7
Post-Development Stormwater Management for New Development and Redevelopment

7.1 Regulatory Requirement

Federal Regulation

40 CFR 122.34 (b)(5) – Develop, implement and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects that are less than one acre that are part of a larger common plan of development or sale, that discharge into your small MS4. Develop and implement strategies which include a combination of structural and/or non-structural BMPs appropriate for your community. Use an ordinance or other regulatory mechanism to address post-construction runoff. Ensure adequate long-term operation and maintenance of BMPs.

Connecticut DEEP General Permit

Required throughout the MS4

(i) develop, implement, and enforce a program to address stormwater runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the MS4 or directly to waters of the State. This program shall ensure that controls are in place that will prevent or minimize water quality impacts;

(ii) develop and implement strategies which include a combination of structural and/or non-structural best management practices (BMPs) appropriate for your community;

(iii) use an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State or local law;

(iv) ensure adequate long-term operation and maintenance of BMPs.

7.2 Applicable BMPs

The Town will undertake the following measures to address the Post-Construction Stormwater Controls measure:

7.2.1 Evaluate and Update Regulatory Authority and Procedures

Trumbull has existing regulations in place for addressing stormwater issues in its Zoning Regulations and Subdivision Regulation's. These regulations and procedures will be reviewed for conformance with the Phase II regulations, and updated as necessary.

Measurable Goal: Review and update existing ordinances and procedures.

Schedule:

Permit Timeline	Activity
Year 2	Evaluate existing ordinances, regulations and procedures.
Year 3	Update ordinances, regulations and procedures.
Year 3	**Implementation complete.**

Responsible Person: Town Engineer

Section 8
Pollution Prevention/Good Housekeeping for Municipal Operations

8.1 Regulatory Requirement

Federal Regulation

40 CFR 122.34 (b)(6) – Develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations.

Connecticut DEEP General Permit

Required throughout the MS4

(i) develop and implement an operation and maintenance program that includes a training component for municipal employees and contractors and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations;

(ii) using training materials that are available from the EPA, the State or other organizations, this program shall include employee training to prevent and reduce stormwater pollution from activities such as park and open space maintenance, fleet and building system maintenance, new construction and land disturbances, and stormwater system maintenance;

(iii) develop and implement a program to sweep all streets at least once a year as soon as possible after snowmelt;

(iv) develop and implement a program to evaluate and, if necessary, clean catch basins and other stormwater structures that accumulate sediment at least once a year;

(v) develop and implement a program to evaluate, and if necessary, prioritize for repairing, retrofitting or upgrading the conveyances, structures and outfalls of the MS4

Required within the Urbanized Area

(i) develop and implement a program to sweep all streets at least twice a year, the first of which shall be as soon as possible after snowmelt and the second to be conducted not less than 90 days following the first;

(ii) develop and implement a program to clean catch basins and other stormwater structures that accumulate sediment at least once a year as soon as possible after snowmelt.

8.2 Applicable BMPs

The Town has shall undertake the following measures to address the Pollution Prevention/Good Housekeeping for Municipal Operations measure:

8.2.1 Evaluate Street Sweeping

Trumbull will evaluate its existing street sweeping plan for conformance to the requirements of the Connecticut DEP General Permit and modify its program as necessary to meet the DEP's requirement that all streets be sweeped at least once a year after snowmelt. It will also periodically do a visual check for accumulation of trash and debris on streets to determine if more frequent sweepings are required.

Measurable Goal: Conform to the sweeping requirements of the Connecticut DEEP General Permit and monitor trash and debris buildup on streets to determine if additional sweepings are necessary.

Schedule:

Permit Timeline	Activity
Year 1	Evaluate existing street sweeping plan and conform to General Permit requirements.
Year 2	Implement revised plan, monitor streets for additional trash and debris accumulation.
Year 2	**Implementation complete.**

Responsible Person: Town Engineer

8.2.2 Provide Spill Response Kits and Training

The Town shall provide training to applicable employees regarding spill response and proper management of deleterious material such as deicing salts, sand, and fertilizers. The Town will also supply and maintain spill kits at various municipal facilities.

Measurable Goal: Provide training and spill kits.

Schedule:

Permit Timeline	Activity
Year 2	Provide spill kits.
Year 2	Provide spill response and chemical management training for appropriate employees.
Year 2	**Implementation complete.**

Responsible Person: Town Engineer

8.2.3 Evaluate Wash Areas at Facilities

Drainage at vehicle wash areas at public facilities will be evaluated to determine the wash area's impact upon water quality.

Measurable Goal: Evaluate drainage at the wash areas and implement a program to ensure discharges from wash areas do not have a negative impact upon the Town's water quality.

Schedule:

Permit Timeline	Activity
Year 2	Observe wash areas and make recommendations.
Year 3	Prepare plan.
Year 4	Implement plan.
Year 4	**Implementation complete.**

Responsible Person: Town Engineer

8.2.4 Clean Catch Basins

Debris and sediment collected in catch basins can be transported by stormwater. Develop a program to evaluate and clean catch basins to minimize the transport of pollutants.

Measurable Goal: Develop and implement a program to evaluate, and if necessary, clean basins and other stormwater structures that accumulate sediment at least once a year, including a provision to identify and prioritize those structures that may require cleaning more than once a year..

Schedule:

Permit Timeline	Activity
Year 1	Observe catch basins under current cleaning program and make recommendations for prioritization.
Year 2	Development fo new catch basin cleaning program.
Year 3	Implement new program.
Year 4	Continue program.
Year 5	Continue program.
Year 5	**Implementation complete.**

Responsible Person: Town Engineer

Town of Trumbull
NPDES Phase 2 Stormwater Management Plan

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APPENDIX A

Connecticut Department of
Energy & Environmental Protection
Bureau of Materials Management & Compliance Assurance
Water Permitting & Enforcement Division

General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems

Issued: January 20, 2016

Effective: July 1, 2017

Expires: June 30, 2022

General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems

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Section 1. Authority

This general permit is issued under the authority of Section 22a-430b of the Connecticut General Statutes.

Section 2. Definitions

The definitions of terms used in this general permit shall be the same as the definitions contained in Sections 22a-423 of the Connecticut General Statutes and Section 22a-430-3(a) of the Regulations of Connecticut State Agencies. As used in this general permit, the following definitions shall apply:

"x-year, 24-hour rainfall event" means the maximum 24-hour precipitation event with a probable recurrence interval of once in the given number of years (i.e. x=2, 25 or 100), as defined by the National Weather Service in Technical Paper Number 40, "Rainfall Frequency Atlas of the United States," May 1961, and subsequent amendments, or equivalent regional or state rainfall probability information developed therefrom.

"Aquifer protection area" means aquifer protection area as defined in section 22a-354h of the Connecticut General Statutes.

"Best engineering practices" means the design of engineered control measures to control pollution to the maximum extent achievable using measures that are technologically available and economically practicable.

"Best Management Practices (*BMP*)" means schedules of activities, practices (and prohibitions of practices), structures, vegetation, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the state consistent with state, federal or other equivalent and technically supported guidance. BMPs also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from material storage.

"Catchment area" means the land area from which stormwater runoff is collected by a permittee's MS4 and discharges through a single outfall to surface water.

"Coastal Jurisdiction Line" means the location of the topographical elevation of the highest predicted tide as defined in Section 22a-359(c) of the Connecticut General Statutes.

"Coastal waters" means coastal waters as defined in Section 22a-93(5) of the Connecticut General Statutes.

"Commissioner" means Commissioner as defined in section 22a-423 of the Connecticut General Statutes.

"Control Measures" means any BMPs or other methods (including effluent limitations) used to prevent or reduce the discharge of pollutants to waters of the state.

"Department" means the Department of Energy & Environmental Protection.

"Directly Connected Impervious Area (DCIA)" means that impervious area from which stormwater runoff discharges *directly* to waters of the state or *directly* to a storm sewer system that discharges to waters of the state. Impervious areas that discharge through a system designed to retain the

appropriate portion of the Water Quality Volume (pursuant to Section 6(a)(5)(b)(i) or (ii) of this general permit) are not considered DCIA.

"Fresh-tidal wetland" means a tidal wetland located outside of coastal waters.

"Grab sample" means an individual sample collected in less than fifteen minutes.

"Guidelines" means the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, established pursuant to Section 22a-328 of the Connecticut General Statutes.

"High Quality Waters" means those waters defined as high quality waters in the Connecticut Water Quality Standards pursuant to Section 22a-426-1(36) of the Regulations of Connecticut State Agencies.

"Illicit Discharge" means any unpermitted discharge to waters of the state that does not consist entirely of stormwater or uncontaminated ground water except those discharges identified in Section 3(*a*)(2) of this general permit when such non-stormwater discharges are not significant contributors of pollution to a discharge from an identified MS4.

"Impaired water(s)" means those surface waters of the state designated by the Commissioner as impaired pursuant to Section 303(d) of the federal Clean Water Act and as identified in the most recent State of Connecticut Integrated Water Quality Report within Categories 4 or 5, including any subdivisions of these categories.

"Individual permit" means a permit issued to a named permittee under Section 22a-430 of the Connecticut General Statutes.

"Inland wetland" means wetlands as that term is defined in Section 22a-38 of the Connecticut General Statutes.

"Low Impact Development" or *"LID"* means a site design strategy that maintains, mimics or replicates pre-development hydrology through the use of numerous site design principles and small-scale treatment practices distributed throughout a site to manage runoff volume and water quality at the source.

"Minimize", for purposes of implementing the minimum control measures in Section 6 of this general permit, means to reduce and/or eliminate to the Maximum Extent Practicable (MEP) as described in Section 5(*b*).

"Municipal separate storm sewer system" or *"MS4"* means conveyances for stormwater (including roads with drainage systems, streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains) owned or operated by any municipality or by any state or federal institution and discharging to surface waters of the state.

"Municipality" means a city, town or borough of the state as defined in section 22a-423 of the Connecticut General Statutes.

"New or Increased Discharge" means new discharge or activity as defined in section 22a-426-8(b)(3) and increased discharge or activity as defined in section 22a-426-8(b)(2), as referenced to the Regulations of Connecticut State Agencies.

"Permittee" means any municipality or any state or federal institution that initiates, creates, originates or maintains a discharge authorized by this general permit and that has filed a registration pursuant to Section 4 of this permit.

"Point Source" means any discernible, confined and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged.

"Qualified professional engineer" means a professional engineer who: (1) has, for a minimum of eight (8) years, engaged in the planning and designing of engineered stormwater management systems for (i) municipal separate storm sewer systems and (ii) residential and commercial construction projects in accordance with the Guidelines and the Stormwater Quality Manual including, but not limited to, a minimum of four (4) years in responsible charge of the planning and designing of engineered stormwater management systems for such projects; or (2) is currently certified as a Professional in MS4 Stormwater Compliance as designated by EnviroCert International, Incorporated, or other certifying organization acceptable to the Commissioner, and for a minimum of six (6) years, has engaged in the planning and designing of engineered stormwater management systems for (i) municipal separate storm sewer systems and (ii) residential and commercial construction projects in accordance with the Guidelines and the Stormwater Quality Manual including, but not limited to, a minimum of two (2) years in responsible charge of the planning and designing of engineered stormwater management systems for such projects; or (3) currently provides engineering services for the Permittee by employ (e.g. Town Engineer) or by contract.

"Registrant" means a municipality or institution which files a registration pursuant to Section 4 of this general permit.

"Redevelopment" means any construction activity (including, but not limited to, clearing and grubbing, grading, excavation, and dewatering) within existing drainage infrastructure or at an existing site to modify or expand or add onto existing buildings or structures, grounds, or infrastructure.

"Registration" means a registration form filed with the Commissioner pursuant to Section 4 of this general permit.

"Retain" means to hold runoff on-site to promote vegetative uptake and groundwater recharge through the use of runoff reduction or LID practices or other measures. In addition, it means there shall be no subsequent point source release to surface waters from a storm event defined in this general permit or as approved by the Commissioner.

"Runoff reduction practices" means those post-construction stormwater management practices used to reduce post-development runoff volume delivered to the receiving water, as defined by retaining the volume of runoff from a storm up to the first half inch or one inch of rainfall in accordance with Sections 6(*a*)(5)(B)(i) or (ii), respectively. Runoff reduction is quantified as the total annual post-development runoff volume reduced through canopy interception, soil amendments, evaporation, rainfall harvesting, engineered infiltration, extended filtration or evapotranspiration.

"Sanitary Sewer Overflow" or *"SSO"* means a discharge of untreated sanitary wastewater from a municipal sanitary sewer.

"Small MS4" means any municipally-owned or -operated MS4 (as defined above) including all those located partially or entirely within an Urbanized Area that have at least 1,000 residents in the Urbanized Area (as determined by the 2000 or 2010 census) and all state- and federally-operated MS4s (except DOT) and any other MS4s located outside an Urbanized Area as may be designated by the Commissioner. (Note: A list of Small MS4 municipalities is included in Appendix A of this general permit. DOT will be authorized under a separate permit.)

"Standard of care", as used in Section 3(*b*)(9), means to endeavor to perform in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances.

"State or Federal Institution" or "*institution"* means any facility (including, but not limited to, state and federal prisons, office complexes, hospitals; university campuses, public housing authorities, schools, or other special districts) consisting of more than one building that is owned by an agency or department of the State of Connecticut (except the Department of Transportation) or a federal agency and has an average daily population of 1,000 people or more.

"Stormwater" means waters consisting of rainfall runoff, including snow or ice melt during a rain event.

"Stormwater Quality Manual" means the Connecticut Stormwater Quality Manual published by the Connecticut Department of Energy & Environmental Protection in 2004, as amended and maintained at http://www.ct.gov/deep/stormwaterqualitymanual.

"Surface water" means those waters as defined in Section 22a-426-1(60) of the Regulations of Connecticut State Agencies.

"Tidal wetland" means a wetland as that term is defined in Section 22a-29(2) of the Connecticut General Statutes.

"Total Maximum Daily Load (*TMDL*)" means a water quality implementation plan established pursuant to Section 303 of the federal Clean Water Act.

"Urbanized Area (*UA*)" means the areas of the State of Connecticut so defined by the U.S. Census Bureau for the 2000 or 2010 census.

"Water Quality Standards or Classifications" means those water quality standards or classifications contained in Sections 22a-426 -1 through 22a-426-9, inclusive, of the Regulations of Connecticut State Agencies and the Classification Maps adopted pursuant to Section 22a-426 of the Connecticut General Statutes, which together constitute the Connecticut Water Quality Standards., as may be amended.

"Water Quality Volume" or *"WQV"* means the volume of runoff generated by one inch of rainfall on a site as defined in the Connecticut Stormwater Quality Manual.

Section 3. Authorization Under This General Permit

(a) Eligible Activities

(1) This general permit authorizes the discharge of stormwater from or associated with a Small MS4, provided the requirements of subsection (*b*) of this section are satisfied and the activity is conducted in accordance with the conditions listed in Section 5 of this general permit to the Maximum Extent Practicable (as defined in Section 5(b)).

(2) This permit authorizes the following non-stormwater discharges provided: the permittee controls such non-stormwater discharges to the Maximum Extent Practicable (MEP), as required by this general permit; such non-stormwater discharges do not contribute to a violation of water quality standards; and such non-stormwater discharges are documented in the Stormwater Management Plan and are not significant contributors of pollutants to any identified MS4:

- uncontaminated ground water discharges including, but not limited to, pumped ground water, foundation drains, water from crawl space pumps and footing drains;
- irrigation water including, but not limited to, landscape irrigation and lawn watering runoff;
- residual street wash water associated with sweeping;
- discharges or flows from firefighting activities (except training); and
- naturally occurring discharges such as rising ground waters, uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)), springs, diverted stream flows and flows from riparian habitats and wetlands.

(3) Any non-stormwater discharge to the MS4 authorized by a permit issued pursuant to Section 22a-430 or 22a-430b of the Connecticut General Statutes is also authorized under this general permit.

(b) Requirements for Authorization

This general permit authorizes the activity listed in the "Eligible Activities" section (Section 3(*a*)) of this general permit provided:

(1) Coastal Management Act

Such activity is consistent with all applicable goals and policies in Section 22a-92 of the Connecticut General Statutes, and must not cause adverse impacts to coastal resources as defined in Section 22a-93(15) of the Connecticut General Statutes.

(2) Endangered and Threatened Species

Implementation of the permittee's Stormwater Management Plan shall not threaten the continued existence of any species listed pursuant to section 26-306 of the Connecticut General Statutes as endangered or threatened and must not result in the destruction or adverse modification of habitat designated as essential to such species unless otherwise exempted by Federal statute.

(3) Aquifer Protection Areas

Such activity, if it is located within an aquifer protection area as mapped under section 22a-354b of the Connecticut General Statutes, must comply with regulations adopted pursuant to section 22a-354i of the Connecticut General Statutes.

(4) Discharge to POTW

The stormwater is *not* discharged to a Publicly Owned Treatment Works (POTW).

(5) Discharge to Groundwater

The stormwater is *not* discharged entirely to groundwater, meaning a stormwater discharge to a surface water will not occur up to a 100-year, 24-hour rainfall event.

(6) New or Increased Discharges to High Quality Waters

On or before thirty (30) days prior to the commencement of a new or increased discharge to a High Quality Waters from its MS4, the permittee must document compliance with the Connecticut Anti-Degradation Implementation Policy in the Water Quality Standards, as amended. Before commencing any new or increased discharge, the permittee shall identify in its Stormwater Management Plan ("Plan"), the control measures it will implement to ensure compliance with anti-degradation provisions and the terms of this Permit. At a minimum, the permittee shall evaluate and implement to the Maximum Extent Practicable practices which will prevent the discharge of the Water Quality Volume to a surface water body or other practices necessary to protect and maintain designated uses and meet standards and criteria contained in the Water Quality Standards.

(7) New or Increased Discharges to Impaired Waters

There shall be no increased discharges from the MS4 to impaired waters listed in categories 5 or 4b of the most recent Connecticut Integrated Water Quality Report of waters listed pursuant to Clean Water Act section 303(d) and 305(b) unless the permittee demonstrates that there is no net increase in loading by the MS4 to the impaired water of the pollutant(s) for which the waterbody is impaired. The permittee may demonstrate no net increase by either:

(A) Documenting that the pollutant(s) for which the waterbody is impaired is not present in the MS4's discharge and retain documentation of this finding with the Plan; or

(B) Documenting that the total load of the pollutant(s) of concern from the MS4 to any impaired portion of the receiving water will not increase as a result of the activity and retain documentation of this finding in the Plan. Compliance with the requirements for Runoff Reduction and Low Impact Development measures for new development and redevelopment in Sections 6(a)(5)(A) and (B) shall be considered as demonstrating no net increase. Requirements for discharges to impaired waters are included in Section 6(k) of this general permit.

(8) Certification Requirements for Registrants and other Individuals

As part of the registration for this general permit, the registrant and any other individual or individuals principally responsible for preparing the registration submits to the Commissioner a written certification which, at a minimum, complies with the following requirements:

(A) The registrant and any other individual or individuals responsible for preparing the registration and signing the certification has completely and thoroughly reviewed, at a minimum, this general permit and the following regarding the activities to be authorized under such general permit: (i) all registration information provided in accordance with Section 4(*c*)(2) of such general permit, (ii) the Stormwater Management Plan, and (iii) any plans and specifications and any Department approvals regarding such Stormwater Management Plan;

(B) The registrant and any other individual or individuals responsible for preparing the registration and signing the certification pursuant to this general permit has, based on the review described in section 3(*b*)(8)(A) of this general permit, made an affirmative determination to: (i) comply with the terms and conditions of this general permit; (ii) maintain compliance with all plans and documents prepared pursuant to this general permit including, but not limited to, the Stormwater Management Plan; (iii) properly implement and maintain the elements of the Stormwater Management Plan; and (iv) properly operate and maintain all stormwater management measures and systems in compliance with the terms and conditions of this general permit to protect the waters of the state from pollution;

(C) Such registrant and any other individual or individuals responsible for preparing the registration certifies to the following statement:

"I hereby certify that I am making this certification in connection with a registration under the General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems, submitted to the Commissioner by [INSERT NAME OF REGISTRANT] for an activity located at or within [NAME OF MUNICIPALITY OR ADDRESS OF THE REGISTERED ACTIVITY] and that all terms and conditions of the general permit are being met for all discharges which have been created, initiated or maintained and such activity is eligible for authorization under such permit. I further certify that a system is in place to ensure that all terms and conditions of this general permit will continue to be met for all discharges authorized by this general permit at the site. I certify that I have personally examined and am familiar with the information that provides the basis for this certification, including but not limited to all information described in Section 3(*b*)(8)(A) of such general permit, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this certification is based is true, accurate and complete to the best of my knowledge and belief. I certify that I have made an affirmative determination in accordance with Section 3(*b*)(8)(B) of this general permit. I understand that the registration filed in connection with such general permit is submitted in accordance with and shall comply with the requirements of Section 22a-430b of Connecticut General Statutes, as amended by Public Act 12-172. I also understand that knowingly making any false statement made in the submitted information and in this certification may be punishable as a criminal offense, including

the possibility of fine and imprisonment, under section 53a-157b of the Connecticut General Statutes and any other applicable law."

(9) Stormwater Management Plan Certification

As part of the registration for this general permit, the registrant submits to the Commissioner a written certification by a qualified professional engineer who has reviewed the Stormwater Management Plan (Plan) in accordance with the following requirements:

(A) The qualified professional engineer has, at a minimum, completely and thoroughly reviewed this general permit and the following regarding the discharges to be authorized under such general permit: (i) all registration information provided in accordance with Section 4(*c*)(2) of such general permit, (ii) the Stormwater Management Plan, and (iii) all non-engineered and engineered stormwater management measures and systems, including any plans and specifications and any Department approvals regarding such stormwater management measures and systems.

(B) Affirmative Determination

A qualified professional engineer signing the certification must have made an affirmative determination, based on the review described in section 3(*b*)(9)(A) of this general permit and on best engineering practices, that the Plan and control measures therein are adequate to assure that the activity authorized under this general permit will comply with the terms and conditions of such general permit and all non-engineered and engineered stormwater management measures and systems: (i) have been designed in accordance with best engineering practices; (ii) will function properly as designed; (iii) are adequate to ensure compliance with the terms and conditions of this general permit; and (iv) will protect the waters of the state from pollution.

(C) The qualified professional engineer, as specified in section 3(*b*)(9)(A), above, shall certify to the following statement:

"I hereby certify that I am a qualified professional engineer, as defined in the General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems. I am making this certification in connection with a registration under such general permit, submitted to the Commissioner by [INSERT NAME OF REGISTRANT] for an activity located at or within [NAME OF MUNICIPALITY OR ADDRESS OF THE REGISTERED ACTIVITY]. I have personally examined and am familiar with the information that provides the basis for this certification, including but not limited to all information described in Section 3(*b*)(9)(A) of such general permit, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this certification is based is true, accurate and complete to the best of my knowledge and belief. I certify, based on my review of all information described in Section 3(*b*)(9)(A) of such general permit and on the standard of care for such projects, that I have made an affirmative determination in accordance with Section 3(*b*)(9)(B) of this general permit. I understand that this certification is part of a registration submitted in accordance with Section 22a-430b of Connecticut General Statutes and is subject to the requirements and responsibilities for a qualified professional in such statute. I also understand that knowingly making any false statement in this certification may be punishable as a criminal offense, including the possibility of fine and imprisonment,

under section 53a-157b of the Connecticut General Statutes and any other applicable law."

(D) Nothing in this subsection shall be construed to authorize or require a qualified professional engineer to engage in any profession or occupation requiring a license under any other provision of the Connecticut General Statutes without such license.

(c) Registration

Pursuant to the "Registration Requirements" section (Section 4) of this permit, a Small MS4 shall submit a Registration Form (accessible from the DEEP website) to the Commissioner at least ninety (90) days prior to the effective date of this general permit. The form will guide the registrant to submit the appropriate information.

Include any additional forms and information regarding compliance and/or consistency with the Coastal Management Act, High Quality Waters, Impaired Waters (including TMDL requirements), Endangered and Threatened Species, and Aquifer Protection Areas that may be required pursuant to the "Requirements of Authorization" section (Section 3(*b*)).

(d) Geographic Area

This general permit applies throughout the State of Connecticut.

(e) Effective Date and Expiration Date of this General Permit

This general permit is effective July 1, 2017 and expires on June 30, 2022.

(f) Effective Date of Authorization

An activity is authorized by this general permit: on the date the general permit becomes effective; on the date a complete registration meeting the requirements of Section 4(*c*) is submitted; for registrants that did not register as required by Section 3(*c*), on the date the authorized activity is initiated; or on another date approved by the Commissioner, whichever is latest.

Section 4. Registration Requirements

(a) Who Must File a Registration

Any municipality or state or federal institution that initiates, creates, originates or maintains a discharge of stormwater from or associated with a Small MS4 shall file with the Commissioner a registration form that meets the requirements of this section of this general permit. Such form shall be submitted along with the applicable fee within the timeframes and in the amounts specified in Sections 3(*c*) and 4(*c*)(1)(A), respectively.

(b) Scope of Registration

A registrant must register on one registration form by the date indicated in Section 3(*c*) for all discharges that are operated by the registering municipality or institution. A registrant may not submit more than one registration under this general permit.

(c) Contents of Registration

(1) Fees

(A) The registration fee for a Small MS4 shall be $625 to be submitted with the registration form.

(B) The fees for municipalities shall be half of those indicated in subsection (A) above pursuant to section 22a-6(b) of the Connecticut General Statutes. State and Federal agencies shall pay the full fees specified in this subsection.

(C) The registration fee shall be paid electronically or by check or money order payable to the **Department of Energy & Environmental Protection**.

(D) No activity shall be authorized by this general permit until the registration fee has been paid in full.

(E) The registration fee is non-refundable.

(2) Registration Form

The registration shall be filed in a form prescribed and provided by the Commissioner (available on the DEEP website) and shall include the following:

(A) Name of the permittee and the name, title, address, telephone number, permit number (for existing 2004 MS4 permittees) and email address of the chief elected official or principal executive officer.

(B) Name, address, telephone number, and email address of the primary contact person for the permittee.

(C) Name, primary contact, address, telephone number, and email address of any consultant(s) or engineer(s) retained by the permittee to prepare the registration,

(D) Name of receiving stream(s), watershed(s) or waterbody(s) (including waterbody ID number which can be identified at *www.**cteco**.uconn.edu*) to which the MS4 discharges and indication of whether or not a receiving stream is listed as an impaired water, with or without a TMDL, and including identification of the impairment in the most recent State of Connecticut Integrated Water Quality Report or identification of the receiving stream as a high quality water by the Commissioner as defined in the Connecticut Water Quality Standards.

(E) An electronic map or a paper copy of the relevant portion or a full-sized original of a United States Geological Survey (USGS) quadrangle map with a scale of 1:24,000, showing the permittee's boundaries and limits of its separate storm sewer system. If a paper copy of a map is submitted, identify the quadrangle name on the map and be sure to include the name of the permittee.

(F) Assurance that the Stormwater Management Plan for the MS4 is consistent with the following provisions of state statutes and regulations, as appropriate:

(i) For sites within the Coastal Boundary, the permittee must address all applicable goals and policies in Section 22a-92 of the Connecticut General Statutes, and must not cause adverse impacts to coastal resources as defined in Section 22a-93(15) of the Connecticut General Statutes.

(ii) The permittee's Stormwater Management Plan will not threaten the continued existence of any species listed pursuant to section 26-306 of the Connecticut General Statutes as endangered or threatened and will not result in the destruction or adverse modification of habitat designated as essential to such species.

(iii) The implementation of the permittee's Stormwater Management Plan for any part of the MS4 located within an aquifer protection area (see Appendix C) as mapped under section 22a-354b of the Connecticut General Statutes will comply with regulations adopted pursuant to section 22a-354i of the Connecticut General Statutes. For any activity regulated pursuant to sections 8(c) and 9(b) of the Aquifer Protection Regulations (section 22a-354i(1)-(10) of the Regulations of Connecticut State Agencies), the Stormwater Management Plan must assure that stormwater run-off generated from the MS4 is managed in a manner so as to prevent pollution of groundwater.

(iv) The Stormwater Management Plan has been reviewed for consistency with state Historic Preservation statutes, regulations, and policies including identification of any potential impacts on property listed or eligible for listing on the Connecticut Register of Historic Places. A review conducted for an Army Corps of Engineers Section 404 wetland permit would meet this qualification.

(v) The Stormwater Management Plan appropriately addresses new or increased discharges to high quality waters, as specified in Section 3(*b*)(6).

(vi) The Stormwater Management Plan appropriately addresses new or increased discharges to impaired waters, as specified in Section 3(*b*)(7).

(G) For each of the Minimum Control Measures in Section 6(*a*), the following information shall be included:

(i) each Best Management Practice (BMP) to be implemented;

(ii) the person(s) responsible for implementing and maintaining each BMP;

(iii) the date by which each BMP will be implemented;

(iv) the measurable goal(s) by which each BMP will be evaluated.

(H) Provide an internet address (URL) where the Stormwater Management Plan required by Section 5(*b*) and the Annual Reports required by Section 6(*j*) are accessible for public review. Also provide a physical address where a paper copy of the Plan and Annual Reports are available for inspection. If the registrant claims that certain elements of their Plan constitute secure information (pursuant to Section 4(*d*)(2)) or are otherwise exempt from the disclosure requirements of the state Freedom of Information Act (section 1-210 et seq of the Connecticut General Statutes, also called FOIA) as specified in that Act, the registrant shall follow the procedures provided in the

registration form instructions for this general permit regarding information subject to FOIA requirements. The process of complying with the FOIA requirements does not exempt the registrant from the registration and Plan preparation deadlines of this general permit.

(I) The certification of the registrant and of the individual or individuals responsible for actually preparing the registration, in accordance with Section 3(*b*)(8).

(J) Certification (pursuant to the requirements and conditions of Section 3(*b*)(9)) that the Stormwater Management Plan has been reviewed by a qualified professional engineer (as defined in Section 2) licensed in the State of Connecticut.

(d) Availability of Registrations, Stormwater Management Plans and Annual Reports

(1) Registration Availability

Within thirty (30) days of receipt of a registration, the Commissioner shall post on the DEEP website a list of registrations submitted and identify the location where the Stormwater Management Plan is available.

On or before sixty (60) days from the date of posting of a registration by the Commissioner, members of the public may review the registration and submit written comments to the Commissioner.

(2) Stormwater Management Plan Availability

A permittee shall make its Stormwater Management Plan (Plan) available, electronically and at a publicly available location, for public review and comment at least ninety (90) days prior to the effective date of this general permit. The permittee shall also provide the internet address (URL) where the Plan may be located or an electronic copy to the Commissioner. Within thirty (30) days of receipt of a Stormwater Management Plan (or its URL), the Commissioner shall post on the DEEP website a list of Plans submitted and identify the location where the Plan will be available for review. In addition to the internet address (URL) required as part of the registration (pursuant to Section 4(*c*)(2)(H)), reasonable efforts to inform the public of this document shall be undertaken by the permittee. The Plan shall be made available at the permittee's main office or other designated municipal or institution office, a local library or other publicly available location for public inspection and copying consistent with the federal and state Freedom of Information Acts. On or before sixty (60) days from the date of the availability of the Plan, members of the public may review the Plan and submit written comments on it to the Commissioner.

If the registrant claims that certain elements of their Plan constitute secure information subject to restrictions related to Homeland Security or other security issues otherwise exempt from the disclosure requirements of the state Freedom of Information Act (section 1-210 et seq of the Connecticut General Statutes, also called FOIA) as specified in that Act, they shall follow the procedures provided in the registration form instructions for this general permit regarding information subject to FOIA requirements. The process of complying with the FOIA requirements does not exempt the registrant from the registration and Plan preparation deadlines in this general permit.

Following the comment period specified above, the final Plan shall remain available for public inspection on-line and a paper copy made available at the location specified above during regular business hours.

(3) Annual Report Availability

At least forty five (45) days prior to submission of each Annual Report to the Department, pursuant to Section 6(*j*), each permittee shall make available for public review and comment a draft copy of the complete Annual Report. Comments on the Annual Report may be made to the permittee and are *not* submitted to the Department. Reasonable efforts to inform the public of this document shall be undertaken by the permittee. Such draft copies shall be made available electronically on the permittee's website for public inspection and copying consistent with the federal and state Freedom of Information Acts and at at least one of the following locations: the permittee's main office or other designated municipal or institution office, a local library or other central publicly available location. Following submission of the Annual Report (pursuant to Section 6(*j*)), a copy of the final report shall be made available for public inspection during regular business hours.

(e) Where to File a Registration

A registration shall be filed with the Commissioner on forms available through the DEEP website.

(f) Additional Information

The Commissioner may require a registrant to submit additional information, which the Commissioner reasonably deems necessary to evaluate the consistency of the subject activity with the requirements for authorization under this general permit.

(g) Additional Notification

For discharges authorized by this general permit to another regulated Small MS4 or to the City of Stamford, a copy of the registration and all attachments thereto shall also be submitted to the owner and operator of that system.

For discharges authorized by this general permit to a DOT separate storm sewer system, a copy of the registration and all attachments thereto shall also be submitted to the DOT upon request.

For discharges within a public drinking water supply watershed or aquifer area, the permittee shall notify the water company of the availability (pursuant to Sections 4(*d*)(1) and (2), above) of the registration and the Plan described in subsection 5(*b*) of this general permit or the registration and Plan shall be submitted to the water company upon request.

For discharges to river components and tributaries which have been designated as Wild and Scenic under the Wild and Scenic Rivers Act, a copy of the registration and the Plan described in 5(*b*) of this general permit shall be submitted to the applicable Wild and Scenic Coordinating Committee upon request.

(h) Action by Commissioner

(1) The Commissioner may require that a permittee obtain an individual permit for any discharge authorized by this permit in accordance with Section 22a-430b of the Connecticut General Statutes.

(2) The Commissioner may reject without prejudice a registration if he or she determines that it does not satisfy the registration requirements (Section 4(*c*)) of this general permit. Any registration refiled after such a rejection shall be accompanied by the fee specified in the "Fees" section (Section 4(*c*)(1)) of this general permit.

(3) The Commissioner may disapprove a registration if he or she finds that the subject activity is inconsistent with the "Requirements for Authorization" section (Section 3(*b*)) of this general permit, or for any other reason provided by law.

(4) Disapproval of a registration under this subsection shall constitute notice to the registrant that the subject activity must be authorized by an individual permit.

(5) Disapproval of a registration shall be in writing.

Section 5. Requirements of this General Permit

The permittee shall at all times continue to meet the requirements for authorization set forth in Section 3 of this general permit. In addition, a permittee shall ensure that authorized activities are conducted in accordance with the following conditions:

(a) Conditions Applicable for Certain Discharges

(1) If the permittee initiates, creates, or originates a discharge of stormwater which is located less than 500 feet from a tidal wetland that is not a fresh-tidal wetland, such discharge shall flow through a system designed to retain the Water Quality Volume, as defined in Section 2.

(2) If the permittee wishes to initiate, create, or originate a discharge of stormwater below the coastal jurisdiction line into coastal, tidal, or navigable waters for which a permit is required under the Structures and Dredging Act in accordance with Section 22a-361(a) of the Connecticut General Statutes or into tidal wetlands for which a permit is required under the Tidal Wetlands Act in accordance with Section 22a-32 of the Connecticut General Statutes, the municipality shall obtain such permit(s) from the Commissioner prior to initiating, creating or originating such discharge.

(3) There shall be no distinctly visible floating scum, oil or other matter contained in the stormwater discharge. Excluded from this are naturally occurring substances such as leaves and twigs provided no person has placed such substances in or near the discharge.

(4) The stormwater discharge shall not result in pollution which may cause or contribute to acute or chronic toxicity to aquatic life, impair the biological integrity of aquatic or marine ecosystems, or result in an unacceptable risk to human health.

(5) The stormwater discharge shall not cause or contribute to an exceedance of the applicable Water Quality Standards in the receiving water.

(6) Any new stormwater discharge to high quality waters (as identified by the Commissioner consistent with the Water Quality Standards) shall be discharged in accordance with the Connecticut Anti-Degradation Implementation Policy in the Water Quality Standards manual. At a minimum, the permittee shall evaluate and implement to the Maximum Extent Practicable practices which will prevent the discharge of the Water Quality Volume to a surface water body or other practices necessary to protect and maintain designated uses and meet standards and criteria contained in the Water Quality Standards.

(7) Any stormwater discharge to the waters identified in Appendix D shall be managed for the Stormwater Pollutant of Concern identified in the appendix consistent with the requirements in Section 6 of this permit.

(b) Stormwater Management Plan

The permittee shall develop, implement, and enforce a stormwater management plan designed to reduce the discharge of pollutants from the Small MS4 to the maximum extent practicable, to protect water quality, and to satisfy the appropriate water quality requirements of the federal Clean Water Act. Maximum Extent Practicable (MEP) is a technology-based standard established by Congress in the Clean Water Act Section 402(p)(3)(B)(iii). Since no precise definition of MEP exists, it allows for maximum flexibility on the part of MS4 operators as they develop their programs. (40CFR 122.2, See also: Stormwater Phase II Compliance Assistance Guide EPA 833-R-00-002, March 2000). When trying to reduce pollutants to the MEP, there must be a serious attempt to comply, and practical solutions may not be lightly rejected. Factors such as the conditions of receiving waters, specific local concerns, MS4 size, climate, implementation schedules, current ability to finance the program, beneficial uses of receiving water, hydrology, geology, and capacity to perform operation and maintenance should be considered in determining whether permittee has complied with this general permit to the Maximum Extent Practicable.

Under this program, the permittee shall prepare a Stormwater Management Plan pursuant to Section 6 of this general permit, which plan must be completed by such time as specified in Section 4(*d*)(2) of this general permit. The permittee shall continue to implement the Stormwater Management Plan and all Minimum Control Measures required by this general permit throughout the entire term of the general permit. The permittee shall continue to provide for adequate staffing and economic resources for such implementation throughout the entire term of the general permit. If at any time the Commissioner finds that the Plan is not adequate to protect the waters of the state from pollution, the Commissioner may terminate authorization under this permit and require the permittee to submit an individual permit application.

Failure to implement all elements of the Stormwater Management Plan to the MEP constitutes a violation of this permit.

Section 6. Development of Stormwater Management Plan (Plan)

The Plan shall address the Minimum Control Measures as indicated in this section. Section 6(*a*) contains the requirements for Small MS4s. These measures shall be implemented throughout the boundaries of the municipality or institution except as otherwise indicated in this section.

(a) Minimum Control Measures

For each Minimum Control Measure, the permittee shall: define appropriate BMPs; designate a person(s) and job title responsible for each BMP; define a time line for implementation of each BMP; where appropriate, identify the location, including the address and latitude and longitude, for each BMP; and define measurable goals for each BMP. The Minimum Control Measures in the Plan include, but are not limited to:

(1) Public education and outreach

The goals of this minimum control measure are:

- To raise awareness that polluted stormwater runoff is the most significant source of water quality problems;
- To motivate residents to use Best Management Practices (BMPs) which reduce polluted stormwater runoff; and
- To reduce polluted stormwater runoff as a result of increased awareness and utilization of BMPs.

(A) Implement a public education program to distribute educational materials to the permittee's community (i.e. residents, business and commerce, students, staff, contractors, etc.) or conduct equivalent outreach activities about the sources and impacts of stormwater discharges on waterbodies and the steps that the public can take to reduce pollutants in stormwater runoff. The education program shall include, but not be limited to, information on management of pet waste, application of fertilizers, herbicides, and pesticides, impervious cover and impacts of illicit discharges and improper disposal of waste into the MS4. The form and content of the education program will be dependent on the audience and identified areas of concern for each MS4. Permittees may join other permittees in the same region to develop and implement a public education program. Educational information may be developed and/or acquired from other permittees, governmental agencies, community and non-governmental organizations, councils of government, academia, and/or environmental advocacy organizations. Outreach resources will be available from the DEEP stormwater webpage at www.ct.gov/deep/stormwater. Information may be disseminated with flyers, brochures, door hangers, television public service announcements, and/or web based tools. Each Annual Report shall summarize the types, sources, number of, and methods by which materials disseminated.

(i) Permittees previously authorized by the General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems issued on January 9, 2004 (existing 2004 MS4 permittees) shall begin implementation of this measure within the first year following the effective date of this permit and continue until permit expiration. Permittees shall utilize the materials developed under the 2004 MS4 permit and update or modify as necessary to acquire and/or develop the content of the outreach materials for this general permit.

(ii) Permittees not previously authorized by the General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems issued on January 9, 2004 (new MS4 permittees) shall begin implementation of this measure within the second year following the effective date of this permit and continue until

permit expiration. Permittees shall utilize the one year period following the effective date of this permit to acquire and/or develop the content of the outreach materials.

(B) To implement the public education and outreach program, the permittee shall develop or acquire current educational material from DEEP and other sources that identifies the pollutants (such as pathogens/bacteria, nitrogen, phosphorus, sediments, metals, oils & greases) associated with stormwater discharges, the potential sources of the pollutants, the environmental impacts of these pollutants, and related pollution reduction practices.

(C) Additional measures for discharges to waters associated with a Stormwater Pollutant of Concern

These measures may be implemented solely by the permittee or as part of a collaborative regional or statewide program to address the issue. However, the permittee retains sole responsibility for compliance with this section. The method of implementation shall be indicated in the permittee's Plan.

(i) For waters for which **Phosphorus** is a Stormwater Pollutant of Concern, educational materials shall be specifically tailored and targeted to educate on the sources, impacts, and available pollution reduction practices from the following:

a. Septic systems
b. Fertilizer use
c. Grass clippings and leaves management
d. Detergent use
e. Discharge of sediment (to which Phosphorus binds) from Construction sites
f. Other erosive surfaces

(ii) For waters for which **Nitrogen** is a Stormwater Pollutant of Concern, educational materials shall be specifically tailored and targeted to educate on the sources, impacts, and available pollution reduction practices from the following:

a. Septic systems
b. Fertilizer use
c. Grass clippings and leaves management
d. Discharge of sediment (to which Nitrogen binds) from Construction sites
e. Other erosive surfaces

(iii) For waters for which **Bacteria** is a Stormwater Pollutant of Concern, educational materials shall be specifically tailored and targeted to educate on the sources, impacts, and available pollution reduction practices from the following:

a. Septic systems
b. Sanitary cross connections
c. Waterfowl
d. Pet waste
e. Manure piles associated with livestock and horses

(iv) For waters for which **Mercury** is a Stormwater Pollutant of Concern, educational materials shall be specifically tailored and targeted to educate on the sources,

impacts and available recycling programs for elemental mercury and mercury-containing items such as:

a. Thermometers
b. Thermostats
c. Fluorescent lights
d. Button cell batteries

(D) Suggested Strategies.

(i) Target specific populations: Each permittee is encouraged to direct such outreach program and/or materials at specific populations. Such target populations may include, for example, school age populations, farming populations, and urban populations. Sample educational material for each Stormwater Pollutant of Concern noted above will be made available by DEEP.

(ii) Partner with local organizations: Permittees may wish to include in its outreach efforts various local organizations which may be able to assist in helping to spread the stormwater message.

(2) Public Involvement/Participation

The permittee shall provide opportunities to engage their community to participate in the review and implementation of the permittee's Plan. The goal of this minimum control measure is to involve the community in both the planning and implementation process of improving water quality. Public participation is beneficial to the success of a municipal stormwater management program because it allows for a broader public support, additional expertise, and a conduit to other programs. Community members are also more likely to apply these lessons/BMPs at home if they are part of the process.

(A) Publish a public notice on the permittee's website, through an email or mailing list, if the permittee maintains one, or in a newspaper with general circulation in the area to inform the public of the Plan and the Annual Report required by Section 6(*j*) of this permit and to solicit comments on the Plan and Annual Report. The notice shall provide a contact name (with phone number, address, and email) to whom the public can send comments and a publicly accessible location (such as the MS4's main office or other designated municipal office, a local library or other central publicly available location) and/or URL where the Plan and Annual Report are available for public review. The public notice shall allow for a 30 day comment period, at a minimum. Municipalities and institutions shall publish this public notice annually no later than January 31.

(B) The permittee is encouraged to enlist local organizations to help implement the elements of their Plan. However, the permittee retains sole responsibility for permit compliance.

(C) No requirements in addition to those specified in subsections (A)-(B), above, are specified for discharges to waters impaired for Phosphorus, Nitrogen, Bacteria, or Mercury.

(3) Illicit discharge detection and elimination.

Within one (1) year of the effective date of this general permit for existing 2004 MS4 permittees and within two (2) years of the effective date of this general permit for new MS4 permittees, the permittee shall develop a written Illicit Discharge Detection and Elimination (IDDE) program designed to: provide the legal authority to prohibit and eliminate illicit discharges (as defined in Section 2 except for those discharges noted in the Section 3(*a*)(2) of this permit) to the MS4; find the source of any illicit discharges; eliminate those illicit discharges; and ensure ongoing screening and tracking to prevent and/or eliminate future illicit discharges. Failure to implement all elements of the IDDE program to the MEP constitutes a violation of this permit.

(A) IDDE Program Elements

(i) The permittee shall, at a minimum, implement the IDDE program elements in this section and the IDDE protocol in Appendix B within the Urbanized Area and those catchment areas of the MS4 with either Directly Connected Impervious Area (DCIA) of greater than 11% (as identified on maps available at www.ct.gov/deep/municipalstormwater) or which discharge to impaired waters ("priority" areas). The permittee is encouraged to develop a prioritizing strategy to identify areas outside these identified areas to further implement these IDDE measures. This prioritizing strategy should utilize the prioritizing elements included in Section (A)(7)(c) of Appendix B.

(ii) Illicit discharges to the MS4 by any person are prohibited, and any such discharges are not authorized by the general permit, are unlawful, and remain unlawful until they are eliminated. The permittee shall prohibit all illicit discharges from entering its MS4. Upon detection, the permittee shall eliminate illicit discharges as soon as possible and require the immediate cessation of such discharges upon confirmation of responsible parties in accordance with its enforceable legal authorities established pursuant to subsection (B) below. Where elimination of an illicit discharge within sixty (60) days of its confirmation is not possible, the permittee shall establish a schedule for its elimination not to exceed 180 days (six (6) months). The permittee shall immediately commence actions necessary for elimination. The permittee shall diligently pursue elimination of all illicit discharges. In the interim, the permittee shall take all reasonable and prudent measures to minimize the discharge of pollutants to its MS4.

(iii) The permittee shall develop a program for citizen reporting of illicit discharges. This may include maintaining a website, email list or mailing program that provides clear instructions for the public describing how citizens can submit an illicit discharge report. The reporting program shall provide an email address and/or a phone number or other means for submissions. The permittee shall affirmatively investigate and eliminate any illicit discharges reported to it by any citizen or organization, provided that such report incorporates at least a time and location of an observed discharge. The permittee shall commence inspection of such a reported outfall or manhole promptly after receiving such a report, and incorporate those reported outfalls into its IDDE program subject to all provisions

of this subsection (3) and of Appendix B. All citizen reports and the responds to those reports shall be included in the Annual Report.

(iv) The permittee shall implement outfall screening and an illicit discharge detection protocol pursuant to **Appendix B** to identify, prioritize, and investigate separate storm sewer catchments for suspected illicit discharges of pollutants.

(v) The permittee shall maintain a record of illicit discharge abatement activities including, at a minimum: location (identified with an address or latitude and longitude), description, date(s) of inspection, sampling data (if applicable), action(s) taken, date of removal or repair and responsible party(ies). This information shall be included in the permittee's Annual Report pursuant to the Section 6(*j*) of this permit.

(vi) Timelines – permittees shall implement IDDE program elements in accordance with the schedules included in this section and in Appendix B.

(B) Establish the necessary and enforceable legal authority by statute, ordinance, rules and regulations, permit, easement, contract, order or any other means, to eliminate illicit discharges.

(i) The legal authority shall:

a. prohibit illicit discharges to its storm sewer system and require removal of such discharges consistent with subsection (3)(A), above; and

b. control the discharge of spills and prohibit the dumping or disposal of materials including, but not limited to, residential, industrial and commercial wastes, trash, used motor vehicle fluids, pesticides, fertilizers, food preparation waste, leaf litter, grass clippings, and animal wastes into its MS4; and

c. authorize fines or penalties and/or recoup costs incurred by the permittee from anyone creating an illicit discharge or spilling or dumping as specified in subsection (3)(A), above. For state and federal institutions, where this provision may conflict with existing rules, regulations, policies, chain of command or other circumstances, alternate provisions for enforcement may be utilized.

d. provide any additional legal authorities specified in Section (A)(7)(a) of Appendix B.

(ii) Existing 2004 MS4 permittees must establish and implement this legal authority within one year of the effective date of this permit.

(iii) New MS4 permittees must establish and implement this legal authority on or before two (2) years of the effective date of this permit.

(C) Develop a list (spreadsheet or database) and map or series of maps at a minimum scale of 1"=2000' and maximum scale of 1"=100' showing all stormwater discharges from a pipe or conduit located within and owned or operated by the municipality or institution

and all interconnections with other MS4s. The map(s) should, if possible, be developed in a GIS format.

(i) The list and map(s) shall include for each discharge:

a. Type, material, size, and location (identified with a latitude and longitude) of conveyance, outfall or channelized flow (e.g. 24" concrete pipe);

b. the name, water body ID and Surface Water Quality Classification of the immediate surface waterbody or wetland to which the stormwater runoff discharges;

c. if the outfall does not discharge directly to a named waterbody, the name and water body ID of the nearest named waterbody to which the outfall eventually discharges;

d. the name of the watershed, including the subregional drainage basin number (available from CT ECO at www.cteco.uconn.edu) in which the discharge is located; and

e. the spreadsheet or database should, if possible, be prepared in a format compatible with Microsoft Excel.

(ii) For existing 2004 MS4 permittees, this list and mapping must be completed within two (2) years of the effective date of this permit.

(iii) For new MS4 permittees, this list and mapping must commence upon the effective date of this permit and be completed within three (3) years from the effective date of this permit. The entirety of the municipal or institutional MS4 shall be mapped by the expiration date of this permit.

(D) For waters for which **Phosphorus**, **Nitrogen**, or **Bacteria** is a Stormwater Pollutant of Concern:

(i) To address septic system failures, the IDDE program shall give highest priority for the IDDE program in areas with the highest potential to discharge bacteria, phosphorus, and nitrogen to the MS4. Such areas shall be identified based on assessment of the following criteria: historic on-site sanitary system failures, proximity to bacteria impaired waters, low infiltrative soils, and shallow groundwater. Consultation with local or state health officials is strongly encouraged. The Annual Report shall include a summary of the program, the number of areas identified with failing systems, actions taken by the permittee to respond to and address the failures, and the anticipated pollutant reduction.

(E) No requirements in addition to those specified in subsections (A) - (C) above exist for discharges to waters for which **Mercury** is a Stormwater Pollutant of Concern.

(4) Construction Site Stormwater Runoff Control

The permittee shall implement and enforce a program to control stormwater discharges (to its MS4) associated with land disturbance or development (including re-development)

activities from sites (as defined in the Department's General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities) with one acre or more of soil disturbance, whether considered individually or collectively as part of a larger common plan. Such program shall include the following elements:

(A) Legal Authority

(i) The permittee shall establish an ordinance, bylaw, regulation, standard condition of approval or other appropriate legal authority that requires:

a. developers, construction site operators, or contractors to maintain consistency with the 2002 Guidelines for Soil Erosion and Sedimentation Control, as amended, the Connecticut Stormwater Quality Manual, and all stormwater discharge permits issued by the DEEP within the municipal or institutional boundary pursuant to CGS 22a-430 and 22a-430b;

b. the implementation of additional measures to protect/improve water quality (in addition to the above requirements) as deemed necessary by the municipality or institution;

c. the permittee to carry out all inspection, surveillance and monitoring procedures necessary to determine compliance with municipal regulations, ordinances or programs or institutional requirements related to the management of the permittee's MS4. Specifically, inspections shall be conducted, where allowed, to inventory the number of privately-owned retention ponds, detention ponds and other stormwater basins that discharge to or receive drainage from the permittee's MS4;

d. the owner of a site seeking development approval from the permittee to provide and comply with a long term maintenance plan and schedule to ensure the performance and pollutant removal efficiency of privately-owned retention ponds, detention ponds and other stormwater basins that discharge to or receive discharge from the permittee's MS4 including short-term and long-term inspection and maintenance measures to be implemented by the private owner; and

e. the permittee to control through interagency or inter-jurisdictional agreements, the contribution of pollutants between the permittee's MS4 and MS4s owned or operated by others.

(ii) For existing 2004 MS4 permittees, within two (2) year from the start of the permittee's first fiscal year that begins after the effective date of this permit, the permittee shall implement, upgrade (if necessary) and enforce its land use regulations to meet the requirements of subsections 4(A)(i)a. – e. above.

(iii) For new MS4 permittees, within three (3) years from the start of the permittee's first fiscal year that begins after the effective date of this permit, the permittee shall implement, upgrade (if necessary) and enforce its land use regulations (for municipalities) or its construction requirements (for institutions) to meet the requirements of Sections 4(A)(i)a. – e. above.

(B) Interdepartmental Coordination

(i) The permittee will develop and implement a plan outlining how all municipal or institutional departments and boards with jurisdiction over the review, permitting, or approval of land disturbance and development projects within the MS4 will coordinate their functions with one another.

(ii) All municipalities and institutions shall implement this measure upon the effective date of this permit.

(C) Site Review and Inspection

(i) The permittee will conduct site plan reviews that incorporate consideration of stormwater controls or management practices to prevent or minimize impacts to water quality.

(ii) The permittee will conduct site inspection(s) and enforcement to assess the adequacy of the installation, maintenance, operation, and repair of construction and post construction control measures.

(iii) All municipalities and institutions shall implement this measure upon the effective date of this permit.

(D) Public Involvement

(i) The permittee will implement a procedure for receipt and consideration of information submitted by the public concerning proposed and ongoing land disturbance and development activities.

(ii) All municipalities and institutions shall implement this procedure upon the effective date of this permit.

(E) State Permit Notification

(i) The permittee will implement a procedure for notifying developers (working in a municipality) or contractors (working for a municipality or an institution) of their potential obligation to obtain authorization under the DEEP's General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities ("construction general permit") if their development or redevelopment project disturbs one or more acres of land, either individually or collectively, as part of a larger common plan, and results in a point source discharge to the surface waters of the state directly or through the permittee's MS4. The notification shall include a provision informing the developer/contractor of their obligation to provide a copy of the Storm Water Pollution Control Plan (required by the construction general permit) to the permittee upon request.

(ii) All municipalities and institutions shall implement this procedure upon the effective date of this permit.

(F) For construction discharges to waters for which **Phosphorus**, **Nitrogen**, **Bacteria**, or **Mercury** is a Stormwater Pollutant of Concern no additional measures are included in this section except as may be required by Sections 3(*b*)(7) or 6(*k*).

(5) Post-construction stormwater management in new development or redevelopment

(A) Legal Authority

(i) The permittee shall establish an ordinance, bylaw, regulation, standard condition of approval or other appropriate legal authority that requires, to the MEP, that a developer or contractor seeking the permittee's approval shall consider the use of low impact development ("LID") and runoff reduction site planning and development practices prior to the consideration of other practices in the permittee's land use regulations, guidance or construction project requirements to meet or exceed those LID and runoff reduction practices identified in the Stormwater Quality Manual. Such legal authority shall include the following standards: 1) for redevelopment of sites that are currently developed with Directly Connected Impervious Area (DCIA) of forty percent or more, retain on-site half the water quality volume for the site, or 2) for new development and redevelopment of sites with less than forty percent DCIA, retain the water quality volume for the site, or 3) an alternate retention/treatment standard as outlined in subsections 5(B)(i)-(ii) below. All permittees shall identify and, where appropriate, reduce or eliminate existing local regulatory barriers to implementing LID and runoff reduction practices to the MEP. These may include site planning requirements, zoning regulations, street design regulations, or infrastructure specifications that address minimal dimensional criteria for the creation of roadways, parking lots, and other DCIA. If such barriers cannot be eliminated within the timeframe dictated by subsections 5(A)(ii) and (iii), below, the permittee shall provide in the Annual Report(s) required by Section 6(*j*) a justification and a revised schedule for implementation.

In establishing the legal authority, the permittee shall consider the following watershed protection elements to manage the impacts of stormwater on receiving waters, except where noted:

a. Minimize the amount of impervious surfaces (roads, parking lots, roofs, etc.) within each municipality by minimizing the creation, extension, and widening of parking lots, roads, and associated development and encourage the use of Low Impact Development or green infrastructure practices.

b. Preserve, protect, create and restore ecologically sensitive areas that provide water quality benefits and serve critical watershed functions. These areas may include, but are not limited to; riparian corridors, headwaters, floodplains and wetlands.

c. Implement stormwater management practices that prevent or reduce thermal impacts to streams, including requiring vegetated buffers along waterways, and disconnecting discharges to surface waters from impervious surfaces such as parking lots.

d. Seek to avoid or prevent hydromodification of streams and other water bodies caused by development, including roads, highways, and bridges.

e. Implement standards to protect trees, and other vegetation with important evapotranspirative qualities.

f. Implement policies to protect native soils, prevent topsoil stripping, and prevent compaction of soils.

(ii) For existing 2004 MS4 permittees, the permittee shall consider the elements of this section during regular reviews and implement this requirement no later than four (4) years after the effective date of this permit.

(iii) For new permittees, the permittee shall consider the elements of this section during regular reviews and implement this requirement no later than five (5) years after the effective date of this permit.

(B) Runoff Reduction/Low Impact Development ("LID") Measures

Pursuant to the requirements of subsection 5(A)(i) above, the permittee shall require the party responsible (i.e. a developer within a municipal boundary or a developer/contractor with the institution) for development and redevelopment projects within its MS4 to:

(i) For development or redevelopment of sites that are currently developed with Directly Connected Impervious Area (DCIA) of forty percent or more, retain on-site half the water quality volume for the site. In cases where this entire amount cannot be retained, the permittee shall require the responsible party to retain runoff volume to the maximum extent achievable using control measures that are technologically available and economically practicable and achievable in light of best industry practice. In such cases, additional stormwater treatment, to the maximum extent achievable using control measures that are technologically available and economically practicable and achievable in light of best industry practice, shall be required for sediment, floatables and nutrients for the volume above that which can be retained up to the water quality volume. In cases where the runoff reduction requirement cannot be met, the developer/contractor shall submit, for the permittee's review, a report detailing factors limiting the capability of achieving this goal. In such cases, the permittee shall approve a stormwater mitigation project on another site proposed by the developer/contractor or approve a fee to be deposited into a dedicated account of the permittee for use by the permittee to fund in whole or in part the retrofit of one or more existing DCIA. Unless such fee is established by DEEP, the fee proposed by the developer/contractor should be set in amount approved by the permittee as calculated based on an estimate of the cost necessary to implement the retrofit to achieve a similar amount of runoff reduction to the amount by which the actual amount of runoff reduced fails to achieve the requirement to retain the water quality volume for the site. The report shall include: the measures taken to maximize runoff reduction practices on the site; the reasons why those practices constitute the maximum extent achievable; the alternative retention volume; and a description of the measures used to provide additional stormwater treatment above

the alternate volume up to the water quality volume. In the case of linear redevelopment projects (e.g. roadway reconstruction or widening) for the developed portion of the right of way: (1) for projects that may be unable to comply with the full retention standard, the alternate retention and treatment provisions may also be applied as specified above, or (2) for projects that will not increase the DCIA within a given watershed, the developer/contractor shall implement the additional stormwater treatment measures referenced above, but will not be required to retain half of the water quality volume.

(ii) For all new development and for redevelopment of sites with less than forty percent DCIA, retain the water quality volume for the site. If there are site constraints that would prevent retention of this volume on-site (e.g. brownfields, capped landfills, bedrock, elevated groundwater, etc.), documentation must be submitted, for the permittee's review and written approval, which: explains the site limitations; provides a description of the runoff reduction practices implemented; provides an explanation of why this constitutes the maximum extent achievable; offers an alternative retention volume; and provides a description of the measures used to provide additional stormwater treatment for sediment, floatables and nutrients above the alternate volume up to the water quality volume. In such cases, the permittee shall approve a stormwater mitigation project on another site proposed by the developer/contractor or approve a fee to be deposited into a dedicated account of the permittee for use by the permittee to fund in whole or in part the retrofit of one or more existing DCIA. Unless such fee is established by DEEP, the fee proposed by the developer/contractor should be set in amount approved by the permittee as calculated based on an estimate of the cost necessary to implement the retrofit to achieve a similar amount of runoff reduction to the amount by which the actual amount of runoff reduced fails to achieve the requirement to retain the water quality volume for the site. Any such treatment shall otherwise be designed, installed and maintained consistent with the Stormwater Quality Manual. In the case of linear projects that do not involve impervious surfaces (e.g. electrical transmission rights-of-way or natural gas pipelines), retention of the water quality volume is not required as long as the post-development runoff characteristics do not differ significantly from pre-development conditions.

(iii) Consider the limitation of turf areas to those areas necessary to construct buildings, utilities, stormwater management measures, parking, access ways, reasonable lawn areas and contouring necessary to prevent future site erosion,

(iv) Maintain consistency with the Connecticut Stormwater Quality Manual, or if inconsistent, provide an explanation of why consistency is not feasible or practicable and information that the proposed plan of development is adequately protective.

(v) In areas served by on-site sewage disposal (septic) systems, the permittee should coordinate with the state or local health official, as appropriate, to confirm that any infiltration measures are appropriately sized, located and constructed in a manner consistent with the Connecticut Department of Public Health's *Technical Standards for Subsurface Sewage Disposal Systems*, Section 19-13-B100A of the Regulations of Connecticut State Agencies and/or DEEP requirements for on-site sewage disposal systems.

(vi) For existing 2004 MS4 permittees, the permittee shall implement this requirement within two (2) years after the effective date of this permit.

(vii) For new MS4 permittees, the permittee shall implement this requirement within three (3) years from the start of the permittee's first fiscal year that begins after the effective date of this permit.

(C) Directly Connected Impervious Area

Using mapping provided by the Commissioner (available at www.ct.gov/deep/municipalstormwater) or other equivalent source, the permittee shall calculate the Directly Connected Impervious Area (DCIA) that contributes stormwater runoff to each of its MS4 outfalls (i.e. catchment area) within three (3) years of the effective date of this general permit. The DCIA calculation shall be based upon the criteria available through the DEEP stormwater webpage (www.ct.gov/deep/municipalstormwater) and the precise methodology and assumptions shall be described in the permittee's Plan and initial annual report. Each annual report shall document the progress of this task until its completion. The Permittee shall revise its DCIA estimate as development, redevelopment, or retrofit projects effectively add or remove DCIA to its MS4.

(D) Long Term Maintenance

(i) The permittee shall implement a maintenance plan for ensuring the long-term effectiveness of retention or detention ponds located in the Urbanized Area and those catchment areas of the MS4 with either DCIA of greater than 11% or which discharge to impaired waters and which discharge to, or receive stormwater from, its MS4. This shall include such ponds that are owned by the permittee and all privately-owned ponds where the permittee maintains an easement or other legal authority pursuant to Section 6(*a*)(4)(A)(i) of this permit. At a minimum, the permittee shall annually inspect all such retention or detention ponds and remove accumulated sediment to restore full solids capture design capacity where found to be in excess of 50% design capacity.

(ii) The permittee shall implement a maintenance plan for ensuring the long-term effectiveness of stormwater treatment structures or measures (such as swirl concentrators, oil/grit separators, water quality wetlands or swales, etc.) installed within the Urbanized Area and those catchment areas of the MS4 with either DCIA of greater than 11% or which discharge to impaired waters. This shall include structures that are owned by the permittee or those for which the permittee maintains an easement or other legal authority pursuant to Section 6(*a*)(4)(A)(i) of this permit. At a minimum, the permittee shall annually inspect all such structures/measures and remove accumulated pollutants (such as sediment, oils, leaves, litter, etc.) to restore full solids capture design capacity where found to be in excess of 50% design capacity.

(iii) For existing 2004 MS4 permittees, the permittee shall implement this requirement within two (2) years of the effective date of this permit.

(iv) For new MS4 permittees, the permittee shall implement this requirement within three (3) years after the effective date of this permit.

(E) Additional measures for discharges to impaired waters (with or without a TMDL)

(i) For waters for which **Nitrogen, Phosphorus** or **Bacteria** is a Stormwater Pollutant of Concern:

To address erosion and sediment problems noted during the course of conducting the inspections required by subsection D above and identified by other means, the permittee shall develop, fund, implement, and prioritize these problems under the Retrofit program specified in Section 6(a)(6)(B) to correct the problem(s) in a specific timeframe and to establish short term and long term maintenance. Each annual report shall include which problem areas were retrofitted, the cost of the retrofit, and the anticipated pollutant reduction.

(ii) No requirements in addition to those specified in subsections (A)-(D) above exist for discharges to waters for which **Mercury** is a Stormwater Pollutant of Concern.

(6) Pollution Prevention/Good Housekeeping

The permittee shall implement an operations and maintenance program for permittee-owned or –operated MS4s that has a goal of preventing or reducing pollutant runoff and protecting water quality from all permittee-owned or -operated MS4s.

(A) Employee Training

The existing 2004 MS4 permittees shall continue a formal employee training program to increase awareness of water quality related issues in management of its MS4. New MS4 permittees shall develop this program within two (2) years of the effective date of this general permit. In addition to providing key staff with topical training regarding standard operating procedures and other activities necessary to comply with the provisions of this permit, the training program shall include establishing an awareness of the general goals and objectives of the Plan; identification and reporting of illicit discharges and improper disposal; and spill response protocols and respective responsibilities of involved personnel.

(B) Infrastructure Repair, Rehabilitation and Retrofit

(i) The permittee shall repair and rehabilitate its MS4 infrastructure in a timely manner to reduce or eliminate the discharge of pollutants from its MS4 to receiving waters. Priority for repair and rehabilitation shall be based on the following:

a. For existing 2004 MS4 permittees, the permittee shall utilize the information developed pursuant to Section 6(*a*)(6)(A)(v) of the 2004 MS4 permit to fund and implement a program for repairing, retrofitting or upgrading the conveyances, structures and outfalls of the MS4. This program shall be updated based on new information on outfalls discharging pollutants, impaired waters, inspection observations or observations made during outfall mapping pursuant to Section 6(*a*)(3)(C) of this permit.

b. For new MS4 permittees, the permittee shall, within the first three (3) years following the effective date of this general permit, develop a program to

identify conveyances, structures and outfalls in need of repairing, retrofitting or upgrading utilizing new and existing information on outfalls discharging pollutants, impaired waters, inspection observations or observations made during outfall mapping pursuant to Section 6(*a*)(3)(C) of this permit.

(ii) Retrofit Program

The goal of the retrofit program is to "disconnect" existing Directly Connected Impervious Areas (DCIA). An area of DCIA is considered disconnected when the appropriate portion of the Water Quality Volume has been retained in accordance with the requirements of Section 6(*a*)(5)(B)(i) or (ii) of this general permit. This may be accomplished through retrofits or redevelopment projects (public or private) that utilize Low Impact Development (LID) and runoff reduction measures or any other means by which stormwater is infiltrated into the ground or reused for other purposes without a surface or storm sewer discharge. A redevelopment project, as that term is used here and in Section 6(*a*)(5)(B)(i) and (ii), is one that modifies an existing developed site for the purpose of enhancing, expanding or otherwise modifying its function or purpose. A retrofit project is one that modifies an existing developed site for the primary purpose of disconnecting DCIA. The DCIA calculation performed pursuant to Section 6(*a*)(5)(C) shall serve as the baseline for the retrofit program required in this section.

a. DCIA Disconnection Tracking

Beginning on the effective date of this general permit, the permittee shall track on an annual basis the total acreage of DCIA that is disconnected as a result of redevelopment or retrofit projects within the MS4. Tracking the disconnection of DCIA means documenting within a given redevelopment or retrofit project the amount of existing DCIA that is modified such that it is disconnected. This tracking may include disconnections of DCIA from redevelopment or retrofit projects implemented as early as five (5) years prior to the effective date of this permit. Any redevelopment or retrofit of an existing developed site, whether public (municipal, state or federal) or private (residential, commercial or industrial) shall be included in this tracking.

Tracking the disconnection of DCIA does <u>not</u> apply for sites that were previously undeveloped as there were no existing impervious surfaces on those sites. The total amount of DCIA that has been disconnected during a given year shall be reported in that year's Annual Report.

b. Retrofit Planning

On or before the end of third year after the effective date of this general permit, the permittee shall develop a plan to implement retrofit projects to meet the goals of this section. The permittee shall identify and prioritize sites that may be suitable for retrofit. Considerations for prioritizing retrofit projects may include outfall catchment areas that discharge to impaired waters, areas within the Urbanized Area of the MS4 or catchment areas with greater than eleven percent (11%) DCIA. The permittee shall select from the list of prioritized projects those that it will implement to meet the goals in subparagraph (c) below. In the Annual Report for the third year of this general permit, the

permittee shall report on its identification and prioritization process, the selection of the projects to be implemented, the rationale for the selection of those projects and the total DCIA to be disconnected upon implementation of the projects.

c. Retrofit Schedule

By the end of this permit term, the permittee shall commence the implementation of the retrofit projects identified in subparagraph (b), above, with a goal of disconnecting one percent (1%) per year of the permittee's DCIA for the fourth and fifth years of this general permit, or a total of 2%, to the MEP. The two percent (2%) goal may be achieved by compiling the total disconnected DCIA tracked pursuant to subparagraph (a), above, or the retrofit projects designated in subparagraph (b), above, or a combination of the two.

If the two percent (2%) goal will not be met, the permittee shall include in the Annual Report a discussion of what percentage of DCIA will actually be disconnected and why the remainder of the two percent (2%) goal could not be achieved based on the MEP standard outlined in Section 5(*b*). The permittee shall also provide in the Annual Report for the fifth year of this permit for continuation of the retrofit program and continue such program with a goal to disconnect one percent (1%) of DCIA in each year thereafter.

(C) MS4 Property and Operations Maintenance

Permittee-owned or -operated properties, parks, and other facilities that are owned, operated, or otherwise the legal responsibility of the permittee shall be maintained so as to minimize the discharge of pollutants to its MS4. Such maintenance shall include, but not be limited to:

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(i) Parks and open space

The permittee shall optimize the application of fertilizers by municipal employees, institutional staff, or private contractors on lands and easements for which it is responsible for maintenance. Optimization practices considered may include conducting soil testing and analysis to determine soil phosphorus levels, the reduction or elimination of fertilizers, reduction of usage by adhering to the manufacturers' instructions, and use of alternative fertilizers forms (i.e. products with reduced, slow-releasing, or insoluble phosphorus compositions). Additional optimization practices to be considered include: proper storage and application practices (i.e. avoid impervious surfaces), application schedule (i.e. appropriate season or month) and timing (i.e. coordinated with climatic conditions to minimize runoff potential); develop and implement standard operating practices for the handling, storage, application, and disposal of pesticides and herbicides in compliance with applicable state and federal laws; evaluate lawn maintenance and landscaping activities to promote water quality (protective practices include reduced mowing frequencies, proper disposal of lawn clippings, and use of alternative landscaping materials like drought resistant and native plantings); and establish procedures for management of trash containers at parks (scheduled cleanings; sufficient number).

The permittee shall establish practices for the proper disposal of grass clippings and leaves at permittee-owned lands. Clippings shall be composted or otherwise appropriately disposed. Clippings should not enter the MS4 system or waters of the state.

(ii) Pet waste management

The permittee shall identify locations within its community/institution where inappropriate pet waste management practices are immediately apparent and pose a threat to receiving water quality due to proximity and potential for direct conveyance of waste to its storm system and waters. In such areas, the permittee shall, implement targeted management efforts such as public education and enforcement (e.g. increased patrol for violators). In permittee-owned recreational areas where dog walking is allowed, the permittee shall install educational signage, pet waste baggies, and disposal receptacles (or require carry-out). The permittee shall document its efforts in its annual reports. The permittee should consider including information regarding the scope and extent of its education, compliance, and enforcement efforts (including the number of violations pursued and fines levied or other enforcement taken).

(iii) Waterfowl management

Identify lands where waterfowl congregate and feeding by the public or institutional staff/residents occurs. To raise awareness regarding the water quality impacts, the permittee shall install signage or use other targeted techniques to educate the public about the detrimental impacts of feeding waterfowl (including the resulting feces deposition) and discourage such feeding practices. The permittee shall also implement practices that discourage the undesirable congregation of waterfowl in these areas, or otherwise isolate the direct drainage from these areas away from its storm system and waters.

(iv) Buildings and facilities (schools under the jurisdiction of the permittee, town offices, police and fire stations, pools, parking garages and other permittee-owned or operated buildings or utilities)

Evaluate the use, storage, and disposal of both petroleum and non-petroleum products; ensure, through employee training, that those responsible for handling these products know proper procedures; ensure that Spill Prevention Plans are in place, if applicable, and coordinate with the fire department as necessary; develop management procedures for dumpsters and other waste management equipment; sweep parking lots and keep areas surrounding the facilities clean to minimize runoff of pollutants; and ensure that all interior building floor drains are not connected to the MS4. This permit does not authorize such discharges; wastewaters from interior floor drains must be appropriately permitted.

(v) Vehicles and Equipment

Establish procedures for the storage of permittee-owned or -operated vehicles; require vehicles with fluid leaks to be stored indoors or in contained areas until repaired; evaluate fueling areas owned by the permittee and used by permittee-owned or -operated vehicles and if possible, place fueling areas under cover in

order to minimize exposure; establish procedures to ensure that vehicle wash waters are not discharged to the municipal storm sewer system or to surface waters. This permit does not authorize such discharges; wastewaters from interior floor drains must be appropriately permitted.

(vi) Leaf Management

The permittee shall establish and implement procedures to minimize or prevent the deposition of leaves in catch basins, streets, parking lots, driveways, sidewalks or other paved surfaces that discharge to the MS4. Such procedures shall also apply to leaves collected by the permittee.

(D) Street, Parking & MS4 Maintenance

The permittee shall implement a program to provide for regular inspection and maintenance of permittee-owned or -operated streets, parking areas and other MS4 infrastructure.

(i) Sweeping

a. Establish and implement procedures for sweeping permittee-owned or -operated streets and parking lots. All streets and parking lots within the Urbanized Area of the MS4, and outside the Urbanized Area within the catchment areas of the MS4 with either DCIA of greater than 11% or which discharge to impaired waters, shall be inspected, swept and/or cleaned (as necessary) with a minimum frequency of once per year in the spring following the cessation of winter maintenance activities (i.e. sanding, deicing, etc.). The procedures shall also include more frequent inspections, cleaning and/or sweeping of targeted areas determined by the permittee to have increased pollutant potential based on the presence of active construction activity or other potential pollutant sources. The permittee shall identify such potential pollutant sources based upon surface inspections, catch basin cleaning or inspection results, land use, winter road deicing and/or sand application, impaired or TMDL waters or other relevant factors as determined by the permittee. If wet dust suppression is conducted, the use of water should be minimized such that a discharge of excess water to surface waters and/or the storm sewer system does not occur.

For streets and parking lots outside the Urbanized Area and outside the catchment areas of the MS4 with either DCIA of greater than 11% or which discharge to impaired waters, including any rural uncurbed streets and parking lots with no catch basins, the permittee shall either meet the minimum frequencies above, or develop and implement an inspection, documentation and targeted sweeping and/or cleaning plan within one (1) year of the effective date of the general permit, and submit such plan with its year one Annual Report. For new and redeveloped municipal parking lots, evaluate options from reducing stormwater runoff to surface waters and/or the storm sewer system by the installing pervious pavements and/or other measures to promote sheet flow of stormwater.

b. Ensure the proper disposal of street sweepings in accordance with Department policies, guidance and regulations. Sweepings shall not be discharged back into the storm drain system and/or surface waters.

c. In its Annual Report, the permittee shall document results of its sweeping program including, at a minimum: a summary of inspection results, curb miles swept, dates of cleaning, volume or mass of material collected, and method(s) of reuse or disposal. The permittee shall also include documentation of any alternate sweeping plan for rural uncurbed streets and any runoff reduction measures implemented.

(ii) Catch Basin Cleaning

The Permittee shall conduct routine cleaning of all catch basins. The Permittee shall track catch basin inspection observations. Utilizing information compiled through its inventory of catch basins, operational staff and public complaints, the Permittee shall optimize routine cleaning frequencies for particular structures or catchment areas as follows to maintain acceptable sediment removal efficiencies:

a. Inspect all permittee-owned catch basins within the Urbanized Area of the MS4 and outside the Urbanized Area within the catchment areas of the MS4 with either DCIA of greater than 11% or which discharge to impaired waters at least once by the end of the third year following the effective date of this general permit. Catch basins outside the Urbanized Area and outside the catchment areas of the MS4 with either DCIA of greater than 11% or which discharge to impaired waters shall be inspected by the end of the fifth year following the effective date of this general permit.

b. Prioritize inspection and maintenance for permittee-owned catch basins located near impaired waters and construction activities (roadway construction, residential, commercial, or industrial development or redevelopment). Clean catch basins in such areas more frequently if inspection and maintenance activities indicate excessive sediment or debris loadings.

c. Establish a schedule that the frequency of routine cleaning will ensure that no catch basin at any time will be more than fifty (50) percent full.

d. If a catch basin sump is more than fifty (50) percent full during two consecutive routine inspections/cleaning events, the permittee shall document that finding, investigate the contributing drainage area for sources of excessive sediment loading, and to the maximum extent practicable, abate contributing sources. The permittee shall describe any actions taken in its Annual Report.

e. For the purposes of this subsection, an excessive sediment or debris loading is a catch basin sump more than fifty (50) percent full. A catch basin sump is more than 50 percent full if the contents within the sump exceed one half the distance between the bottom interior of the catch basin to the invert of the deepest outlet of the catch basin.

f. The permittee shall document in the Plan and in the first Annual Report its plan for optimizing catch basin cleaning, inspection plans, or its schedule for gathering information to develop the optimization plan. Documentation shall include metrics and other information used to reach the determination that the established plan for cleaning and maintenance is optimal for the MS4. The permittee shall keep a log of catch basins cleaned or inspected.

g. The permittee shall report in each Annual Report the total number of catch basins, number inspected, number cleaned, the total volume or mass of material removed from all catch basins and, if practicable, the volume or mass of material removed from each catch basin draining to water quality limited waters.

(E) Snow Management Practices

(i) Deicing Material Management

Develop and implement standard operating practices for the use, handling, storage, application, and disposal of deicing products such as salt and sand to minimize exposure to stormwater; consider means to minimize the use and optimize the application of chloride-based or other salts or deicing product (while maintaining public safety) and consider opportunities for use of alternative materials; for any exterior containers of liquid deicing materials installed after the effective date of this permit, provide secondary containment of at least 110% of the largest container or 10% of the total volume of all containers, whichever is larger, without overflow from the containment area.

(ii) Snow and Ice Control Practices

The permittee shall implement and refine its standard operating practices regarding its snow and ice control to minimize the discharge of sand, anti-icing or de-icing chemicals and other pollutants (while maintaining public safety). The permittee shall establish goals for the optimization of sand and/or chemical application rates through the use, where practicable, of automated application equipment (e.g. zero-velocity spreaders), anti-icing and pre-wetting techniques, implementation of pavement management systems, and alternate chemicals. The permittee shall maintain records of the application of sand, anti-icing and/or de-icing chemicals to document the reduction of chemicals to meet established goals. The permittee shall ensure the proper training for deicing applications for municipal employees, institutional staff, or private contractors on lands and easements for which it is responsible for maintenance.

The permittee shall manage and dispose of snow accumulations in accordance with DEEP's Best Management Practices for Disposal of Snow Accumulations from Roadways and Parking Lots, revised 2/4/11 and as amended (see link at: www.ct.gov/deep/stormwater). In its Annual Report, the permittee shall document results of its snow removal program including, at a minimum: the type of staff training conducted on application methods and equipment, type(s) of deicing materials used; lane-miles treated; total amount of each deicing material used; type(s) of deicing equipment used; any changes in deicing practices (and the reasons for the change); and snow disposal methods.

(F) Interconnected MS4s

As part of interagency agreements established pursuant to Section 6(*c*)(3) of this permit, the Permittee shall coordinate with operators of interconnected MS4s (such as neighboring municipalities, institutions and DOT) regarding the contribution of potential pollutants from the storm sewer systems, contributing land use areas and stormwater control measures in the respective MS4s. This same coordination shall be conducted regarding operation and maintenance procedures utilized in the respective systems.

(G) Sources contributing pollutants to the MS4

The permittee shall develop and implement a program to control the contribution of pollutants to its MS4 from commercial, industrial, municipal, institutional or other facilities, not otherwise authorized by permit issued pursuant to Sections 22a-430 or 22a-430b of the Connecticut General Statutes.

(H) Additional measures for discharges to impaired waters (with or without a TMDL)

(i) For waters for which **Nitrogen** or **Phosphorus** is a Stormwater Pollutant of Concern:

On Permittee-owned or -operated lands, implement a turf management practices and procedures policy which includes, but is not limited to, procedures for proper fertilizer application and the planting of native plant materials to lessen the amount of turf area requiring mowing and the application of chemicals. Each Annual Report shall discuss the actions taken to implement this policy with an estimate of fertilizer and turf reduction.

(ii) For waters for which **Bacteria** is a Stormwater Pollutant of Concern:

On Permittee-owned or -operated lands with a high potential to contribute bacteria (such as dog parks, parks with open water, sites with failing septic systems), the permittee shall develop, fund, implement, and prioritize a retrofit or source management program to correct the problem(s) within a specific timeframe. Each Annual Report shall identify problem areas for which a retrofit or source management program were developed, the location of the closest outfall monitored in accordance with Section 6(*i*), the cost of such retrofit or program, and the anticipated pollutant reduction.

On Permittee-owned or -operated lands, prohibit the feeding of geese or waterfowl and implement a program to manage geese and waterfowl populations. Each Annual Report shall discuss the actions taken to implement this program.

(iii) No additional requirements in addition to those specified in subsections (A)-(C) above exist for discharges to waters for which **Mercury** is a Stormwater Pollutant of Concern.

(b) Sharing Responsibility

(1) Qualifying Local Program

The permittee may satisfy the requirement to implement a BMP for a Minimum Control Measure by having a third party implement the BMP.

When a permittee is relying on a third party to implement one or more BMP(s), the permittee shall note that fact in the registration and Annual Report required in Section 6(*j*), below. If the third party fails to implement the BMP(s), the permittee remains responsible for its implementation.

(Note: For example, if a local watershed organization performs an annual "river clean-up", this event may be used to satisfy a BMP for the Public Participation and/or the Pollution Prevention and Good Housekeeping Minimum Control Measure.)

(2) Qualifying State or Federal Program

If a BMP or Minimum Control Measure is the responsibility of a third party under another NPDES stormwater permit, the permittee is not required to include such BMP or Minimum Control Measure in its Stormwater Management Plan. The permittee shall reference this qualifying program in their Stormwater Management Plan. However, the permittee is not responsible for its implementation if the third party fails to perform. The permittee shall periodically confirm that the third party is still implementing this measure. If the third party fails to implement the measure, the Stormwater Management Plan may be modified to address the measure, if necessary.

In the case of a permitted municipal industrial activity that is covered by the General Permit for the Discharge of Stormwater Associated with Industrial Activity, the permittee may reference the activity's Stormwater Pollution Prevention Plan to address a portion of the permittee's Stormwater Management Plan.

(Note: For example, the permittee may reference a regional mall's requirement to perform sweeping and catch basin cleaning under the General Permit for the Discharge of Stormwater Associated with Commercial Activity. This third party action may be used to address a portion of the permittee's requirement under the Good Housekeeping and Pollution Prevention Minimum Control Measure.)

(3) Coordination of Permit Responsibilities

Where a portion of the separate storm sewer system within a municipality is owned or otherwise the responsibility of another municipality, institution or a state or federal agency the entities shall coordinate the development and implementation of their respective Stormwater Management Plans to address all the elements of Section 6. A description of the respective responsibilities for these elements shall be included in the Stormwater Management Plan for each municipality.

(Note: For example, a storm sewer system within a municipality may be operated and maintained by the DOT. In cases such as these, the two entities shall coordinate their Stormwater Management Plans to address the Minimum Control Measures, particularly at the interface between the two storm sewer systems.)

(4) Co-Permitting

When a municipal Regulated Small MS4s is co-located within the corporate boundary of another Regulated Small MS4, the two may, at their discretion, submit a single registration and share a single Plan as co-permittees. In such a case, the Plan shall clearly indicate which co-permittee is responsible for implementing each of the control measures and other elements of the Plan.

(Note: This provision currently applies only to the City of Groton within the Town of Groton and the Borough of Stonington within the Town of Stonington.)

(c) Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control, including related appurtenances, which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee when necessary to achieve compliance with this permit.

(d) Signature Requirements

The Plan shall be signed by the chief elected official or principal executive officer, as those terms are defined in Section 22a-430-3(b)(2) of the Regulations of Connecticut State Agencies. The Plan shall be retained by the chief elected official or principal executive officer and copies retained by MS4 officials or employees responsible for implementation of the Plan.

(e) Plan Review Fee

When submitting a Stormwater Management Plan as requested by the Commissioner pursuant to Section 6(*f*), below, the permittee shall submit a plan review fee of $375.

(f) Keeping Plans Current

The permittee shall amend the Plan whenever; (1) there is a change which has the potential to cause pollution of the waters of the state; or (2) the actions required by the Plan fail to prevent pollution of the waters of the state or fail to otherwise comply with any other provision of this general permit; or (3) the Commissioner requests modification of the Plan. The amended Plan shall be completed and all actions required by such Plan shall be completed within a time period determined by the Commissioner.

The Commissioner may notify the permittee in writing at any time that the Plan does not meet one or more of the requirements of this general permit. Within thirty (30) days of such notification, unless otherwise specified by the Commissioner in writing, the permittee shall respond to the Commissioner indicating how they plan to modify the Plan to address these requirements. Within ninety (90) days of this response or within one hundred twenty (120) days of the original notification, whichever is less, unless otherwise specified by the Commissioner in writing, the permittee shall then revise the Plan, perform all actions required by the revised Plan, and shall certify to the Commissioner that the requested changes have been

made and implemented. The permittee shall provide such information as the Commissioner requires to evaluate the Plan and its implementation. If at any time the Commissioner finds that the Plan is not adequate to protect the waters of the state from pollution, the Commissioner may terminate authorization under this permit and require the permittee to submit an individual permit application.

(g) Failure to Prepare or Amend Plan

In no event shall failure to complete or update a Plan in accordance with Sections 5(*b*) and 6 of this general permit relieve a permittee of responsibility to implement actions required to protect the waters of the state and to comply with all conditions of this general permit.

(h) Plan Review Certification

A copy of the Plan review certification made in accordance with Section 3(*b*)(9) shall be maintained with the Plan.

(i) Monitoring Requirements

All permittees shall comply with the screening and monitoring requirements in this subsection.

(1) Impaired Waters Outfall Investigation and Monitoring

Regulated Small MS4s that discharge to impaired waters, as identified in Section 6(*k*) below, must create an inventory of all outfalls that discharge to impaired waters utilizing the list and mapping prepared pursuant to Section 6(*a*)(3)(C). The permittee shall then screen these outfalls for the pollutant identified as the pollutant of concern for the impairment in accordance with the following procedures. If the permittee has wet weather sampling data for an outfall pursuant to their sampling conducted under the 2004 MS4 permit or other appropriate wet weather sampling, they may use that data for their outfall screening and will not be required to screen that outfall under this general permit.

(A) Outfall Screening for Phosphorus and Nitrogen

The permittee shall screen outfalls from the MS4 identified in Section 6(*a*)(3)(C) that discharge to impaired waters for which phosphorus or nitrogen is the pollutant of concern. The permittee may take a sample at the outfall during any rain event that results in a discharge from the outfall in accordance with subsection (2), below. This screening shall be conducted for all such outfalls at least once during the term of this general permit in accordance with subparagraphs (i) and (ii) below.

(i) Nitrogen Screening

The permittee may use a portable nitrogen meter to take a field reading during the wet weather discharge. If the nitrogen reading exceeds the following threshold, the outfall shall be identified for follow-up investigation pursuant to subsection (D) below.

Total Nitrogen > 2.5 mg/l

(ii) Phosphorus Screening

The permittee may use a portable phosphorus meter to take a field reading during the wet weather discharge. If the phosphorus reading exceeds the following threshold, the outfall shall be identified for follow-up investigation pursuant to subsection (D) below.

Total Phosphorus > 0.3 mg/l

(B) Outfall Screening for Bacteria

The permittee shall screen outfalls from the MS4 that discharge to impaired waters for which bacteria is the pollutant of concern. The permittee may take a sample at the outfall during any rain event that results in a discharge from the outfall in accordance with subsection (2), below. The sample shall be analyzed for the following:

- E. coli and Total Coliform (col/100ml) (for discharges to Class AA, A and B surface waters)
- Fecal coliform and Enterococci (col/100ml) (for discharges to Class SA and SB surface waters)

The outfall shall be identified for follow-up investigation pursuant to subsection (D) below if any of the following conditions apply:

- E. coli >235 col/100ml for swimming areas and >410 col/100ml for all others, or
- Total Coliform >500 col/100ml, or
- Fecal coliform >31 col/100ml for Class SA and >260 col/100ml for Class SB, or
- Enterococci >104 col/100ml for swimming areas and >500 col/100ml for all others.

If the permittee can document that bacteria levels at an outfall that exceed these levels are solely the result of natural sources of bacteria, they are not required to conduct a follow-up investigation for that outfall. Natural sources may include wildlife or runoff from undeveloped wooded areas but do not include pet waste or waterfowl congregating at parks, ponds or other attractive nuisance areas.

(C) Outfall Screening for Other Pollutants of Concern

The permittee shall screen outfalls from the MS4 identified in Section 6(*a*)(3)(C) that discharge to impaired waters for which pollutants other than phosphorus, nitrogen or bacteria are listed as the pollutant of concern. The permittee shall take a sample at the outfall and in-stream immediately upstream or otherwise outside the influence of the outfall. The sample may be taken during any rain event that results in a discharge from the outfall in accordance with subsection (2), below. These samples shall be analyzed for turbidity. The permittee may use a field turbidity meter for these analyses. If the

outfall sample is more than 5 NTU greater than the in-stream sample, the outfall shall be identified for follow-up investigation pursuant to subsection (D) below.

(D) Follow-up Investigations

The permittee shall conduct follow-up investigations for the drainage areas associated with the outfalls identified as potentially contributing to an impairment as a result of the analyses conducted pursuant to subsections (A) – (C), above.

(i) Drainage Area Investigation

The permittee shall investigate activities within the drainage area contributing to each outfall identified for follow-up investigation pursuant to subsections (A) – (C), above. This investigation shall include factors potentially associated with the cause of the related stream impairment. Such factors may include: land use or development patterns; business or commercial activities; industrial activities; DCIA; natural contributors; potential MS4 maintenance issues; residential activities; and any other activities identified by the permittee as potentially contributing to the related impairment.

(ii) Control Measure Implementation

In each outfall drainage area identified for follow-up investigation pursuant to subsections (A) – (C), above, the permittee shall implement a BMP program focusing on the impaired waters provisions of each of the Control Measures in Section 6(*a*) of this general permit and on the findings of the drainage area investigation in subparagraph (i), above.

(iii) Prioritized Outfall Monitoring

Once outfall screening has been completed for at least half of the outfalls identified pursuant to this section, the permittee shall utilize the screening results to select six (6) of the highest contributors of any of the pollutants of concern. These six outfalls shall be sampled annually for the appropriate pollutant of concern in accordance with the schedule in subsection (E), below. If more than one pollutant of concern is identified for any monitored outfall (i.e. more than one impairment), all of these pollutants shall be monitored. If fewer than six outfalls were identified for follow-up investigation, all of these outfalls shall be monitored, but no more than six.

(E) Schedule

(i) Impaired Waters Discharge Mapping

Inventory and mapping of discharges to impaired waters prepared pursuant to this section shall be completed within two (2) years from the effective date of this general permit for existing 2004 MS4 permittees and within three (3) years from the effective date of this general permit for new MS4 permittees.

(ii) Outfall Screening

Outfall screening pursuant to subsections (A) – (C) shall begin within one (1) year of the effective date of this general permit for existing 2004 MS4 permittees and two (2) years for new MS4 permittees. At least fifty percent (50%) of these outfalls shall be screened no later than the end of the third year following the effective date of this general permit for existing 2004 MS4 permittees and no later than the end of the fourth year for new MS4 permittees. All such outfalls shall be screened by the end of the term of this general permit (5 years).

(iii) Follow-up Investigations

The permittee shall commence follow-up investigations identified pursuant to subsection (D), above, no later than two (2) years following the effective date of this general permit for existing 2004 MS4 permittees and three (3) years for new MS4 permittees.

(iv) Prioritized Outfall Monitoring

The permittee shall commence annual monitoring of the six outfalls identified pursuant to subsection (D)(iii), above, no later than beginning of the fourth year following the effective date of this general permit for existing 2004 MS4 permittees and no later than the beginning of the fifth year for new MS4 permittees.

(F) Reporting

The permittee shall report on the progress of their impaired waters investigation and monitoring program in their Annual Report beginning in the second year following the effective date of this general permit. The report shall include a listing of the outfalls screened during the year, the number of outfalls identified for follow-up investigation, the progress of drainage area investigations, a description of the control measure implementation for the different impairments, identification of the six outfalls to be monitored, and the results of the prioritized outfall monitoring.

(2) Stormwater Monitoring Procedures

(A) Wet Weather Outfall Monitoring

Samples shall be collected from discharges resulting from any rain storm that produces a discharge from the outfall(s) being monitored and that occurs at least 48 hours after any previous rain storm that produced a discharge from the outfall. Runoff events resulting from snow or ice melt alone cannot be used to meet these monitoring requirements. However, monitoring may be conducted during a rain event that may include insignificant amounts of snow or ice melt. Monitoring shall consist of a single grab sample taken within the first six (6) hours of discharge from the outfall.

(B) Rain Event Information

The following information shall be collected for the rain events during which monitoring is conducted:

(i) The date, temperature, time of the start of the discharge, time of sampling, and magnitude (in inches) of the rain event sampled.

(ii) The duration between the rain event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) rain event.

(C) Test Procedures

Unless otherwise specified in this permit, all pollutant parameters shall be tested according to methods prescribed in Title 40, CFR, Part 136 (1990). Laboratory analyses must be consistent with Connecticut Reasonable Confidence Protocols.

(j) Reporting & Record Keeping Requirements

(1) The permittee shall keep records required by this permit for at least 5 years following its expiration or longer if requested by the Commissioner in writing. Such records, including the Stormwater Management Plan, shall be available to the public at reasonable times during regular business hours.

(2) Annual Report

By April 1 of the second year following the effective date of this general permit and annually thereafter by April 1, the permittee shall submit an Annual Report for the preceding calendar year electronically to the Department. The DEEP MS4 stormwater webpage (www.ct.gov/deep/municipalstormwater) will provide guidance on Annual Report submittal. The Annual Report must be in Microsoft Word©, Adobe Acrobat© or other format acceptable to the Commissioner. In the event that electronic submission is not available or possible, please contact the Stormwater Section at (860) 424-3025.

The report shall include:

(A) The Annual Report review fee is $375.00.

(i) The fees for municipalities shall be half of those indicated above pursuant to section 22a-6(b) of the Connecticut General Statutes. State and Federal agencies shall pay the full fees specified in this subsection.

(B) A written discussion of the status of compliance with this general permit including, but not limited to:

(i) a listing and brief description (including, where appropriate, the address or latitude and longitude) of all BMPs within each Minimum Control Measure;

(ii) any reporting requirements enumerated in the controls measures sections 6(*a*) and its subsections;

(iii) an implementation schedule for each BMP and an indication of whether or not the BMP or any portion of the BMP was scheduled to be implemented during the year covered by the Annual Report;

(iv) the status of implementation for each BMP scheduled to be completely or partially implemented during the year covered by the Annual Report, including an assessment of the appropriateness of the BMP and progress towards achieving the implementation dates and measurable goals for that BMP;

(v) for any portion of a BMP implementation scheduled for the year covered by the Annual Report that was *not* completed as scheduled, a discussion of the circumstances and reasons for non-implementation, a modified implementation schedule, and, if necessary, a modified or alternate BMP to replace the BMP not implemented including the rationale for such modification or alternate BMP;

(vi) the overall status of each of the six categories of the Minimum Control Measures and a discussion of the effectiveness of each category in achieving its goals;

(vii) a discussion of any changes to personnel responsible for the Plan or BMP implementation;

(viii) a description of any new BMPs added to the Plan during the year including a description of the BMP, the reason or rationale for adding the BMP, the timeline for implementation, the party responsible for implementation and the measurable goal for the BMP and, where appropriate, the location for each BMP, including the address and latitude and longitude;

(ix) a discussion of the progress and status of the MS4's IDDE program (see Section 6(*a*)(3)) including outfall screening, mapping, drainage area evaluation and prioritization, illicit discharge tracking activities, IDDP field monitoring results, number and type of illicit discharges detected, and number of illicit discharges eliminated;

(x) a discussion of measures included in the Plan for the control of discharges to impaired waters (see Section 6(*k*) below) including a list of BMPs in the Minimum Control Measures that are targeted for such discharges, progress in implementing these measures, any evaluation of the effectiveness of these measures in meeting the goals of the Plan's impaired waters program, and any new or modified BMPs to be added to the Plan to improve its effectiveness;

(xi) a discussion of the MS4's stormwater monitoring program describing the status of monitoring for the year of the report, the overall status of the monitoring program, a summary of the findings, any significant observations regarding the results, any modifications to the Plan as a result of the monitoring results; and

(xii) a discussion of any planned BMP implementation in the coming year, including a discussion of any new or modified BMPs planned for future implementation.

(C) All monitoring data collected and analyzed pursuant to Section 6(*i*).

(D) All other information collected and analyzed, including data collected under the Illicit Discharge Detection Protocol (Appendix B), during the reporting period.

(k) Discharges to Impaired Waters or Water bodies subject to a Pollutant Load Reduction within a TMDL

MS4s that discharge to impaired waters (with or without a TMDL), waters for which nitrogen, phosphorus, bacteria or mercury are stormwater pollutants of concern, or waters which have pollution load reductions specified within a TMDL are required to meet certain criteria identified in this section and other sections of this general permit.

(1) Existing Discharge to an Impaired Water without an Established TMDL

If the permittee discharges to an impaired water without an established TMDL, the permittee must follow:

(A) For waters for which Phosphorus, Nitrogen, Bacteria, or Mercury are stormwater pollutants of concern, the control measures in Section 6(*a*) and the screening and monitoring requirements of Section 6(*i*)(1),

(B) For all other impairments, implement control measures to reduce the discharge of the pollutant(s) associated with the impairment and follow the requirements of Section 6(*i*)(1)(C), or as directed by the Commissioner.

(2) Existing Discharge to a Water with an Established TMDL or with a Pollutant Load Reduction specified within the TMDL

If the permittee discharges to a water included in a TMDL, the permittee must follow:

(A) For waters for which Phosphorus, Nitrogen, Bacteria, or Mercury is a stormwater pollutant of concern, the control measures in Section 6(*a*) and the screening and monitoring requirements of Section 6(*i*)(1),

(B) For all other discharges subject to a pollutant load reduction contained within a TMDLs, implement control measures to be consistent with the Waste Load Allocation in the specific TMDL. The permittee must also conduct the appropriate screening and monitoring in accordance with Section 6(*i*)(1).

(C) The permittee shall implement BMPs as necessary to achieve the Waste Load Allocation, Load Allocation or Water Quality Targets specified within the TMDL (see Appendix D).

(3) New Discharge to an Impaired Water without an Established TMDL

If a new discharge to an impaired water without a TMDL is authorized pursuant to the conditions of Section 3(*b*)(7), the permittee must implement and maintain any control measures or conditions on the site that enabled such authorization, and modify such measures or conditions as necessary to maintain such authorization. The permittee must also maintain compliance with this subsection and Section 6(*i*) and maintain documentation of these measures and conditions in their Plan.

(4) New Discharge to a Water with an Established TMDL or with a Pollutant Load Reduction specified within the TMDL

If a new discharge to a water with a TMDL or with a pollutant load reduction established within the TMDL is authorized pursuant to the conditions of Section 3(*b*)(7), the permittee must follow the discharge requirements consistent with the applicable Wasteload Allocations, Load Allocations or Water Quality Targets for that TMDL. The permittee must also conduct the appropriate screening and monitoring in accordance with Section 6(*i*)(1) and maintain documentation of these measures and conditions in their Plan.

Section 7. Additional Requirements of this General Permit

(a) Regulations of Connecticut State Agencies Incorporated into this General Permit

The permittee shall comply with all laws applicable to the subject discharges, including but not limited to, the following Regulations of Connecticut State Agencies which are hereby incorporated into this general permit, as if fully set forth herein:

(1) Section 22a-430-3:

Subsection (b) General - subparagraph (1)(D) and subdivisions (2), (3), (4) and (5)
Subsection (c) Inspection and Entry
Subsection (d) Effect of a Permit - subdivisions (1) and (4)
Subsection (e) Duty to Comply
Subsection (f) Proper Operation and Maintenance
Subsection (g) Sludge Disposal
Subsection (h) Duty to Mitigate
Subsection (i) Facility Modifications, Notification - subdivisions (1) and (4)
Subsection (j) Monitoring, Records and Report Requirements - subdivisions (1), (6), (7), (8), (9) and (11) (except subparagraphs (9) (A) (2) and (9) (c)
Subsection (k) Bypass
Subsection (m) Effluent Limitation Violations
Subsection (n) Enforcement
Subsection (p) Spill Prevention and Control
Subsection (q) Instrumentation, Alarms, Flow Recorders
Subsection (r) Equalization

(2) Section 22a-430-4

Subsection (t) Prohibitions
Subsection (p) Revocation, Denial, Modification
Appendices

(b) Reliance on Registration

In evaluating the permittee's registration, the Commissioner has relied on information provided by the permittee. If such information proves to be false or incomplete, the permittee's authorization may be suspended or revoked in accordance with law, and the Commissioner may take any other legal action provided by law.

(c) Duty to Correct and Report Violations

Upon learning of a violation of a condition of this general permit, a permittee shall immediately take all reasonable action to determine the cause of such violation, correct and mitigate the results of such violation and prevent further such violation. The permittee shall report in writing such violation and such corrective action to the Commissioner within five (5) days of the permittee's learning of such violation. Such information shall be filed in accordance with the certification requirements prescribed in Section 7(*e*) of this general permit.

(d) Duty to Provide Information

If the Commissioner requests any information pertinent to the authorized activity or to compliance with this general permit or with the permittee's authorization under this general permit, the permittee shall provide such information within thirty (30) days of such request. Such information shall be filed in accordance with the certification requirements prescribed in Section 7(*e*) of this general permit.

(e) Certification of Documents

Any document, including but not limited to any notice, information or report, which is submitted to the Commissioner under this general permit shall be signed by the chief elected official or principal executive officer of the municipality or institution, and by the individual or individuals responsible for actually preparing such document, each of whom shall certify in writing as follows:

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that a false statement made in this document or its attachments may be punishable as a criminal offense, in accordance with Section 22a-6 of the Connecticut General Statutes, pursuant to Section 53a-157b of the Connecticut General Statutes, and in accordance with any other applicable statute."

(f) Date of Filing

For purposes of this general permit, the date of filing with the Commissioner of any document is the date such document is received by the Commissioner. The word "day" as used in this general permit means the calendar day; if any date specified in the general permit falls on a Saturday, Sunday, or legal holiday, such deadline shall be the next business day.

(g) False Statements

Any false statement in any information submitted pursuant to this general permit may be punishable as a criminal offense, in accordance with Section 22a-6, under Section 53a-157b of the Connecticut General Statutes.

(h) Correction of Inaccuracies

Within fifteen days after the date the permittee becomes aware of a change in any information in any material submitted pursuant to this general permit, or becomes aware that any such information is inaccurate or misleading or that any relevant information has been omitted, the permittee shall correct the inaccurate or misleading information or supply the omitted

information in writing to the Commissioner. Such information shall be filed in accordance with the certification requirements prescribed in Section 7(*e*) of this general permit.

(i) Other Applicable Law

Nothing in this general permit shall relieve the permittee of the obligation to comply with any other applicable federal, state and local law, including but not limited to the obligation to obtain any other authorizations required by such law.

(j) Other Rights

This general permit is subject to and does not derogate any present or future rights or powers of the State of Connecticut and conveys no rights in real or personal property nor any exclusive privileges, and is subject to all public and private rights and to any federal, state, and local laws pertinent to the property or activity affected by such general permit. In conducting any activity authorized hereunder, the permittee may not cause pollution, impairment, or destruction of the air, water, or other natural resources of this state. The issuance of this general permit shall not create any presumption that this general permit should or will be renewed.

Section 8. Commissioner's Powers

(a) Abatement of Violations

The Commissioner may take any action provided by law to abate a violation of this general permit, including but not limited to penalties of up to $25,000 per violation per day under Chapter 446k of the Connecticut General Statutes, for such violation. The Commissioner may, by summary proceedings or otherwise and for any reason provided by law, including violation of this general permit, revoke a permittee's authorization hereunder in accordance with Sections 22a-3a-2 through 22a-3a-6, inclusive, of the Regulations of Connecticut State Agencies. Nothing herein shall be construed to affect any remedy available to the Commissioner by law.

(b) General Permit Revocation, Suspension, or Modification

The Commissioner may, for any reason provided by law, by summary proceedings or otherwise, revoke or suspend this general permit or modify to establish any appropriate conditions, schedules of compliance, or other provisions which may be necessary to protect human health or the environment.

(c) Filing of an Individual Application

If the Commissioner notifies a permittee in writing that such permittee shall obtain an individual permit under Section 22a-430 of the Connecticut General Statutes if he wishes to continue lawfully conducting the authorized activity, the permittee shall file an application for an individual permit within thirty (30) days of receiving the Commissioner's notice, or at such other date as the Commissioner may allow. While such application is pending before the Commissioner, the permittee shall comply with the terms and conditions of this general permit and the subject approval of registration. If the Commissioner issues an individual permit to a permittee under this general permit, this general permit, as it applies to such permittee, shall automatically terminate on the date such individual permit is issued. Nothing herein shall affect the Commissioner's power to revoke a permittee's authorization under this general permit at any time.

Issued Date: January 20, 2016

Michael Sullivan

Deputy Commissioner

This is a true and accurate copy of the general permit executed on January 20, 2016 by the Department of Energy and Environmental Protection.

Appendix A – Small MS4 Municipalities

Connecticut Municipalities with >1,000 People in Urbanized Areas		
Ansonia	Avon	Beacon Falls
Berlin	Bethany	Bethel
Bloomfield	Bolton	Branford
Bridgeport	Bristol	Brookfield
Brooklyn*	Burlington	Canton
Cheshire	Chester	Clinton
Cromwell	Danbury	Darien
Deep River	Derby	Durham
East Granby	East Hartford	East Haven
East Lyme	East Windsor	Easton
Ellington	Enfield	Essex
Fairfield	Farmington	Glastonbury
Granby	Greenwich	Griswold
Groton (City)	Groton (Town)	Guilford
Haddam*	Hamden	Hartford
Hebron	Killingly*	Ledyard
Lisbon	Madison	Manchester
Marlborough	Meriden	Middlebury
Mansfield*	Middlefield	Middletown
Milford	Monroe	Montville
Naugatuck	New Britain	New Canaan
New Fairfield	New Hartford*	New Haven
New London	New Milford	Newington
Newtown	North Branford	North Haven
Norwalk	Norwich	Old Lyme
Old Saybrook	Orange	Oxford
Plainfield*	Plainville	Plymouth
Portland	Prospect	Putnam
Redding	Ridgefield	Rocky Hill
Seymour	Shelton	Simsbury
Somers	South Windsor	Southbury
Southington	Sprague*	Stonington (Town & Borough)
Stratford	Suffield	Thomaston
Thompson	Tolland	Trumbull
Vernon	Wallingford	Waterbury
Waterford	Watertown	West Hartford
West Haven	Westbrook	Weston
Westport	Wethersfield	Wilton
Willington*	Windsor	Windsor Locks
Wolcott	Woodbridge	Woodbury

* Designates New MS4 Permittees

Appendix B
Illicit Discharge Detection and Elimination (IDDE) Program Protocol

(A) Illicit Discharge Detection and Elimination (IDDE) Program

Objective: The permittee shall implement an IDDE program to systematically find and eliminate sources of non-stormwater discharges to its MS4 and implement procedures to prevent such discharges.

During the development of the new components of the IDDE program required by this permit, permittees previously authorized by the permit issued January 9, 2004 must continue to implement their existing IDDE program required by that permit to detect and eliminate illicit discharges to their MS4.

(1) Definitions and Prohibitions

The permittee shall prohibit illicit discharges and sanitary sewer overflows (SSOs) to its MS4 and require removal of such discharges consistent with subsections (2) and (4), below.

An SSO is a discharge of untreated sanitary wastewater from a municipal sanitary sewer.

An illicit discharge is any discharge to an MS4 that is not composed entirely of stormwater, *except*:

(a) discharges authorized under a separate NPDES permit that authorize a discharge to the MS4

(b) non-stormwater discharges allowed by Section 3(a)(2) of this general permit

(2) Elimination of Illicit Discharges

(a) Upon detection, the permittee shall eliminate illicit discharges as soon as possible and require the immediate cessation of such discharges upon confirmation of responsible parties in accordance with its enforceable legal authorities established pursuant to subsection (B) below. Where elimination of an illicit discharge within sixty (60) days of its confirmation is not possible, the permittee shall establish a schedule for its elimination not to exceed 180 days (six (6) months). The permittee shall immediately commence actions necessary for elimination. The permittee shall diligently pursue elimination of all illicit discharges. In the interim, the permittee shall take all reasonable and prudent measures to minimize the discharge of pollutants to its MS4.

(b) The period between identification and elimination of an illicit discharge is not a grace period. Discharges from an MS4 that are mixed with an illicit discharge are not authorized by this general permit, are unlawful, and remain unlawful until eliminated.

(3) Non-Stormwater Discharges

The permittee may presume that the sources of non-stormwater listed in Section 3(a)(2) of this permit need not be addressed. However, if the permittee identifies any of these sources as significant contributors of pollutants to the MS4, then the permittee shall implement measures to control these sources so they are no longer significant contributors of pollutants, and/or eliminate them entirely, consistent with this appendix.

(4) Sanitary Sewer Overflows

(a) Upon detection of an SSO the permittee shall eliminate it as expeditiously as possible and take interim mitigation measures to minimize the discharge of pollutants to and from its MS4 until elimination is completed.

(b) The permittee shall identify all known locations where SSOs have discharged to the MS4 within the previous five years. This shall include SSOs resulting, during dry or wet weather, from inadequate conveyance capacities, or where interconnectivity of the storm and sanitary sewer infrastructure allows for communication of flow between the systems. Within 120 days of the effective date of the permit, the permittee shall develop an inventory of all identified SSOs indicating:

- Location (approximate street crossing/address and receiving water, if any);
- A clear statement of whether the discharge entered a surface water directly or entered the MS4;
- Date(s) and time(s) of each known SSO occurrence (i.e. beginning and end of any known discharge);
- Estimated volume(s) of the occurrence;
- Description of the occurrence indicating known or suspected cause(s);
- Mitigation and corrective measures completed with dates implemented; and
- Mitigation and corrective measures planned with implementation schedules.

The permittee shall maintain the inventory as a part of the Plan and update the inventory annually.

(c) The permittee shall provide written notice to the Commissioner within five (5) days of becoming aware of the SSO occurrence and shall include the information in the updated inventory. The notice shall contain all of the information listed in subsection (b), above.

(d) The permittee shall include and update the SSO inventory in its annual report, including the status of mitigation and corrective measures implemented by the permittee to address each SSO identified pursuant to this appendix.

(e) The period between identification and elimination of a discharge from the SSO to the MS4 is not a grace period. Discharges from an MS4 that are mixed with an SSO are not authorized by this general permit, are unlawful and remain unlawful until eliminated.

(5) Outfall/Interconnection Inventory

The permittee shall develop an outfall and interconnection inventory that identifies each outfall and interconnection discharging from the MS4, records its location and condition, and provides a framework for tracking inspections, screenings and other activities under the permittee's IDDE program pursuant to Section 6(*a*)(3) of this general permit.

(a) An outfall means a point source as defined by 40 CFR § 122.2 and in Section 2 of this general permit as the point where the MS4 discharges to waters of the state. An outfall does not include open conveyances connecting two separate storm sewers or pipes, tunnels or other conveyances that connect segments of the same stream or other waters of the state and that are used to convey waters of the state. However, it is strongly recommended that a permittee inspect all

accessible portions of the system as part of this process. Culverts longer than a simple road crossing shall be included in the inventory unless the permittee can confirm that they are free of any connections and simply convey waters of the state.

An interconnection means the point where the permittee's MS4 discharges to another MS4 or other storm sewer system, through which the discharge is conveyed to waters of the state or to another storm sewer system and eventually to a water of the state.

(b) The permittee shall complete its outfall and interconnection inventory in accordance with the timelines in Sections 6(*a*)(3)(C)(ii) and (iii) and shall include the progress of this inventory in each annual report. The inventory shall be updated annually to include data collected in connection with the dry weather screening under subsection (7(d)), below, and other relevant inspections conducted by the permittee.

(c) The inventory shall include the following information: unique identifier, receiving water, date of most recent inspection, dimensions, shape, material (concrete, PVC), spatial location (latitude and longitude with a minimum accuracy of +/-30 feet, physical condition and indicators of potential non-stormwater discharges (including presence or evidence of suspect flow and sensory observations such as odor, color, turbidity, floatables, or oil sheen) as of the most recent inspection.

(6) System mapping

The permittee shall develop a revised and more detailed map than was required by the previous permit issued January 9, 2004. This revised map of the MS4 shall include, at a minimum, parts of the MS4 within the Urbanized Area and those catchment areas of the MS4 with either DCIA of greater than 11% or which discharge to impaired waters ("priority" areas). This map shall be completed within three (3) years of the effective date of this permit for existing 2004 MS4 permittees and by the end of the permit term for new 2004 MS4 permittees. This permit does not provide additional time for existing 2004 MS4 permittees for completion of the mapping that was required by the previous permit.

(a) The mapping shall include, at a minimum, a depiction of the permittee's separate storm sewer system in the priority areas described above. The mapping is intended to facilitate the identification of key infrastructure and factors influencing proper system operation, and the potential for illicit sanitary sewer discharges. The map shall include the required infrastructure and water resources information as indicated in subparagraph (i), below, and shall include the information in subparagraph (ii), below, where available. The Commissioner also recommends the inclusion of additional items as indicated in subparagraph (iii), below.

(i) Required mapping elements

- Municipal separate storm sewer system
  - outfalls and receiving waters (required by previous permit)
  - pipes
  - open channel conveyances (swales, ditches, etc.)
  - catch basins
  - manholes
  - interconnections with other MS4s and other storm sewer systems

- municipally-owned stormwater treatment structures (e.g. detention and retention basins, infiltration systems , bioretention areas, water quality swales, gross particle separators, oil/water separators, or other proprietary systems)

- Catchment delineations as defined in Section 2 for use in priority rankings required in subsection (7)(c), below, or prioritizing BMP retrofits.
- Waterbodies identified by name and indication of all use impairments as identified on the most recent Integrated Water Quality Report pursuant to Clean Water Act section 303(d) and 305(b).

(ii) Elements required where available

- Municipal sanitary sewer system;
- Municipal combined sewer system, if applicable

(iii) Recommended elements

- Storm sewer material, size and age.
- Sanitary sewer system material, size and age
- Where a municipal sanitary sewer system exists, properties known or suspected to be served by a septic system, especially in high-density urban areas
- Area where the permittee's MS4 has received or could receive flow from septic system discharges (e.g. areas with poor soils, or high ground water elevations unsuitable for conventional subsurface disposal systems)
- Seasonal high water table elevations impacting sanitary alignments
- Topography
- Orthophotography
- Alignments, dates and representation of work completed (with legend) of past illicit discharge investigations (e.g. flow isolation, dye testing, CCTV)
- Locations of suspected, confirmed and corrected illicit discharges (with dates and flow estimates)

(b) The mapping may be produced by hand or through computer-aided methods (e.g. GIS). The required scale and detail of the map shall be appropriate to facilitate a rapid understanding of the system by the permittee and the Commissioner. In addition, the mapping shall serve as a planning tool for the implementation and phasing of the IDDE program and demonstration of the extent of complete and planned investigations and corrections. The permittee shall update the mapping as necessary to reflect newly discovered information and required corrections or modifications.

(c) The permittee shall report on the progress towards the completion of the map required by this permit in each annual report.

(7) Written Illicit Discharge Detection and Elimination Program

The IDDE program shall be recorded in a written document pursuant to Section 6(*a*)(3) of the general permit. The IDDE program shall include each of the elements described in subsections (a) – (h), below, unless the permittee provides a written explanation within the IDDE program as to why a particular element is not applicable to the permittee.

Notwithstanding the permittee's explanation, the Commissioner may at any time determine that a particular element is in fact applicable to the permittee and require the permittee to add it to the IDDE program. The written IDDE program shall be completed within one (1) year of the effective date of the permit for existing 2004 MS4 permittees and within two (2) years of the effective date of this general permit for new MS4 permittees. The permittee shall implement the IDDE program in accordance with the goals and milestones set forth in subsection (8), below.

(a) Legal Authority

The IDDE program shall provide that the permittee has adequate legal authority to accomplish the following tasks: prohibit illicit discharges; investigate suspected illicit discharges; eliminate illicit discharges, including discharges from properties not owned by or controlled by the MS4 that discharge into the MS4 system; and implement appropriate enforcement procedures and actions. Adequate legal authority consists of a currently effective ordinance, by-law, or other regulatory mechanism. For existing 2004 MS4 permittees, the ordinance, by-law, or other regulatory mechanism was a requirement of that permit and was required to be effective by January 8, 2009. These permittees shall update their IDDE legal authority within one year of the effective date of this permit. New MS4 permittees must establish this legal authority on or before two (2) years of the effective date of this permit. The written IDDE program shall include a reference or citation of the authority the permittee will use to implement all aspects of the IDDE program.

(b) Statement of IDDE Program Responsibilities

The permittee shall establish a written statement that clearly identifies responsibilities with regard to eliminating illicit discharges. The statement shall identify the lead permittee agency(ies), department(s) or personnel responsible for implementing the IDDE Program as well as any other agencies, departments or personnel that may have responsibilities for aspects of the program (e.g. state or local health officials responsible for overseeing septic system construction; sanitary sewer system staff; inspectional services for enforcing plumbing codes; town counsel responsibilities in enforcement actions, institutional support staff etc.). Where multiple departments, agencies or personnel have responsibilities with respect to the IDDE program specific areas of responsibility shall be defined and processes for coordination and data sharing shall be established and documented.

(c) Assessment and Priority Ranking of Catchments

The permittee shall assess and priority rank the catchments, delineated as required by subsection (6)(a), above, in terms of their potential to have illicit discharges and SSOs and the related public health significance. This ranking will determine the priority order for screening of outfalls and interconnections pursuant to subsection (d), below, catchment investigations for evidence of illicit discharges and SSOs pursuant to subsection (e), below, and provides the basis for determining permit milestones pursuant to subsection (8), below.

(i) The permittee shall classify each catchment into one of the following categories:

- Excluded catchments: Catchments with no potential for illicit discharges may be excluded from the IDDE program. This category is limited to roadway drainage in undeveloped areas with no dwellings and no sanitary sewers; drainage for athletic fields, parks or undeveloped green space and associated parking without services;

cross-country drainage alignments (that neither cross nor are in proximity to sanitary sewer alignments) through undeveloped land.

- Problem Catchments: Catchments with known or suspected contributions of illicit discharges based on existing information shall be designated as Problem Catchments. This shall include any catchments where previous outfall/interconnection screening indicates sewer input based on olfactory/visual evidence or sampling results (ammonia ≥ 0.5 mg/l, surfactants ≥ 0.25 mg/l, and bacteria levels greater than the water quality criteria applicable to the receiving water; or ammonia ≥ 0.5 mg/l, surfactants ≥ 0.25 mg/l, and detectable levels of chlorine). Problem Catchments need not be screened pursuant to subsection (d), below, and shall be scheduled for catchment investigation pursuant to subsection (e), below. Problem catchments shall be identified during the initial ranking of catchments and subsequent rankings shall not add any catchments to the Problem Catchment category.
- High Priority Catchments: Catchments that have not been classified as Problem Catchments and that are discharging to an area of concern to public health due to proximity of public beaches, recreational areas, drinking water supplies or shellfish beds; catchments determined by the permittee as high priority based on outfall/interconnection screening under subsection (d), below, and catchment characteristics assessment under subparagraph (c)(ii), below. Any catchment where outfall/interconnection screening indicates sewer input based on olfactory/visual evidence or sampling results (ammonia ≥ 0.5 mg/l, surfactants ≥ 0.25 mg/l, and bacteria levels greater than the water quality criteria applicable to the receiving water; or ammonia ≥ 0.5 mg/l, surfactants ≥ 0.25 mg/l, and detectable levels of chlorine) shall be ranked at the top of the High Priority Catchments category and scheduled for catchment investigation pursuant to subsection (e), below.
- Low Priority Catchments: Catchments determined by the permittee as low priority based on outfall/interconnection screening under subsection (d), below, and catchment characteristics assessment under subparagraph (c)(ii), below.

(ii) The permittee shall priority rank catchments within each category (except for excluded catchments), based on screening factors. The permittee shall, at a minimum, consider the following screening factors:

- Past discharge complaints and reports.
- Poor dry weather receiving water quality- the following guidelines are recommended to identify waters as having a high illicit discharge potential: exceeding water quality standards for bacteria; ammonia levels above 0.5 mg/l; surfactants levels greater than or equal to 0.25 mg/l.
- Density of generating sites - Generating sites are those places, including institutional, municipal, commercial, or industrial sites, with a potential to generate pollutants that could contribute to illicit discharges. Examples of these sites include, but are not limited to, car dealers; car washes; gas stations; garden centers; and industrial manufacturing areas.
- Age of surrounding development and infrastructure – Industrial areas greater than 40 years old and areas where the sanitary sewer system is more than 40 years old will probably have a high illicit discharge potential. Developments 20 years or younger will probably have a low illicit discharge potential.
- Sewer conversion – Catchments that were once serviced by septic systems, but have been converted to sewer connections may have a high illicit discharge potential.

- Historic combined sewer systems – Catchments that were once serviced by a combined sewer system, but have been separated may have a high illicit discharge potential.
- Density of aging septic systems – Septic systems thirty years or older in residential land use areas are prone to have failures and may have a high illicit discharge potential. Consultation with local or state health officials is strongly encouraged.
- Culverted streams – any river or stream that is culverted for distances greater than a simple roadway crossing may have a high illicit discharge potential.

The permittee may also consider as priorities for evaluation for illicit discharges, although not necessarily indicators of the presence of illicit connections or discharges:

- Water bodies that receive a discharge from the MS4 and are drinking water supplies, shell fishing areas, beaches or waters used for contact recreation.
- Impaired waterbodies that receive a discharge from the MS4 or waters with approved TMDLs applicable to the permittee, where illicit discharges have the potential to contain the pollutant identified as the cause of the impairment.

The permittee may add additional relevant factors, including location-specific screening factors; if so, the permittee shall include the additional factors in its written IDDE program.

(iii) An initial illicit discharge potential assessment and priority ranking based on existing information shall be completed within two (2) years from the effective date of the permit for existing 2004 MS4 permittees. New MS4 permittees shall complete this assessment and ranking by the end of the term of the permit. The permittee shall update its assessment and priority ranking annually based on catchment delineations pursuant to subsection (6), above, the results of screening pursuant to subsection (d), below, and other new relevant information. The permittee shall provide a listing of all catchments and the results of the ranking for each catchment in each annual report. For each catchment being investigated the permittee shall also provide in its annual report (1) a summary of evidence of known or suspected illicit discharges and SSOs; (2) completed, ongoing or planned corrective measures addressing confirmed illicit discharges and SSOs; and (3) a schedule for completing and verifying measures correcting the confirmed illicit discharges and SSOs.

(d) Outfall and Interconnection Screening and Sampling

The IDDE program shall include a written procedure for screening and sampling of outfalls and interconnections from the MS4 in dry and wet weather for evidence of illicit discharges and SSOs. This screening procedure shall be used for:

- baseline outfall and interconnection screening pursuant to subparagraph (iii), below (dry weather);
- confirmatory screenings pursuant to subsection (f), below (dry and/or wet weather depending on catchment characteristics);
- follow-up screening pursuant to subsection (g), below (dry and/or wet weather depending on catchment characteristics).

(i) The screening and sampling procedure shall include procedures for sample collection, use of field kits, storage and conveyance of samples (including relevant hold times).

(ii) If an outfall is inaccessible or submerged, the permittee shall proceed to the first accessible upstream manhole or structure for the observation and sampling and report the location with the screening results. If an interconnection is inaccessible or submerged, interconnection screening shall occur at the first accessible location within the permittee's system upgradient of the interconnection.

(iii) Dry weather screening and sampling shall proceed only when no more than 0.1 inches of rainfall has occurred in the previous 24-hour period. When a flow is observed, a sample of the flow shall be collected and analyzed for the parameters listed in subparagraph (v), below. If no dry weather flow is observed, the permittee shall record the condition of the outfall and other relevant information. If no flow is observed, but evidence of dry weather flow exists, the permittee shall revisit the outfall during dry weather within one week of the initial observation, if practicable, to perform a second dry weather screening and sample any observed flow. The permittee shall identify in the annual report any other necessary follow-up actions to identify the source of any apparent intermittent flow not sampled.

(iv) Wet weather screening and sampling, which shall be conducted at an outfall and/or within the catchment area in accordance with subparagraph (e)(ii)b., below, shall proceed during or after a storm event of sufficient depth or intensity to produce a stormwater discharge but only during the spring (March to June) when groundwater levels are relatively high. The permit does not require a minimum rainfall event prior to wet weather screening. However, the purpose of wet weather screening and sampling under the IDDE program is to identify illicit discharges that may activate or become evident during wet weather. Permittees may incorporate provisions that assist in targeting such discharges, including avoiding sampling during the initial period of discharge ("first flush") and/or identifying minimum storm event intensities likely to trigger sanitary sewer interconnections.

(v) Samples shall be analyzed at a minimum for ammonia, chlorine, conductivity, salinity, *E. coli*. (freshwater receiving water) or enterococcus (saline or brackish receiving water), surfactants (such as MBAS), and temperature. All analyses with the exception of indicator bacteria can be performed with field test kits or field instrumentation. In addition, where the discharge is directly into a water quality limited water or a water subject to an approved TMDL, the sample shall be analyzed for the pollutants identified as the cause of the impairment. Sampling for pollutants of concern shall be conducted using the analytical methods found in 40 CFR §136, or alternative methods approved by the Commissioner in accordance with the procedures in 40 CFR §136. Other IDDE screening parameters shall be considered field screening and are not subject to 40 CFR Part 136 requirements.

(vi) Catchments where there is relevant information indicating sewer input to the MS4 or sampling results where ammonia $\geq$ 0.5 mg/l, surfactants $\geq$ 0.25 mg/l, and bacteria levels greater than the water quality criteria applicable to the receiving water (or alternatively, ammonia $\geq$ 0.5 mg/l, surfactants $\geq$ 0.25 mg/l, and detectable levels of chlorine) shall be considered highly likely to contain illicit discharges from sanitary sources, and such catchments shall be ranked at the top of the High Priority Catchments category for investigation.

(e) Catchment Investigation Procedure

The permittee shall develop a written systematic procedure for catchment investigation that includes (1) a review of mapping and historic plans and records for the catchment; (2) a manhole inspection methodology; and (3) procedures to isolate and confirm sources of illicit discharges, as set forth below.

(i) For each catchment being investigated, the permittee shall review relevant mapping and historic plans and records to the extent available, including but not limited to plans related to the construction of the storm drain and of sanitary sewers in the catchment, prior work performed on the storm drain or sanitary sewers, local health official or other municipal data on septic system failures or required upgrades, and complaint records related to SSOs, sanitary sewer surcharges, and septic system breakouts. This review shall be used to identify areas within the catchment with higher potential for illicit connections and System Vulnerability Factors that indicate a risk of sanitary or septic system inputs to the MS4 under wet weather conditions. Consultation with local or state health officials is strongly encouraged. The permittee shall identify and record the presence of any of the following specific System Vulnerability Factors:

- History of SSOs, including, but not limited to, those resulting from wet weather, high water table, or fat/oil/grease blockages;
- Sewer pump/lift stations, siphons, or known sanitary sewer restrictions where power/equipment failures or blockages could readily result in SSOs;
- Inadequate sanitary sewer level of service (LOS) resulting in regular surcharging, customer back-ups, or frequent customer complaints;
- Common or twin-invert manholes serving storm and sanitary sewer alignments;
- Common trench construction serving both storm and sanitary sewer alignments;
- Crossings of storm and sanitary sewer alignments;
- Sanitary sewer alignments known or suspected to have been constructed with an underdrain system;
- Sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken, or offset sanitary infrastructure, directly piped connections between storm drain and sanitary sewer infrastructure, or other vulnerability factors identified through Inflow/Infiltration Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations.
- Areas formerly served by combined sewer systems;
- Any sanitary sewer and storm drain infrastructure greater than 40 years old in medium and densely developed areas;
- Widespread code-required septic system upgrades required at property transfers (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance);
- History of multiple local health department or sanitarian actions addressing widespread septic system failures (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance);

The permittee shall document the presence or absence of System Vulnerability Factors for each catchment, retain this documentation as part of its IDDE program, and report this

information in Annual Reports. Where System Vulnerability Factors are present, the catchment shall be investigated pursuant to subparagraph (ii)b., below.

(ii) The manhole inspection methodology shall describe a storm drain network investigation that involves systematically and progressively observing, sampling (as required below) and evaluating key junction manholes in the MS4 to narrow the location of suspected illicit discharges or SSOs to an isolated pipe segment between two manholes, locate evidence of illicit discharges or SSOs that may not be evident at the outfall under all circumstances, and confirm or identify potential system vulnerability factors. The written catchment investigation procedures shall detail how the permittee will further isolate and identify potential illicit discharges as indicated by field kit detections equal to or greater than the threshold values listed in subparagraph (d)(vi), above. The permittee is responsible for selecting key junction manholes in a manner such that the distance between key junction manholes is appropriate to ensure a thorough assessment of its system.

The manhole inspection methodology may either start from the outfall and work up the system or start from the upper parts of the catchment and work down the system or be a combination of both practices. Either method must, at a minimum, include an investigation of each key junction manhole within the MS4, even where no evidence of an illicit discharge is observed at the outfall. The Catchment Investigation Procedure must describe the method the permittee will use.

a. Dry weather investigation

Key junction manholes shall be opened and inspected for visual and olfactory evidence of illicit connections (e.g. excrement, toilet paper, gray filamentous bacterial growth, or sanitary products present). If flow is observed, the permittee shall sample the flow at a minimum for ammonia, chlorine and surfactants and can use field kits for these analyses. Additional indicator sampling may assist in determining potential sources (e.g. bacteria for sanitary flows, conductivity to detect tidal backwater, etc.). Where sampling results or visual or olfactory evidence indicate potential illicit discharges or SSOs, the area draining to the junction manhole shall be flagged for further investigation, through upstream junction manhole investigation and/or isolation and confirmation of sources pursuant to subsection (e)(ii), above.

Manhole inspections in all areas shall also include identifying System Vulnerability Factors including common (twin invert) manholes, directly piped connections between storm drains and sanitary sewer infrastructure, common weir walls, sanitary sewer underdrain connections and other structural vulnerabilities where sanitary discharges could enter the storm drain system during wet weather. Where present, such System Vulnerability Factors shall be investigated pursuant to paragraph (b) below.

b. Wet weather investigation

Where the review of mapping and historic plans and records and/or manhole inspections indicate the presence of one or more System Vulnerability Factors as listed in subsection (e)(i), above, the permittee shall also inspect and sample under wet weather conditions to the extent necessary to determine whether wet weather-induced high flows in sanitary sewers or high groundwater in areas served by septic

systems result in discharges of sanitary flow to the MS4. The permittee shall conduct at least one wet weather screening and sampling at the outfall for any catchment where one or more System Vulnerability Factors are present. This sampling can be done upon completion of any dry weather investigation but must be completed before catchment investigation is marked as complete. All data shall be recorded and reported in each annual report.

(iii) Isolation and Source Verification Procedures

The permittee shall develop procedures to be used to isolate and confirm sources where manhole investigations or other physical evidence or screening has identified MS4 alignments to be influenced by illicit discharges or SSOs. These shall include isolation of the drainage area for implementation of more detailed investigations, inspection of additional manholes along the alignment to refine the location of potential contaminant sources, and methods such as caulk damns, targeted internal plumbing inspections, dye testing, video inspections, or smoke testing to isolate and confirm the sources.

(f) Removal and Confirmation

When the source of an illicit discharge or SSO is identified and confirmed, the permittee shall exercise its authority as necessary to require its removal pursuant to subsections (2) or (3), above. For each confirmed source the permittee shall include in the annual report the following information: the location of the discharge and its source(s), a description of the discharge, the method of discovery, date of discovery, date of elimination, mitigation or enforcement action; and estimate of the volume of flow removed.

Within one year of removal of all identified illicit discharge and SSO sources within a catchment area, confirmatory outfall or interconnection screening shall be conducted. The confirmatory screening shall be conducted in dry weather unless System Vulnerability Factors have been identified in the catchment pursuant to subsection (e)(i), above, in which case both dry weather and wet weather confirmatory screening shall be conducted. If confirmatory screening indicates evidence of additional illicit discharges, the catchment shall be scheduled for additional investigation. Confirmatory screening is not required in catchments where no illicit discharges or system vulnerability factors have been identified and no previous screening indicated suspicious flows.

(g) Follow-up Screening

Upon completion of catchment investigation pursuant to subsection (e), above, and illicit discharge removal and confirmation (if necessary) pursuant to subsection (f), above, the catchment outfall or interconnection shall be scheduled for follow-up screening within five years, or sooner as determined by the permittee based on the catchment's illicit discharge priority. Follow-up screening shall consist of dry weather screening and sampling except that wet weather screening and sampling shall also be required in catchments where wet weather screening was required by subparagraph (e)(ii)b., above.

(h) Illicit Discharge Prevention Procedures

The permittee shall develop and implement mechanisms and procedures designed to prevent illicit discharges and SSOs, such as: spill response and prevention procedures including identification of spills, reporting procedures, containment procedures, and documentation;

public awareness (this may be a part of the education program required by subsection (2), above); reporting (hotlines) and training of public employees involved in the IDDE program on ways to identify potential illicit discharges and SSOs.

(8) IDDE Program Implementation Goals and Milestones

The permittee shall implement the IDDE Program to meet the following goals and milestones:

(a) The permittee shall complete dry weather screening and sampling (where flowing) of every MS4 outfall and interconnection (except Excluded and Problem Catchments) no later than three years from the permit effective date for existing 2004 MS4 permittees and by the end of the permit term for new MS4 permittees. Existing 2004 MS4 permittees may rely on screening conducted under the previous permit issued January 9, 2004, pursuant to an enforcement action, or by the Commissioner to the extent that it meets the requirements of subsection (7), above. New MS4 permittees shall complete dry weather screening and sampling of every MS4 outfall and interconnection (except Excluded and Problem Catchments) no later than the end of the permit term. All data shall be reported in each annual report. Permittees that have conducted substantially equivalent monitoring to that required by subsection (7)(d), above, as part of an enforcement action can request an exemption from the requirements of subsection (7)(d), above, by submitting a written request to the Commissioner and retaining exemption approval from the Commissioner as part of the Plan. Until the permittee receives formal written approval of the exemption from subsection (7)(d), above, from the Commissioner the permittee remains subject to all requirements of subsection (7)(d), above.

(b) Existing 2004 MS4 permittees shall begin investigations using the procedure developed in accordance with subsection (7)(d), above, within three months of investigation procedure finalization and no later than 15 months (1 year and 3 months) from the effective date of the permit. New MS4 permittees shall begin these investigations no later than 2 years and 3 months from the effective date of the permit. All permittees shall make continued progress each year toward meeting the milestones of subsection (8)(c), below. The permittee shall continue investigation, including Problem Catchments, using its existing IDDE program until such time as the procedure under subsection (7)(e), above, is developed.

(c) The permittee shall implement the Catchment Investigation Procedure in every catchment of the MS4, even where dry weather screening does not indicate evidence of illicit discharges. The permittee shall begin implementation of the procedure in Problem Catchments and those catchments with the highest ranking in the Assessment of Priority Catchments pursuant to subsection (7)(c), above, Implementation of the Catchment Investigation Procedure shall comply with the following milestones. For purposes of these milestones, a catchment investigation is considered complete if a permittee has completed all elements of subsection (7)(e), above.

i. The permittee shall complete the Catchment Investigation Procedure in a minimum of 80% of the MS4 area served by Problem Catchments within three years of the permit effective date and 100% of Problem Catchments within five years of the permit effective date.

ii. The permittee shall complete the Catchment Investigation Procedure in every catchment of the MS4 where information indicates sewer input including outfall/interconnection screening that indicates sewer input based on olfactory/visual evidence or sampling results (ammonia $\geq$ 0.5 mg/l, surfactants $\geq$ 0.25 mg/l, and bacteria levels greater than the water

quality criteria applicable to the receiving water; or ammonia ≥ 0.5 mg/l, surfactants ≥ 0.25 mg/l, and detectable levels of chlorine) within five (5) years of the permit effective date.

iii. The permittee shall complete the Catchment Investigation Procedure in 40% of the area served by all MS4 catchments within five (5) years of the permit effective date, and in 100% of the area served by all MS4 catchments within ten (10) years of the permit effective date. The permittee may count the area of low priority catchments only if the Catchment Investigation has been started in all other MS4 catchments. For the purposes of this section, catchment investigations that have been started include those where provisions of subsections (7)(e)(i) and (ii), above, have been completed.

d. Where catchments do not contain junction manholes, the dry weather screening and sampling shall be considered as meeting the manhole inspection requirement. In these catchments, dry weather screenings that indicate potential presence of illicit discharges shall be further investigated pursuant to subsection (7)(e)(iii), above. Investigations in these catchments may be considered complete where dry weather screening reveals no flow; no evidence of illicit discharges or SSOs is indicated through sampling results or visual or olfactory means; and no wet weather System Vulnerability Factors are identified.

e. The permittee shall track progress towards these milestones in each annual report.

(9) Indicators of IDDE Program Progress

The permittee shall define or describe indicators for tracking program success. At a minimum, indicators shall include measures that demonstrate efforts to locate illicit discharges, the number of SSOs and illicit discharges identified and removed, the percent and area in acres of the catchment area served by the MS4 evaluated using the catchment investigation procedure, and volume of sewage removed. The permittee shall evaluate and report the overall effectiveness of the program based on the tracking indicators in the annual report.

(10) Training

The permittee shall, at a minimum, annually provide training to employees involved in IDDE program about the program, including how to recognize illicit discharges and SSOs. The permittee shall report on the frequency and type of employee training in the annual report.

Appendix C

AQUIFER PROTECTION AREAS AND OTHER GROUNDWATER DRINKING SUPPLY AREAS

GUIDANCE INFORMATION

The Stormwater Management Plan ("the Plan") should consider measures to reduce or mitigate potential impacts to both ground water (aquifers) and surface waters, taking into consideration both quantity and quality of the runoff. The emphasis should be to minimize, to the extent possible, changes between pre-development and post-development runoff rates and volumes. Coordination and discussion with the local water company is strongly encouraged.

The basic stormwater principals for Aquifer Protection Areas (and other groundwater drinking supply areas) are to prevent inadvertent pollution discharges/releases to the ground, while encouraging recharge of stormwater where it does not endanger groundwater quality. The permittee should review Sections 19-13-B32(h) and (i) of the Regulations of Connecticut State Agencies for additional information. Measures include:

- prevent illicit discharges to storm water, including fuel/chemical pollution releases to the ground;
- minimize DCIA and disconnect large areas of DCIA with natural or landscape areas;
- direct paved surface runoff to aboveground type land treatment structures – sheet flow, surface swales, depressed grass islands, detention/retention and infiltration basins, and wet basins. These provide an opportunity for volatilization of volatile organic compounds to the extent possible before the stormwater can infiltrate into the ground;
- provide necessary impervious pavement in high potential pollutant release areas. These "storm water hot spots" include certain land use types or storage and loading areas, fueling areas, intensive parking areas and roadways (see table below);
- only use subsurface recharge structures such as dry wells, galleries, or leaching trenches, to directly infiltrate clean runoff such as rooftops, or other clean surfaces. These structures do not adequately allow for attenuation of salts, solvents, fuels or other soluble compounds in groundwater that may be contained in runoff; and
- restrict pavement deicing chemicals, or use an environmentally suitable substitute such as sand only, or alternative de-icing agents such as calcium chloride or calcium magnesium.

Infiltration of stormwater should be **restricted** under the following site conditions:

- ***Land Uses or Activities with Potential for Higher Pollutant Loads:*** Infiltration of stormwater from these land uses or activities (refer to Table 7-5 below), also referred to as stormwater "hotspots," can contaminate public and private groundwater supplies. Infiltration of stormwater from these land uses or activities may be allowed by the review authority with appropriate pretreatment. Pretreatment could consist of one or a combination of the primary or secondary treatment practices described in the Stormwater Quality Manual provided that the treatment practice is designed to remove the stormwater contaminants of concern.

- ***Subsurface Contamination:*** Infiltration of stormwater in areas with soil or groundwater contamination such as brownfield sites and urban redevelopment areas can mobilize contaminants.

- ***Groundwater Supply and Wellhead Areas:*** Infiltration of stormwater can potentially contaminate groundwater drinking water supplies in immediate public drinking water wellhead areas.

Land Uses or Activities with Potential for Higher Pollutant Loads
Table 7-5 of the 2004 Stormwater Quality Manual

Land Use/Activities	
• Industrial facilities subject to the DEEP Industrial Stormwater General Permit or the U.S. EPA National Pollution Discharge Elimination System (NPDES) Stormwater Permit Program • Vehicle salvage yards and recycling facilities • Vehicle fueling facilities (gas stations and other facilities with on-site vehicle fueling) • Vehicle service, maintenance, and equipment cleaning facilities • Fleet storage areas (cars, buses, trucks, public works) • Commercial parking lots with high intensity use (shopping malls, fast food restaurants, convenience stores, supermarkets, etc.) • Public works storage areas	• Road salt storage facilities (if exposed to rainfall) • Commercial nurseries • Flat metal rooftops of industrial facilities • Facilities with outdoor storage and loading/unloading of hazardous substances or materials, regardless of the primary land use of the facility or development • Facilities subject to chemical inventory reporting under Section 312 of the Superfund Amendments and Reauthorization Act of 1986 (SARA), if materials or containers are exposed to rainfall • Marinas (service and maintenance) • Other land uses and activities as designated by the review authority

For further information regarding the design of stormwater collection systems in Aquifer Protection Areas, contact the Aquifer Protection Area Program at (860) 424-3020 or visit www.ct.gov/deep/aquiferprotection.

Appendix D – Impaired Waters Guidance

Surface Waters and Associated Stormwater Pollutants of Concern			
Stormwater Pollutant of Concern	Waterbodies included within a TMDL or Waters Included in Pollution Control Strategy Developed by CT DEEP	Impaired waters without a TMDL	
		Impaired Designated Use	Cause
Phosphorus	Any water body subject to a TMDL pollutant load reduction for Phosphorus or any waterbody included in the Interim Phosphorus Reduction Strategy for Connecticut Freshwater Non-tidal Receiving Rivers and Streams Technical Support Document (2014 or as amended) , including but not limited to the Bantam River Watershed, Blackberry River Watershed, Factory Brook Watershed, Farmington River Watershed, Fivemile River Watershed, Hockanum River Watershed, Housatonic River Main Stem Watershed, Limekiln Brook Watershed, Naugatuck River Watershed, Norwalk River Watershed, Pequabuck River Watershed Pomperaug River Watershed, Pootatuck River Watershed, Quinebaug River Watershed, Quinnipiac River Watershed, Shetucket River Watershed or Willimantic River Watershed	Habitat for Fish, Other Aquatic Life and Wildlife or Recreation	Phosphorus, Nutrient/ Eutrophication Biological Indicators, Dissolved Oxygen, Chlorophyll-a, or Excess Algal Growth
Nitrogen	Any water body subject to a TMDL pollutant load reduction for Nitrogen, including but not limited to the Long Island Sound TMDL for Dissolved Oxygen (entire state of CT)	Habitat for Marine Fish, Other Aquatic Life and Wildlife	Dissolved oxygen saturation, Nitrogen (Total), Nutrient / Eutrophication Biological Indicators, Oxygen, Dissolved
Bacteria	Any water body subject to a TMDL pollutant load reduction for Total Coliform, Escherichia coli, Fecal coliform or Enterococci	Recreation, Existing or Proposed Drinking Water, Commercial Shellfish Harvesting Where Authorized or Shellfish Harvesting for Direct Consumption Where Authorized	Total Coliform, Escherichia coli, Fecal coliform or Enterococci
Mercury	Any water body subject to a TMDL pollutant load reduction for Mercury (Entire state of Connecticut)	Habitat for Fish, Other Aquatic Life and Wildlife or Fish Consumption	Mercury

Water Quality Targets for Waters for Which Bacteria is a Stormwater Pollutant of Concern				
Water Quality Classification	**E. Coli (Freshwater Rec) (cols/100mls)**	**Enterococci (Marine Rec) (cols/100mls)**	**Fecal Coliform (Marine Shellfishing) (cols/100mls)**	**Total Coliform (Freshwater Drinking) (cols/100mls)**
AA	Instantaneous designated swimming 235 / Non designated Swimming 410 / All other Recreation 576 Geomean 126	N/A	N/A	Monthly Moving average <100 / Single Sample Maximum 500
A	Same as AA	N/A	N/A	N/A
B	Same as AA	N/A	N/A	N/A
SA (Direct Consumption)	N/A	Instantaneous Designated Swimming 104 / Instantaneous All other Uses 500 / Geomean 35	Geomean 14 / 90% of samples <31	N/A
SB (Indirect Consumption)	N/A	Same as SA waters	Geomean 88 / 90% of samples < 260	N/A

Tighe&Bond

APPENDIX B

Pequonnock River

Watershed Summary

Watershed Description and Maps

The Pequonnock River watershed covers an area of approximately 15,381 acres in the southwestern portion of Connecticut (Figure 1). There are four towns located at least partially in the watershed, including the municipalities of Newtown, Monroe, Trumbull, and Bridgeport, CT.

The Pequonnock River watershed includes five segments impaired for recreation due to elevated bacteria levels. These segments were assessed by Connecticut Department of Energy and Environmental Protection (CT DEEP) and included in the CT 2010 303(d) list of impaired waterbodies. Some segments in the watershed are currently unassessed as of the writing of this document. However, this does not mean there are no problems on those segments, but is an indication that there is no current data to evaluate the segments as part of an assessment process. An excerpt of the Integrated Water Quality Report is included in Table 1 to show the status of waterbodies in the watershed (CT DEEP, 2010).

The Pequonnock River begins in Monroe, continues southerly to join the west branch of the river near the Route 25 crossing in Trumbull, and outlets to Bridgeport Harbor in Bridgeport. The Pequonnock River (Segment 5) (CT7105-00_05) consists of 2.35 miles of river in Monroe (Figure 2). The Pequonnock River (Segment 5) begins at the outlet of Stepney Pond just north of West Maiden Lane, flows southerly through a forested area between two residential neighborhoods, crosses Cutler's Farm Road, and ends at the inlet to Great Hollow Lake in Wolfe's Park. The West Branch Pequonnock River (CT7105-01_01) consists of 1.51 miles of river in Monroe (Figure 2). The West Branch Pequonnock River begins at the outlet to the West Pequonnock Reservoir parallel to Route 25 and ends at the mouth of the Pequonnock River just downstream of the Maple Drive crossing. The Pequonnock River (Segment 4) (CT7105-00_04) consists of 1.83 miles of river in Monroe (Figure 2). The Pequonnock River (Segment 4) begins at the outlet to an unnamed impoundment just upstream of the Purdy Hill Road crossing and Harsh Pond in Monroe, and ends at the

Impaired Segment Facts

Impaired Segments and Lengths (miles):

1. Pequonnock River (Segment 2) (CT7105-00_02); 2.92
2. Pequonnock River (Segment 3) (CT7105-00_03); 4.19
3. Pequonnock River (Segment 4) (CT7105-00_04); 1.83
4. West Branch Pequonnock River (CT7105-01_01); 1.51
5. Pequonnock River (Segment 5) (CT7105-00_05); 2.35

Municipality: Monroe, Trumbull, and Bridgeport

Water Quality Classifications: Class A

Designated Use Impairments: Recreation

Sub-regional Basin Name and Code: Pequonnock River, 7105

Regional Basin: Southwest Eastern

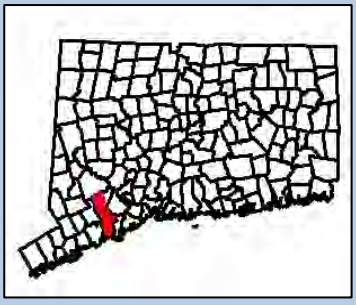
Major Basin: Southwest Coastal

Watershed Area (acres): 15,381

MS4 Applicable? Yes

Applicable Season: Recreation Season (May 1 to September 30)

Figure 1: Watershed location in Connecticut



Monroe Turnpike (Route 111) crossing near the intersection of Route 25 in Trumbull. The Pequonnock River (Segment 3) (CT7105-00_03) consists of 4.19 miles of river in Trumbull (Figure 2). The Pequonnock River (Segment 3) begins at the Monroe Turnpike (Route 111) crossing near the intersection with Route 25 and ends at the Daniels Farm Road crossing. The Pequonnock River (Segment 2) (CT7105-00_02) consists of 2.92 miles of river in Trumbull and Bridgeport (Figure 2). The Pequonnock River (Segment 2) begins at the Daniels Farm Road crossing in Trumbull, and ends at the inlet to Bunnell's Pond (Beardsley Park) on the eastern side of Route 8 in Bridgeport.

The impaired segments of the Pequonnock River have a water quality classification of A. Designated uses include potential drinking water supply, habitat for fish and other aquatic life and wildlife, recreation, and industrial and agricultural water supply. As there are no designated beaches in these segments of the Pequonnock River, the specific recreation impairment is for non-designated swimming and other water contact related activities.

Table 1: Impaired segments and nearby waterbodies from the Connecticut 2010 Integrated Water Quality Report

Waterbody ID	Waterbody Name	Location	Miles	Aquatic Life	Recreation	Fish Consumption
CT7105-00_01	Pequonnock River-01	From end of estuary (DS of Glenwood Avenue crossing, along south side of Route 1), US to upper end of Bunnell's (Beardsley Park) Pond (eastern side of Route 8, exit 6 area), Bridgeport. Segment includes Pond.	1.35	U	U	FULL
CT7105-00_02	Pequonnock River-02	From inlet to Bunnell's (Beardsley Park) Pond (eastern side of Route 8, exit 6 area), Bridgeport, US to Daniels Farm Road crossing (US of Route 25 crossing), Trumbull.	2.92	NOT	U*	FULL
CT7105-00_03	Pequonnock River-03	From Daniels Farm Road crossing (US of Route 25 crossing), Trumbull, US to Monroe Turnpike (Route 111) crossing (near intersection with Route 25), Trumbull.	4.19	NOT	FULL*	FULL

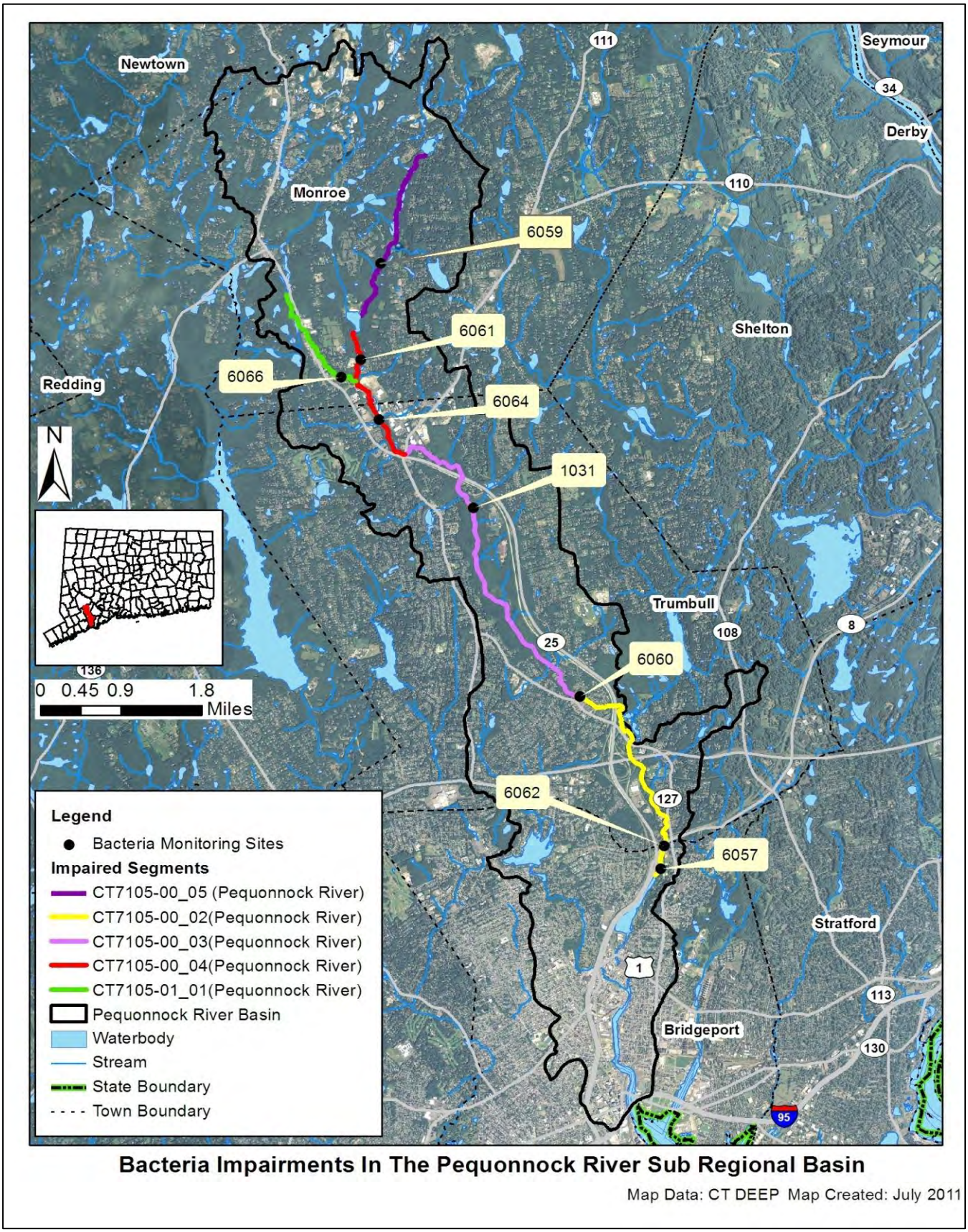
Table 1: Impaired segments and nearby waterbodies from the Connecticut 2010 Integrated Water Quality Report

Waterbody ID	Waterbody Name	Location	Miles	Aquatic Life	Recreation	Fish Consumption
CT7105-00_04	Pequonnock River-04	From Monroe Turnpike (Route 111) crossing (near intersection with Route 25), Trumbull, US to outlet of unnamed impoundment (US of Purdy Hill Road crossing, and US of Harsh Pond) Monroe.	1.83	U	FULL*	FULL
CT7105-01_01	West Branch Pequonnock River	Mouth on Pequonnock River, DS of Maple Drive crossing, on Jewish Community Center property, US to outlet of West Pequonnock Reservoir, parallel to Route 25, Monroe.	1.51	U	NOT	FULL
CT7105-00_05	Pequonnock River-05	From inlet to unnamed impoundment (northeastern portion of pond), US to headwaters at Stepney Pond outlet dam (just US of West Maiden Lane crossing), Monroe.	2.35	U	NOT	FULL

Shaded cells indicate impaired segment addressed in this TMDL
***Impairment determined from 2010 data; will be listed as impaired on the 2012 303(d) List of Impaired Waters**
FULL = Designated Use Fully Supported
NOT = Designated Use Not Supporter
U = Unassessed

Since the Pequonnock River outlets to Bridgeport Harbor, more information about potential sources impacting the water quality of the Pequonnock River and Bridgeport Estuary watersheds can be found in Estuary 7: Bridgeport (Appendix 81).

Figure 2: GIS map featuring general information of the Pequonnock River watershed at the sub-regional level



Land Use

Existing land use can affect the water quality of waterbodies within a watershed (USEPA, 2011c). Natural processes, such as soil infiltration of stormwater and plant uptake of water and nutrients, can occur in undeveloped portions of the watershed. As impervious surfaces (such as rooftops, roads, and sidewalks) increase within the watershed landscape from commercial, residential, and industrial development, the amount of stormwater runoff to waterbodies also increases. These waterbodies are negatively affected as increased pollutants from failing and insufficient septic systems, oil and grease from automobiles, and sediment from construction activities become entrained in this runoff. Agricultural land use activities, such as fertilizer application and manure from livestock, can also increase pollutants in nearby waterbodies (USEPA, 2011c).

As shown in Figures 3 and 4, the Pequonnock River watershed consists of 60% urban area, 35% forested area, 3% water, and 2% agriculture. The northern portions of the watershed are characterized by a mix of land uses, including forested areas, scattered residential developments, and agricultural operations. By contrast, the middle and southern portions of the watershed in Trumbull and Bridgeport are more heavily developed, particularly in Bridgeport (Figure 4).

Figure 3: Land use within the Pequonnock River watershed

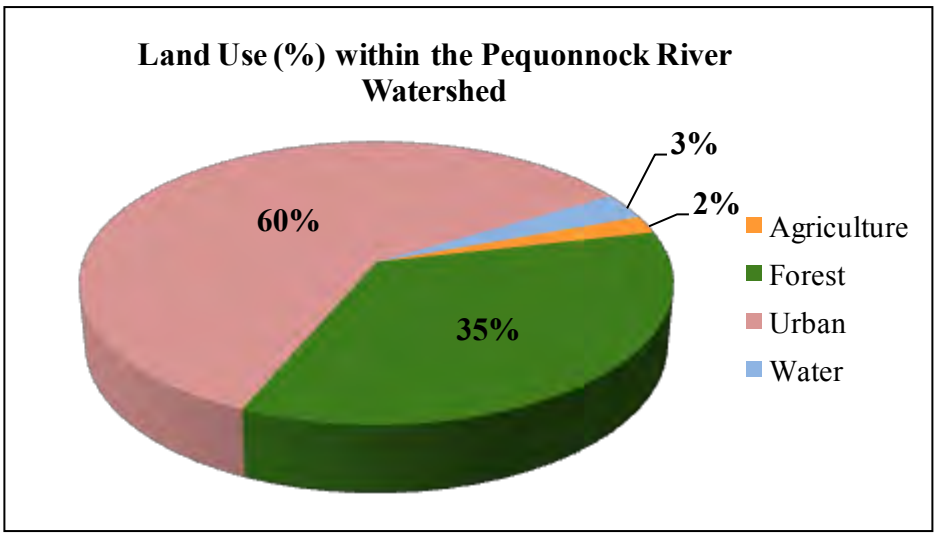
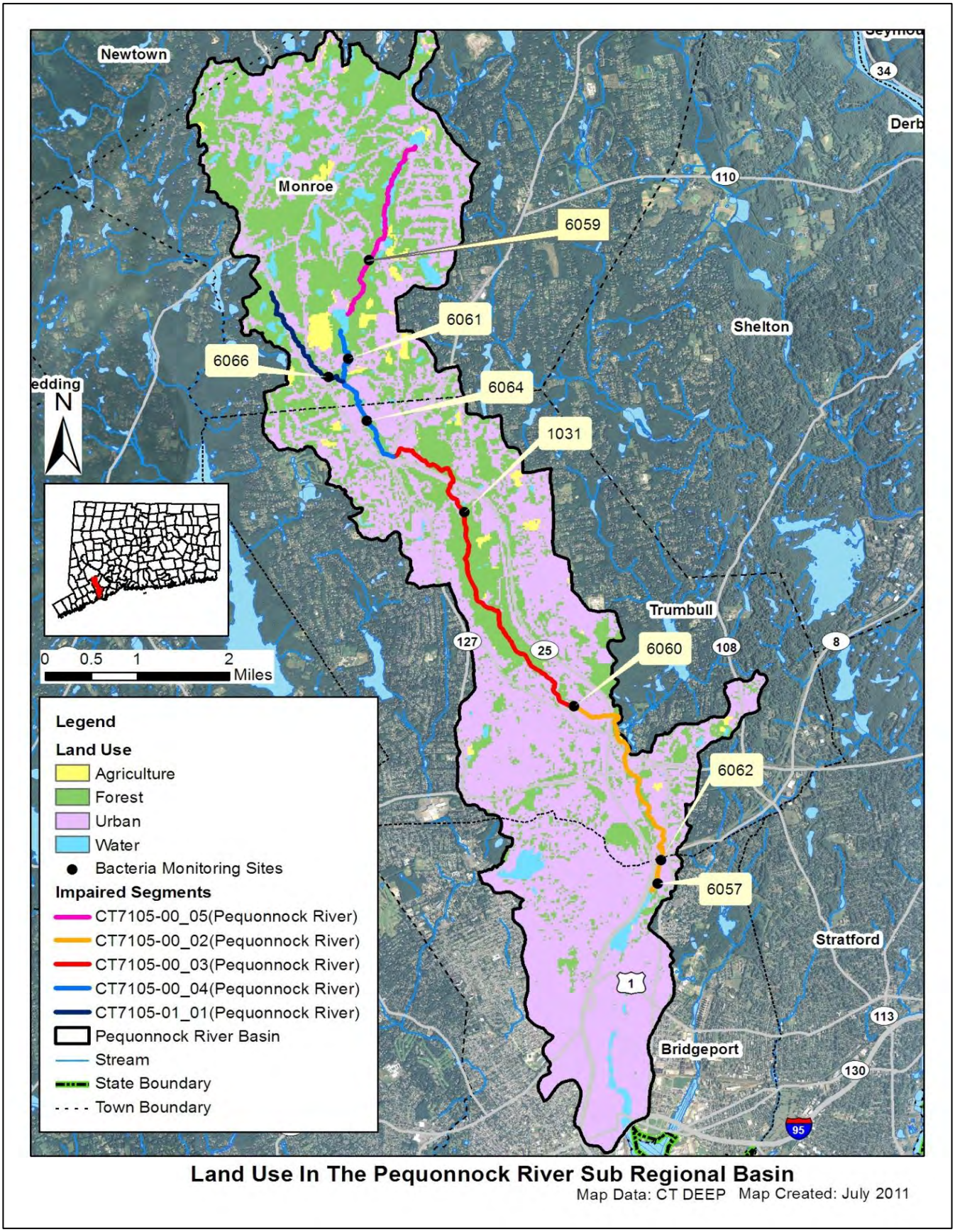


Figure 4: GIS map featuring land use for the Pequonnock River watershed at the sub-regional level



WHY IS A TMDL NEEDED?

E. coli is the indicator bacteria used for comparison with the CT State criteria in the CT Water Quality Standards (WQS) (CTDEEP, 2011). All data results are from CT DEEP, USGS, Bureau of Aquaculture, or volunteer monitoring efforts at stations located on the impaired segments.

Table 2: Sampling station location description for the impaired segments in the Pequonnock River watershed (ordered downstream to upstream)

Waterbody ID	Waterbody Name	Station	Station Description	Municipality	Latitude	Longitude
CT7105-00_02	Pequonnock River (Segment 2)	6062	Before Bunnell's Pond at Beardsley Park	Bridgeport	41.22155	-73.17894
		6057	Bunnell's Pond outlet	Bridgeport	41.21765	-73.17963
CT7105-00_03	Pequonnock River (Segment 3)	6060	Daniel's Farm Road bridge	Trumbull	41.24688	-73.19722
		1031	Whitney Avenue in town park	Trumbull	41.27889	-73.220278
CT7105-00_04	Pequonnock River (Segment 4)	6064	Spring Hill bridge downstream of confluence with un-named brook	Trumbull	41.29388	-73.24072
		6061	East Branch of Pequonnock River at Purdy Hill Road bridge	Trumbull	41.30408	-73.24475
CT7105-01_01	West Branch Pequonnock River	6066	Maple Drive bridge	Monroe	41.30102	-73.24886
CT7105-00_05	Pequonnock River (Segment 5)	6059	Cutler Farm Road before William E. Wolfe Park	Monroe	41.320410	-73.240550

The impaired segments of the Pequonnock River are Class A freshwater rivers (Figure 5). Their applicable designated uses are potential drinking water supply area, habitat for fish and other aquatic life and wildlife, recreation, and industrial and agricultural water supply. Water quality analyses were conducted using data from one sampling location on the Pequonnock River (Segment 5) and the West Branch Pequonnock River, and from two sampling locations on the Pequonnock River (Segments 2-4) in 2006 and from 2009-2010 (Table 2). Water quality criteria for *E. coli*, along with bacteria sampling results in 2006 and from 2009-2010 are presented in Tables 13-17.

Pequonnock River (Segment 2) (CT7105-00_02): As shown in Table 13, geometric mean values exceeded the WQS for *E. coli* at Station 6062 in 2009 and 2010 and at Station 6065 in 2010. Single sample values for both stations exceeded the WQS for *E. coli* multiple times.

Pequonnock River (Segment 3) (CT7105-00_03): As shown in Table 14, geometric mean values exceeded the WQS for *E. coli* at Station 6060 in 2010. Single sample values also exceeded the WQS for *E. coli* multiple times at Station 6060 in 2010.

Pequonnock River (Segment 4) (CT7105-00_04): As shown in Table 15, geometric mean values exceeded the WQS for *E. coli* at Station 6064 in 2010. Single sample values also exceeded the WQS for *E. coli* once at Station 6064 in 2010 and twice at Station 6061 in 2010.

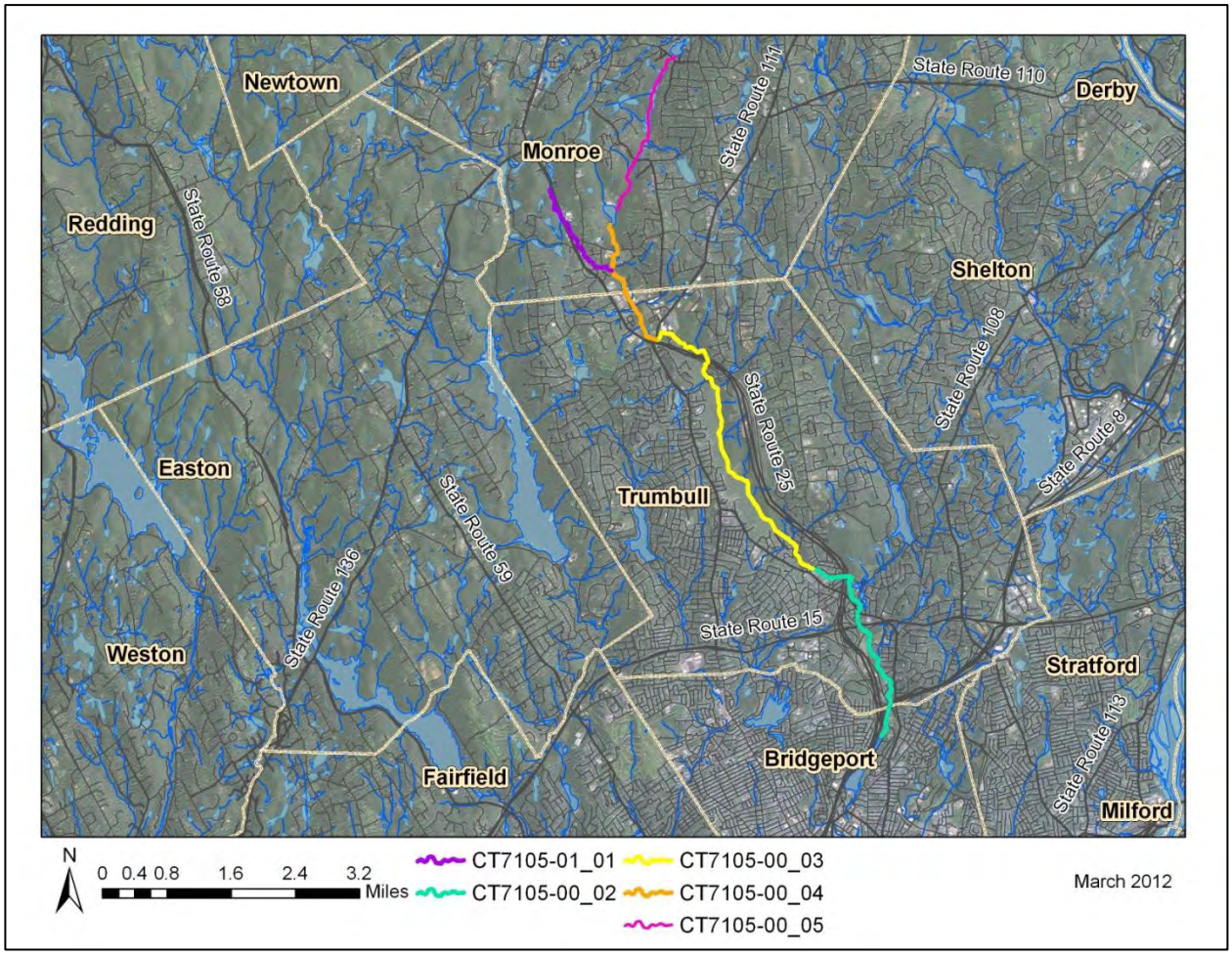
West Branch Pequonnock River (CT7105-01_01): As shown in Table 16, geometric mean values exceeded the WQS for *E. coli* at Station 6066 in 2010. Single sample values also exceeded the WQS for *E. coli* multiple times at Station 6066 in 2010.

Pequonnock River (Segment 5) (CT7105-00_05): As shown in Table 17, geometric mean values exceeded the WQS for *E. coli* at Station 6059 in 2009. Single sample values also exceeded the WQS for *E. coli* once at Station 6059 in 2009.

To aid in identifying possible bacteria sources, the geometric mean was also calculated for wet-weather and dry-weather sampling days for all stations on the Pequonnock River (Tables 13-17). Geometric mean values during both wet and dry-weather conditions were exceeded at Station 6062 on the Pequonnock River (Segment 2), Station 6066 on the West Branch Pequonnock River, and Station 6059 on the Pequonnock River (Segment 5). Geometric mean values during only wet-weather conditions were exceeded at Station 6065 on the Pequonnock River (Segment 2), Station 6060 on the Pequonnock River (Segment 3), and Station 6064 on the Pequonnock River (Segment 4).

Due to the elevated bacteria measurements presented in Tables 13-17, these impaired segments do not meet CT's bacteria WQS, were identified as impaired, and were or will be placed on the CT List of Waterbodies Not Meeting Water Quality Standards, also known as the CT 303(d) Impaired Waters List. The Clean Water Act requires that all 303(d) listed waters undergo a TMDL assessment that describes the impairments and identifies the measures needed to restore water quality. The goal is for all waterbodies to comply with State WQS.

Figure 5: Aerial map of the Pequonnock River



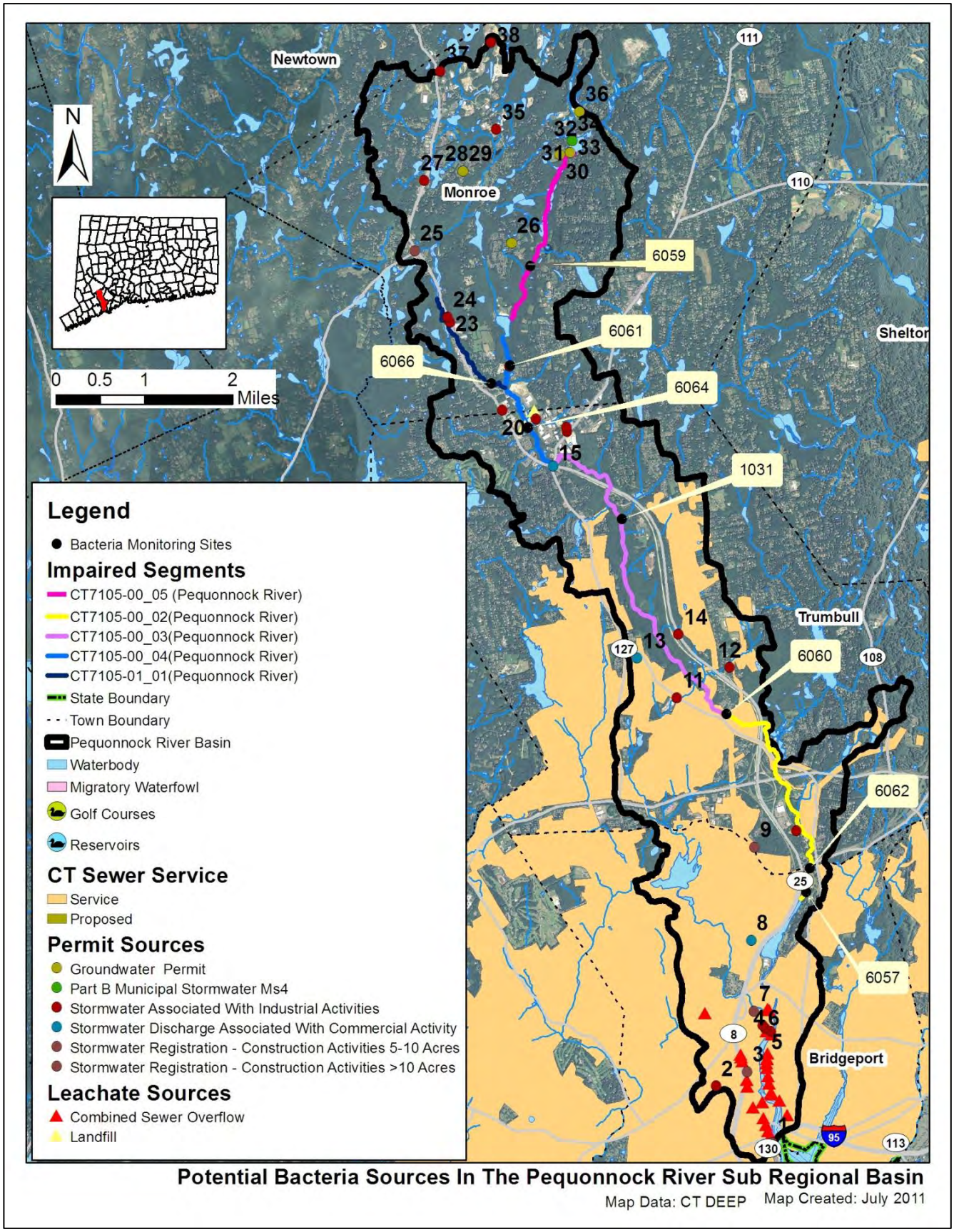
POTENTIAL BACTERIA SOURCES

Potential sources of indicator bacteria in a watershed include point and non-point sources, such as stormwater runoff, agriculture, sanitary sewer overflows (collection system failures), illicit discharges, and inappropriate discharges to the waterbody. Potential sources that have been tentatively identified in the Pequonnock River watershed based on land use (Figures 3 and 4) and a collection of local information for each of the waterbodies is presented in Table 3 and Figure 6. However, the list of potential sources is general in nature and should not be considered comprehensive. There may be other sources not listed here that contribute to the observed water quality impairment in the study segments. Further monitoring and investigation will confirm listed sources and discover additional ones. Some segments in this watershed are currently listed as unassessed by CT DEEP procedures. This does not suggest that there are no data or no impairments existing in the segments. For some, there are data from permitted sources and CT DEEP recommends that any elevated concentrations found from those permitted sources be addressed through voluntary reduction measures. More detailed evaluation of potential sources is expected to become available as activities are conducted to implement these TMDLs.

Table 3: Potential bacteria sources to the impaired segments of the Pequonnock River

Impaired Segment	Permit Source	Illicit Discharge	CSO/ SSO Issue	Failing Septic System	Agricultural Activity	Stormwater Runoff	Nuisance Wildlife/ Pets	Other
Pequonnock River (Segment 2) CT7105-00_02	x	x		x	x	x	x	
Pequonnock River (Segment 3) CT7105-00_03	x	x		x	x	x	x	
Pequonnock River (Segment 4) CT7105-00_04	x			x	x	x	x	x
West Branch Pequonnock River CT7105-01_01	x			x	x	x	x	
Pequonnock River (Segment 5) CT7105-00_05	x			x	x	x	x	

Figure 6: Potential sources in the Pequonnock River watershed at the sub-regional level



The potential sources map for the impaired basin was developed after thorough analysis of available data sets. If information is not displayed in the map, then no sources were discovered during the analysis. The following is the list of potential sources that were evaluated: problems with migratory waterfowl, golf course locations, reservoirs, proposed and existing sewer service, cattle farms, poultry farms, permitted sources of bacteria loading (surface water discharge, MS4 permit, industrial stormwater, commercial stormwater, groundwater permits, and construction related stormwater), and leachate and discharge sources (agricultural waste, CSOs, failing septic systems, landfills, large septic tank leach fields, septage lagoons, sewage treatment plants, and water treatment or filter backwash).

Point Sources

Permitted sources within the watershed that could potentially contribute to the bacteria loading are identified in Table 4. This table includes permit types that may or may not be present in the impaired watershed. A list of active permits in the watershed is included in Table 5. Additional investigation and monitoring could reveal the presence of additional discharges in the watershed. Available effluent data from each of these permitted categories found within the watershed are compared to the CT State WQS for the appropriate receiving waterbody use and type. When available, bacteria data results from these permitted sources are listed in Tables 6 and 7.

Table 4: General categories list of other permitted discharges

Permit Code	Permit Description Type	Number in watershed
CT	Surface Water Discharges	0
GPL	Discharge of Swimming Pool Wastewater	0
GSC	Stormwater Discharge Associated with Commercial Activity	2
GSI	Stormwater Associated with Industrial Activity	21
GSM	Part B Municipal Stormwater MS4	4
GSN	Stormwater Registration – Construction	4
LF	Groundwater Permit (Landfill)	0
UI	Underground Injection	7

Permitted Sources

As shown in Table 5, there are multiple permitted discharges in the Pequonnock River watershed. Bacteria data from 2001 – 2003 for several industrial permitted facilities are included in Table 6. Though this data cannot be compared to a water quality standard as Connecticut does not have a recreation WQS for fecal coliform bacteria, multiple samples from Vitramon (GSI000852) were above the maximum number the analytical method could detect. This discharge occurs along the Pequonnock River (Segment 4), and may be contributing to bacterial concentrations in the Pequonnock River.

Figure 6 also identified multiple CSOs in the southern portion of the watershed as the Pequonnock River outlets to Bridgeport Harbor. Although the CSOs are downstream of the impaired segments, they may contribute to future bacterial impairments of downstream segments. As discussed in Estuary 7: Bridgeport (Appendix 82), CSOs represent a likely source of bacterial contamination to the Bridgeport Estuary since overflowing CSOs will deposit raw sewage with high levels of bacteria into a receiving water. According to the 2005 Bridgeport Estuary Report, there are 148 CSO regulators, and wet-weather flows can bypass

through 71 outfall locations directly to the estuary. More information on CSOs can be found in the core TMDL document (Section 6.2.5).

Since the MS4 permits are not targeted to a specific location, but the geographic area of the regulated municipality, there is no one accurate location on the map to display the location of these permits. One dot will be displayed at the geographic center of the municipality as a reference point. Sometimes this location falls outside of the targeted watershed and therefore the MS4 permit will not be displayed in the Potential Sources Map. Using the municipal border as a guideline will show which areas of an affected watershed are covered by an MS4 permit.

Table 5: Permitted facilities within the Pequonnock River watershed

Town	Client	Permit ID	Permit Type	Site Name/Address	Map #
Bridgeport	Home Depot U.S.A., Inc.	GSC000189	Stormwater Discharge Associated With Commercial Activity	Home Depot #6213	8
Bridgeport	Hawie Manufacturing Co.	GSI001134	Stormwater Associated With Industrial Activities	Hawie Manufacturing Co.	5
Bridgeport	PSEG Power Connecticut, Llc	GSI001601	Stormwater Associated With Industrial Activities	Bridgeport Harbor Station	2
Bridgeport	Dattco, Inc.	GSI002031	Stormwater Associated With Industrial Activities	Dattco	6
Bridgeport	East Coast Auto Parts	GSI002136	Stormwater Associated With Industrial Activities	East Coast Auto Parts	4
Bridgeport	City Of Bridgeport	GSM000035	Part B Municipal Stormwater MS4	Bridgeport, City of	N/A
Bridgeport	Bridgeport Landing Development, Llc	GSN002170	Stormwater Registration - Construction Activities >10 Acres	Steelpointe Harbor	1
Bridgeport	City Of Bridgeport	GSN002241	Stormwater Registration - Construction Activities >10 Acres	Fairchild Wheeler Multi-Magnet High School	9
Bridgeport	United Rentals, Inc.	GSN001790	Stormwater Registration - Construction Activities 5-10 Acres	United Rentals	3
Bridgeport	Northeast Remsco Construction	GSN002194	Stormwater Registration - Construction Activities 5-10 Acres	New River Street Pump Station	7
Monroe	Sippin Brothers Oil Company, Inc.	GSI000254	Stormwater Associated With Industrial Activities	Sippin Brothers Oil Company, Inc.	23
Monroe	Vishay Vitramon, Inc.	GSI000852	Stormwater Associated With Industrial Activities	Vishay Vitramon, Inc.	20

Table 5: Permitted facilities within the Pequonnock River watershed (continued)

Town	Client	Permit ID	Permit Type	Site Name/Address	Map #
Monroe	Town Of Monroe	GSI001089	Stormwater Associated With Industrial Activities	Monroe Public Works Garage	22
Monroe	Cornell-Carr Co., Inc.	GSI001393	Stormwater Associated With Industrial Activities	Cornell-Carr Co., Inc.	27
Monroe	American Heat Treating, Inc.	GSI001849	Stormwater Associated With Industrial Activities	American Heat Treating, Inc.	35
Monroe	Northeast Laser and Electropolish, Llc	GSI001976	Stormwater Associated With Industrial Activities	Northeast Laser & Electropolish, Llc	24
Monroe	First Student, Inc.	GSI002130	Stormwater Associated With Industrial Activities	Monroe Public Works Garage	21
Monroe	M Cubed Technologies, Inc.	GSI002174	Stormwater Associated With Industrial Activities	M Cubed Technologies, Inc.	37
Monroe	H & H Processing, Llc	GSI002308	Stormwater Associated With Industrial Activities	H & H Processing, Llc	38
Monroe	Town Of Monroe	GSM000013 / 200902172	Part B Municipal Stormwater Ms4	Monroe, Town Of	N/A(34/32)
Monroe	State Of Connecticut Department Of Transportation	GSN002195	Stormwater Registration - Construction Activities 5-10 Acres	Intersection Improvements Along Route 25	25
Monroe	Town Of Monroe	UI0000300	Groundwater Permit	Monroe Middle School	36
Monroe	Castlewood Homeowners Association, Inc.	UI0000401	Groundwater Permit	Delmar Associates	30
Monroe	Castlewood Homeowners Association, Inc.	UI0000401	Groundwater Permit	Castlewood Association, Inc.	31
Monroe	Northbrook Tax District	UI0000004	Groundwater Permit	Northbrook Condominiums	28
Monroe	Great Oak Farm Homeowners Assoc., Inc.	UI0000098	Groundwater Permit	Great Oak Farm	26
Monroe	High Meadow Condominium Association, Inc	UI0000123	Groundwater Permit	High Meadows Senior Housing Project	33
Trumbull	The Stop & Shop Supermarket Company Llc	GSC000146	Stormwater Discharge Associated With Commercial Activity	Stop & Shop #620	13

Table 5: Permitted facilities within the Pequonnock River watershed (continued)

Town	Client	Permit ID	Permit Type	Site Name/Address	Map #
Trumbull	CT DOT	GSI000071	Stormwater Associated With Industrial Activities	Trumbull Salt Storage	14
Trumbull	First Student, Inc.	GSI001147	Stormwater Associated With Industrial Activities	First Student, Inc.	17
Trumbull	Mahle, Inc.	GSI001163	Stormwater Associated With Industrial Activities	Mahle, Inc.	12
Trumbull	Town Of Trumbull	GSI001644	Stormwater Associated With Industrial Activities	Trumbull Public Works Garage	11
Trumbull	Helicopter Support, Inc	GSI001744	Stormwater Associated With Industrial Activities	Helicopter Support, Inc.	10
Trumbull	Gardner Denver Nash Llc	GSI001872	Stormwater Associated With Industrial Activities	Gardner Denver Nash Llc	16
Trumbull	Town Of Trumbull	GSI002140	Stormwater Associated With Industrial Activities	Trumbull Transfer Station	19
Trumbull	Sun Products Corporation	GSI002223	Stormwater Associated With Industrial Activities	North American R&D Center	18
Trumbull	Town of Trumbull	GSM000107	Part B Municipal Stormwater MS4	Trumbull, Town of	N/A

Table 6: Industrial permits in the Pequonnock River watershed and available fecal coliform data (colonies/100 mL). The results cannot be compared to the water quality standard as there is no recreation standard for fecal coliform.

Town	Location	Permit Number	Receiving Water	Sample Location	Sample Date	Result
Bridgeport	Hawie Manufacturing, Co.	GSI001134	Pequonnock River	New building loading dock	09/14/01	>600
Bridgeport	Hawie Manufacturing, Co.	GSI001134	Pequonnock River	SD Park City Building	09/14/01	>600
Bridgeport	Hawie Manufacturing, Co.	GSI001134	Pequonnock River	SD Park City Building	08/04/03	80
Bridgeport	CRRA-Bridgeport TRF Station	GSI000097	Pequonnock River	Outfall 001(A)	09/25/01	600
Bridgeport	CRRA-Bridgeport TRF Station	GSI000097	Pequonnock River	Outfall 001(A)	09/26/02	8,300
Monroe	Sippin Bros.	GSI000254	Pequonnock River	Outfall 1	05/02/02	20

Table 6: Industrial permits in the Pequonnock River watershed and available fecal coliform data (colonies/100 mL). The results cannot be compared to the water quality standard as there is no recreation standard for fecal coliform. (continued)

Town	Location	Permit Number	Receiving Water	Sample Location	Sample Date	Result
Monroe	Sippin Bros.	GSI000254	Pequonnock River	Outfall 1	09/26/02	600
Monroe	Vitramon	GSI000852	Pequonnock River	OF-1 roof, SE parking lot	07/26/01	0
Monroe	Vitramon	GSI000852	Pequonnock River	OF-1 roof, SE parking lot	11/05/02	4,400
Monroe	Vitramon	GSI000852	Pequonnock River	OF-2 near warehouse #2	07/26/01	TNTC
Monroe	Vitramon	GSI000852	Pequonnock River	OF-2 near warehouse #2	11/05/02	TNTC
Monroe	Vitramon	GSI000852	Pequonnock River	OF-3 SE parking lot	07/26/01	TNTC
Monroe	Vitramon	GSI000852	Pequonnock River	OF-3 SE parking lot	11/05/02	3,900
Trumbull	CRRA-Trumbull TRF Station-Enviro Express	GSI000159	Pequonnock River	Outfall (001)-north end	09/25/01	600
Trumbull	CRRA-Trumbull TRF Station-Enviro Express	GSI000159	Pequonnock River	Outfall (001)-north end	08/29/02	>600
TNTC = Too numerous to count, or above the maximum number that the analytical method can measure						

Municipal Stormwater Permitted Sources

Per the EPA Phase II Stormwater rule all municipal storm sewer systems (MS4s) operators located within US Census Bureau Urbanized Areas (UAs) must be covered under MS4 permits regulated by the appropriate State agency. There is an EPA waiver process that municipalities can apply for to not participate in the MS4 program. In Connecticut, EPA has granted such waivers to 19 municipalities. All participating municipalities within UAs in Connecticut are currently regulated under MS4 permits by CT DEEP staff in the MS4 program.

The US Census Bureau defines a UA as a densely settled area that has a census population of at least 50,000. A UA generally consists of a geographic core of block groups or blocks that exceeds the 50,000 people threshold and has a population density of at least 1,000 people per square mile. The UA will also include adjacent block groups and blocks with at least 500 people per square mile. A UA consists of all or part of one or more incorporated places and/or census designated places, and may include additional territory outside of any place. (67 FR 11663)

For the 2000 Census a new geographic entity was created to supplement the UA blocks of land. This created a block known as an Urban Cluster (UC) and is slightly different than the UA. The definition of a UC is a densely settled area that has a census population of 2,500 to 49,999. A UC generally consists of a geographic core of block groups or blocks that have a population density of at least 1,000 people per square mile, and adjacent block groups and blocks with at least 500 people per square mile. A UC consists of all or part of one or more incorporated places and/or census designated places; such a place(s)

together with adjacent territory; or territory outside of any place. The major difference is the total population cap of 49,999 people for a UC compared to >50,000 people for a UA. (67 FR 11663)

While it is possible that CT DEEP will be expanding the reach of the MS4 program to include UC municipalities in the near future they are not currently under the permit. However, the GIS layers used to create the MS4 maps in this Statewide TMDL did include both UA and UC blocks. This factor creates some municipalities that appear to be within an MS4 program that are not currently regulated through an MS4 permit. This oversight can explain a municipality that is at least partially shaded grey in the maps and there are no active MS4 reporting materials or information included in the appropriate appendix. While these areas are not technically in the MS4 permit program, they are still considered urban by the cluster definition above and are likely to contribute similar stormwater discharges to affected waterbodies covered in this TMDL.

As previously noted, EPA can grant a waiver to a municipality to preclude their inclusion in the MS4 permit program. One reason a waiver could be granted is a municipality with a total population less than 1000 people, even if the municipality was located in a UA. There are 19 municipalities in Connecticut that have received waivers, this list is: Andover, Bozrah, Canterbury, Coventry, East Hampton, Franklin, Haddam, Killingworth, Litchfield, Lyme, New Hartford, Plainfield, Preston, Salem, Sherman, Sprague, Stafford, Washington, and Woodstock. There will be no MS4 reporting documents from these towns even if they are displayed in an MS4 area in the maps of this document.

The list of US Census UCs is defined by geographic regions and is named for those regions, not necessarily by following municipal borders. In Connecticut the list of UCs includes blocks in the following Census Bureau regions: Colchester, Danielson, Lake Pocotopaug, Plainfield, Stafford, Storrs, Torrington, Willimantic, Winsted, and the border area with Westerly, RI (67 FR 11663). Any MS4 maps showing these municipalities may show grey areas that are not currently regulated by the CT DEEP MS4 permit program.

The Pequonnock River watershed is located primarily within the Towns of Monroe and Trumbull and the City of Bridgeport, CT. Within the watershed area, all three municipalities have designated urban areas, as defined by the U.S. Census Bureau and are required to comply with the General Permit for the Discharge of Stormwater from Small Municipal Storm Sewer Systems (MS4 permit) issued by the Connecticut Department of Energy and Environmental Protection (DEEP) (Figure 7). This general permit is only applicable to municipalities that are identified in Appendix A of the MS4 permit that contain designated urban areas and discharge stormwater via a separate storm sewer system to surface waters of the State. The permit requires municipalities to develop a Stormwater Management Plan (SMP) to reduce the discharge of pollutants as well as to protect water quality. The MS4 permit is discussed further in the "TMDL Implementation Guidance" section of the core TMDL document. Additional information regarding stormwater management and the MS4 permit can be obtained on CTDEEP's website (http://www.ct.gov/dep/cwp/view.asp?a=2721&q=325702&depNav_GID=1654).

Multiple MS4 outfalls have been sampled for *E. coli* bacteria in the watershed (Table 7). In Monroe, three MS4 outfalls were sampled from 2004 – 2008. One outfall exceeded the single sample WQS of 410 colonies/100 mL on 11/22/2005.

Figure 7: MS4 areas of the Pequonnock River watershed

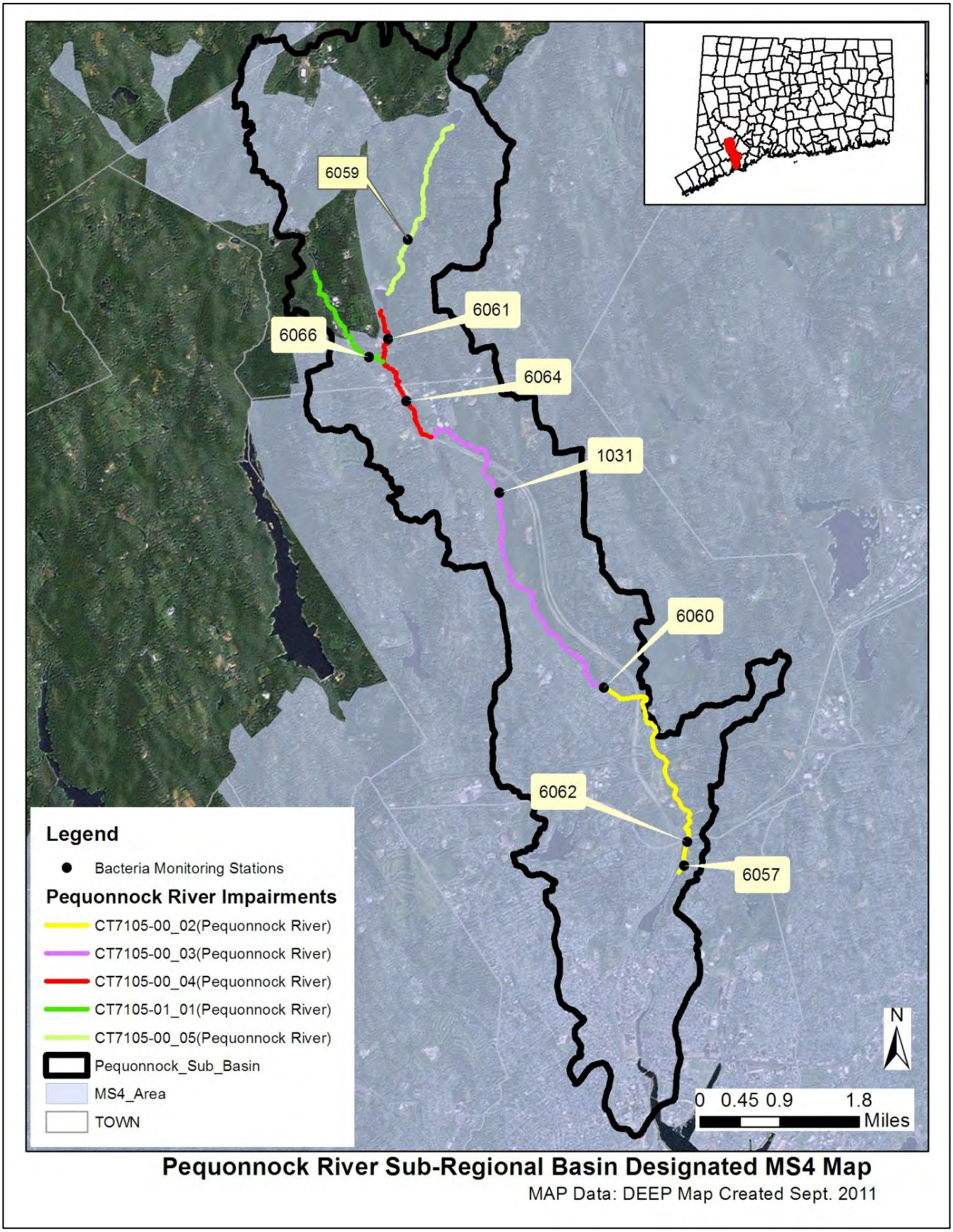


Table 7: List of MS4 sample locations and *E. coli* (colonies/100 mL) results in the Pequonnock River watershed

Town	Location	MS4 Type	Receiving Waters	Sample Date	Result
Monroe	WS 3:(11)-Pepper Street between Commerce Drive and Gardner Road	Industrial	Pequonnock River	11/12/04	198
		Industrial	Pequonnock River	11/22/05	450
		Industrial	Pequonnock River	12/01/06	220
		Industrial	Pequonnock River	03/28/08	272
Monroe	WS 5:(10)-Pastor's Walk, rear side yard of #5	Commercial	Pequonnock River	11/12/04	176
		Commercial	Pequonnock River	11/22/05	340
		Commercial	Pequonnock River	12/01/06	80
		Commercial	Pequonnock River	03/28/08	86
Monroe	WS4:(21)-Fan Hill Road, between #596 and #602	Industrial	Pequonnock River	11/12/04	14
		Industrial	Pequonnock River	11/22/05	20
		Industrial	Pequonnock River	12/01/06	10
		Industrial	Pequonnock River	03/28/08	178
Shaded cells indicate an exceedance of single-sample based water quality criteria (410 colonies/100 mL)					

Non-point Sources

Non-point source pollution (NPS) comes from many diffuse sources and is more difficult to identify and control. NPS pollution is often associated with land-use practices. Examples of NPS that can contribute bacteria to surface waters include insufficient septic systems, pet and wildlife waste, agriculture, and contact recreation (swimming or wading). Potential sources of NPS within the Pequonnock River watershed are described below. The 2011 Pequonnock River Watershed Based Plan describes many of these sources in greater detail (http://www.ct.gov/dep/lib/dep/water/watershed_management/wm_plans/pequonnock/pequonnock_wbpfinal.pdf).

Stormwater Runoff from Developed Areas

The majority of the Pequonnock River watershed is developed. Approximately 60% of the land use in the watershed is considered urban, and this area is concentrated around the impaired segments in Trumbull and Bridgeport (Figures 2 and 9). Urban areas are often characterized by impervious cover, or surface areas such as roofs and roads that force water to run off land surfaces rather than infiltrate the soil. Studies have shown a link between increasing impervious cover and degrading water quality conditions in a watershed (CWP, 2003). In one study, researchers correlated the amount of fecal coliform to the percent of impervious cover in a watershed (Mallin *et al*., 2000).

As shown in Figure 8, the majority of the Pequonnock River watershed has more than 16% impervious surfaces, particularly around the Pequonnock River (Segments 2 and 3). The northern section of the watershed in Monroe has a lower percentage of impervious cover between 7 – 11%, particularly around the West Branch Pequonnock River and the Pequonnock River (Segment 5) (Figure 9). Geometric mean values exceeded the WQS for *E. coli* during wet-weather for all the impaired segments, which suggests

that stormwater runoff may be a source of bacteria to the Pequonnock River (Table 13). Stormwater pollution sources include fertilizer runoff, failing and insufficient septic systems, horse farms, golf courses, and impervious surfaces.

Figure 8: Range of impervious cover (%) in the Pequonnock River watershed

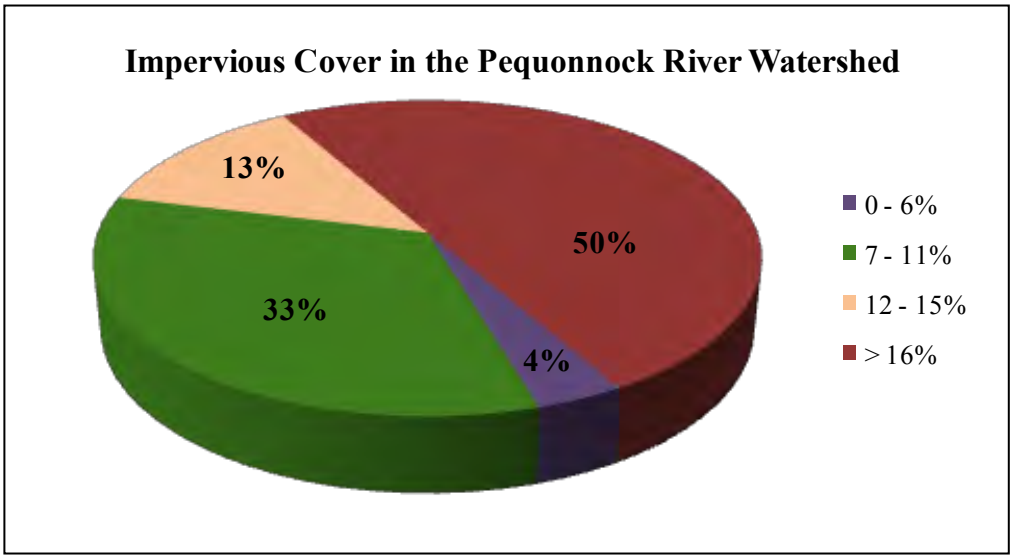
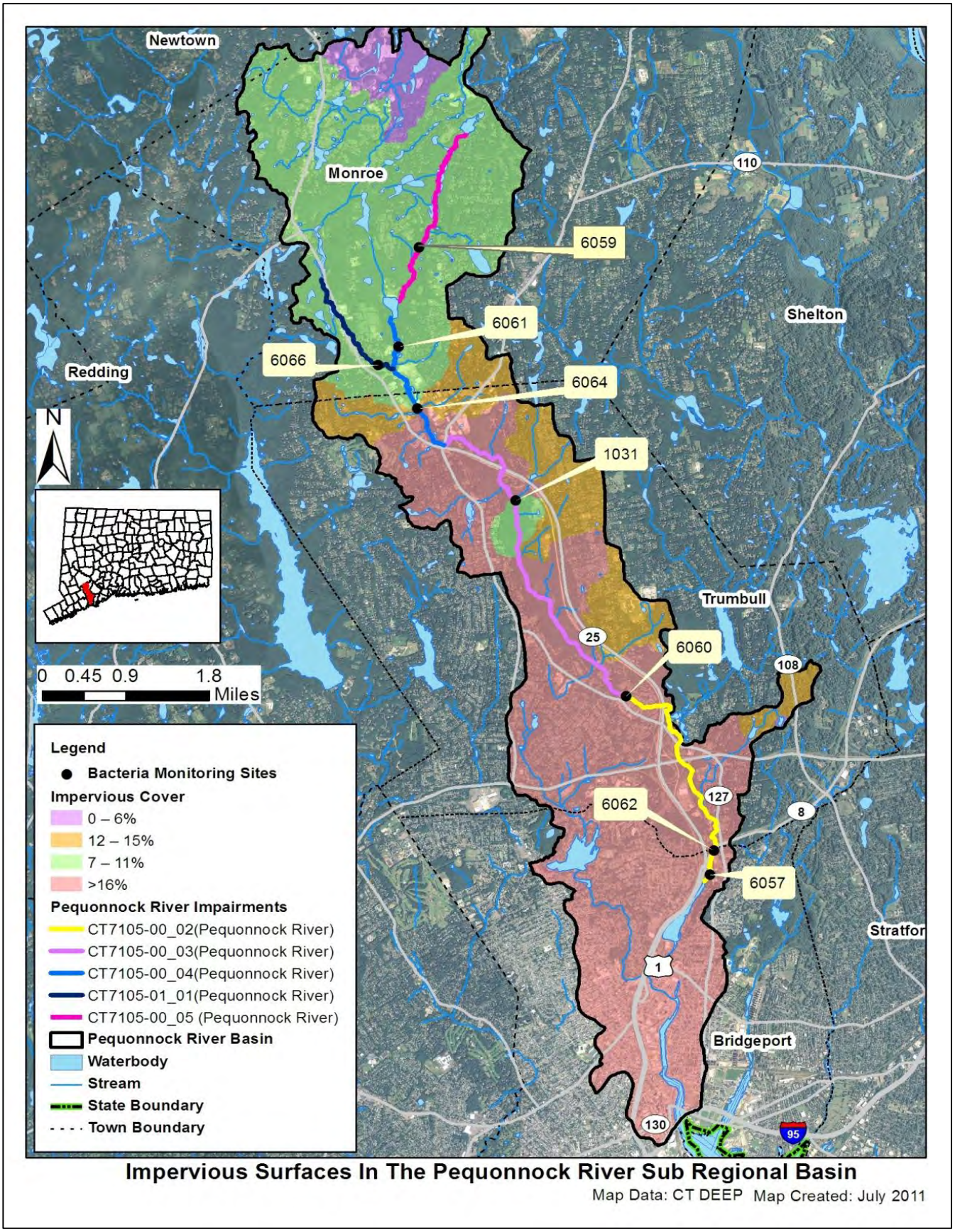


Figure 9: Impervious cover (%) for the Pequonnock River sub-regional watershed



Insufficient Septic Systems

As shown in Figure 6, the northern portion of the Pequonnock River watershed relies on onsite wastewater treatment systems, such as septic systems. Properly managed septic systems and leach fields have the ability to effectively remove bacteria from waste. If systems are not maintained, the waste will not be adequately treated and may result in bacteria reaching nearby surface and ground water.

High geometric means during dry-weather may indicate that illicit discharges such as leaking septic systems may be contributing to the bacterial impairment in a river segment. As shown in Tables 13-17, the geometric mean during dry-weather conditions exceeded the WQS for *E. coli* at the Pequonnock River (Segment 2 and 5) and the West Branch Pequonnock River, suggesting that insufficient septic systems may be contributing to bacterial concentrations in the impaired segments.

In Connecticut, local health directors or health districts are responsible for keeping track of any reported insufficient or failing septic systems in a specific municipality. The Towns of Monroe and Trumbull do not have a specific health director and are part of the Trumbull-Monroe health district (http://www.tmhd.org/). The Town of Bridgeport relies primarily on a sanitary sewer system, though some residents rely on septic systems. The Town of Bridgeport has a full-time health director (http://www.bridgeportct.gov).

Wildlife and Domestic Animal Waste

Wildlife and domestic animals within the Pequonnock River watershed represent another potential source of bacteria to the impaired waterbodies. Wildlife, including waterfowl, may be a significant bacteria source to surface waters. Elevated bacteria levels that are due solely to a natural population of wildlife are not subject to the WQS. Any exacerbation of wildlife population sizes or residency times influenced by human activities are subject to the CT WQS and TMDL provisions. The Pequonnock River Watershed Based Plan (2011) identified fecal material from nuisance waterfowl such as mute swans and Canada geese as a source of NPS. With the construction of roads and drainage systems, these wildlife wastes may no longer be retained on the landscape, but instead may be conveyed via stormwater to the nearest surface waterbody. As such, these physical land alterations can exacerbate the impact of natural sources on water quality (USEPA, 2001). As the majority of the watershed is undeveloped, wildlife waste may be a potential source of bacteria in the Pequonnock River watershed.

The Tashua Recreation Area, Indian Ledge Park, Unity Park, and Beardsley Park are located within the Pequonnock River watershed along the impaired segments. Geese and other waterfowl are known to congregate in open areas including recreational fields, agricultural crop fields, and golf courses. In addition to creating a nuisance, large numbers of geese can also create unsanitary conditions on the grassed areas and cause water quality problems due to bacterial contamination associated with their droppings. Large populations of geese can also lead to habitat destruction as a result of overgrazing on wetland and riparian plants.

Although the southern portion of the watershed is more developed, there is a significant amount of residential development in the northern portion of the Pequonnock River watershed. Waste from domestic animals, such as dogs, may also be contributing to bacteria concentrations in these impaired segments of the Pequonnock River watershed.

Agricultural Activities

Agricultural operations are an important economic activity and landscape feature in many areas of the State. Runoff from agricultural fields may contain pollutants such as bacteria and nutrients (USEPA,

2011a). This runoff can include pollutants from farm practices such as storing manure, allowing livestock to wade in nearby waterbodies, applying fertilizer, and reducing the width of vegetated buffer along the shoreline. Although agricultural land use occupies only a small portion of the watershed, these agricultural operations are located near the impaired segments of the Pequonnock River (Figure 4). Agricultural runoff from these farms and others in the area is a potential source of bacteria to the Pequonnock River.

Additional Sources

A landfill was identified in Figure 6 near Segment 4 of the Pequonnock River, and may be a concern for water quality impairment. There may be other sources not listed here or identified in Figure 6 that contribute to the observed water quality impairment in the Pequonnock River watershed. Further monitoring and investigation will confirm the listed sources and discover additional ones. More detailed evaluation of potential sources is expected to become available as activities are conducted to implement this TMDL.

Land Use/Landscape

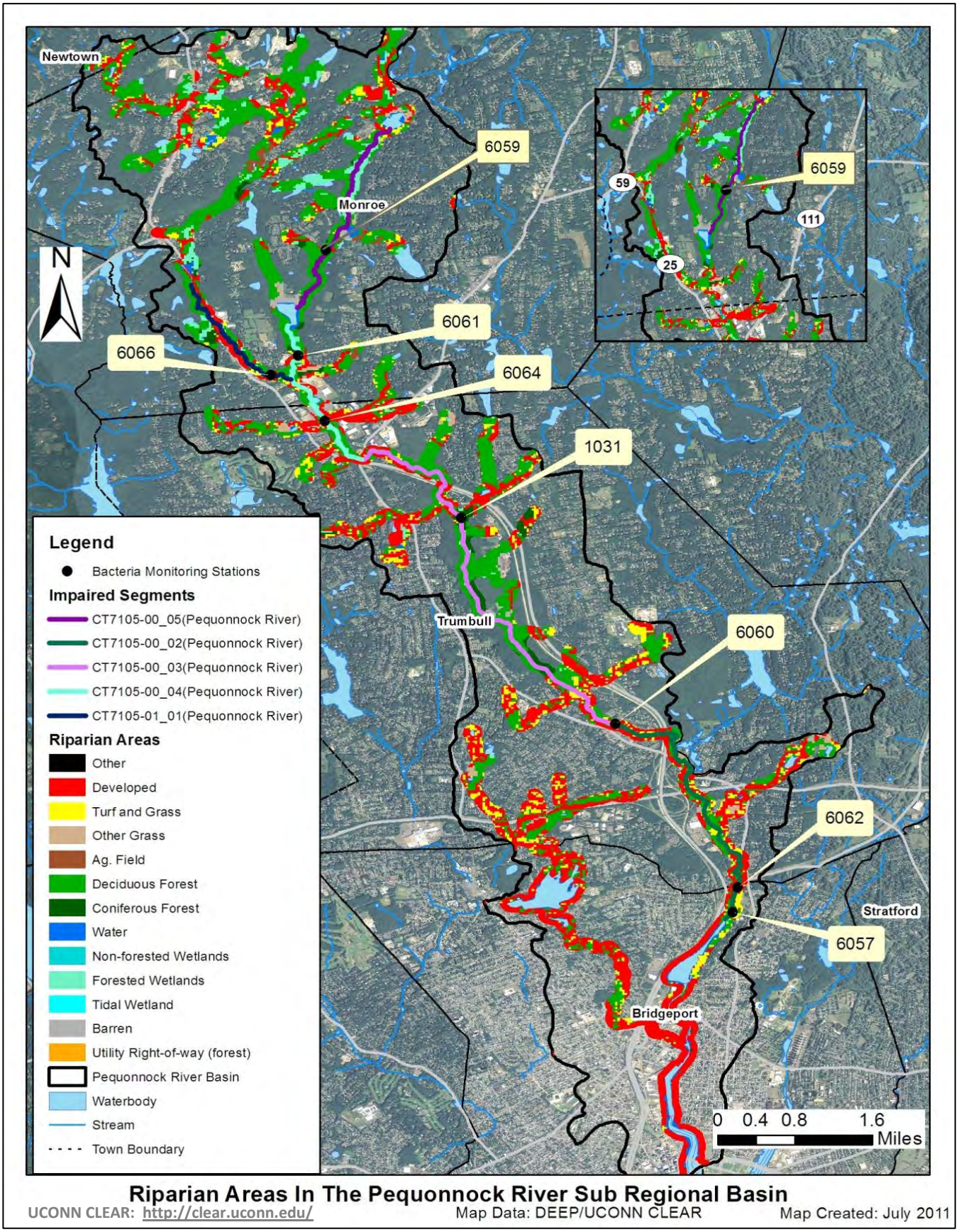
Riparian Buffer Zones

The riparian buffer zone is the area of land located immediately adjacent to streams, lakes, or other surface waters. The boundary of the riparian zone and the adjoining uplands is gradual and not always well-defined. However, riparian zones differ from the uplands because of high levels of soil moisture, frequent flooding, and the unique assemblage of plant and animal communities found there. Through the interaction of their unique soils, hydrology, and vegetation, natural riparian areas influence water quality as contaminants are taken up into plant tissues, adsorbed onto soil particles, or modified by soil organisms. Any change to the natural riparian buffer zone can reduce the effectiveness of the natural buffer and has the potential to contribute to water quality impairment (USEPA, 2011b).

The CLEAR program at UCONN has created streamside buffer layers for the entire State of Connecticut (http://clear.uconn.edu/) which have been used in this TMDL. Analyzing this information can reveal potential sources and implementation opportunities at a localized level. The land use directly adjacent to a waterbody can have direct impacts on water quality from surface runoff sources.

Riparian zones for the northern portion of the watershed and the mid portion through the Pequonnock River Valley State Park are characterized by forested areas with some agriculture (Figure 10). As previously noted, waste from wildlife in non-developed areas can contribute bacteria to nearby waterbodies. However, the majority of the impaired segments have a developed riparian zone. Developed areas within the riparian zone likely contribute pollutants such as bacteria to the waterbody due to a lack of vegetated buffer to treat this runoff.

Figure 10: Riparian buffer zone information for the Pequonnock River watershed



Riparian Areas In The Pequonnock River Sub Regional Basin

UCONN CLEAR: http://clear.uconn.edu/ Map Data: DEEP/UCONN CLEAR Map Created: July 2011

CURRENT MANAGEMENT ACTIVITIES

The Towns of Monroe and Trumbull and the City of Bridgeport have developed and implemented programs to protect water quality from bacterial contamination. In 2011, the Pequonnock River Watershed Based Plan was completed (http://www.ct.gov/dep/lib/dep/water/watershed_management/wm_plans/pequonnock/pequonnock_wbpfinal.pdf). This document outlines current actions in the watershed and recommends future actions necessary to maintain or improve water quality.

CT DEEP's Non-Point Source Pollution Program administers a Non-Point Source Grant Program with funding from EPA under Section 319 of the Clean Water Act (319 grant). Three 319 grants were awarded in the watershed in 2008 and 2009 for completion of a watershed based plan, and a two phased bacterial study of the Pequonnock River. In fact, much of the data used for this TMDL document are from 2009-2010 data collected by Earthplace efforts on the Pequonnock River. More information about these projects can be found online: http://www.depdata.ct.gov/maps/nps/npsmap.htm.

The municipalities within the watershed area have developed and implemented programs to protect water quality from bacterial contamination. As indicated previously, portions of the watershed in Monroe, Trumbull, and Bridgeport are regulated under the MS4 program. The MS4 General Permit is required for any municipality with urbanized areas that initiates, creates, originates or maintains any discharge of stormwater from a storm sewer system to waters of the state. The MS4 permit requires towns to design a Stormwater Management Plan (SMP) to reduce the discharge of pollutants in stormwater to improve water quality. The plan must address the following 6 minimum measures:

1. Public Education and Outreach.
2. Public Involvement/Participation.
3. Illicit discharge detection and elimination.
4. Construction site stormwater runoff control.
5. Post-construction stormwater management in the new development and redevelopment.
6. Pollution prevention/good housekeeping for municipal operations.

Each municipality is also required to submit an annual update outlining the steps they are taking to meet the six minimum measures. All updates that address bacterial contamination in the watershed are summarized in Tables 8 – 10.

Table 8: Summary of MS4 requirement updates related to the reduction of bacterial contamination from Monroe, CT (Permit # GSM000013)

Minimum Measure	Monroe Annual Report Update (2010)
Public Outreach and Education	1) Local Eagle Scouts began catch basin stenciling program. 2) Continued Adopt-a-Road program. 3) Continued dispersing handouts about stormwater to the public. 4) Continued use of the town's website for stormwater information. 5) Involved local school custodians in stormwater training.

Table 8: Summary of MS4 requirement updates related to the reduction of bacterial contamination from Monroe, CT (Permit # GSM000013) (continued)

Minimum Measure	Monroe Annual Report Update (2010)
Public Involvement and Participation	1) Held seven radio broadcasts announcing their Stormwater Management Plan.
Illicit Discharge Detection and Elimination	1) Mapped all stormwater outfalls. 2) Continued IDDE program – no illicit discharges were detected. 3) Continued mandatory outfall sampling. 4) Currently reviewing draft illicit discharge ordinance.
Construction Site Stormwater Runoff Control	1) Continued inspections by the Engineering Department on all construction sites.
Post-Construction Stormwater management	No updates
Pollution Prevention and Good Housekeeping	1) Continued street sweeping program 2) Continued annual catch basin inspection and cleaning program.

Table 9: Summary of MS4 requirement updates related to the reduction of bacterial contamination from Trumbull, CT (Permit # GSM000107)

Minimum Measure	Trumbull Annual Report Update (2009)
Public Outreach and Education	1) Continued to stencil all storm drains (Boy Scouts and other volunteers). 2) Public education materials to be mailed with yearly tax bill. 3) Yearly flyer to all selectmen will include information about MS4.
Public Involvement and Participation	No updates
Illicit Discharge Detection and Elimination	1) Mapped 100% of stormwater outfalls and continued to update map. 3) Continued enforcement of illicit discharge ordinance
Construction Site Stormwater Runoff Control	1) Continued enforcement of construction guidelines at the beginning of new construction projects.
Post-Construction Stormwater management	1) Continued enforcement of post-construction guidelines at the beginning and end of new construction projects. 2) New developments may require particulate separators.
Pollution Prevention and Good Housekeeping	1) Continued annual street sweeping. 2) Continued annual catch basin inspection and cleaning. 3) Repaired and upgraded catch basins and outfalls as needed.

Table 10: Summary of MS4 requirement updates related to the reduction of bacterial contamination from Bridgeport, CT (Permit # GSM000035)

Minimum Measure	Bridgeport Annual Report Update (2010)
Public Outreach and Education	1) MS4 information distributed in WPCA tax bill.
Public Involvement and Participation	1) Continued catch basin stenciling program.
Illicit Discharge Detection and Elimination	1) Mapped all 12" storm drains.
Construction Site Stormwater Runoff Control	1) Reviewed and updated all land use regulations to meet MS4 requirements.
Post Construction Stormwater management	1) Continued to develop long term maintenance program for BMPs.
Pollution Prevention and Good Housekeeping	1) All roads swept 6 times per year (minimum). 2) All catch basins and outfalls inspected and cleaned. 3) Identified sewer lines in need of repair and obtained funding to line 30,000 linear feet of sewer.

RECOMMENDED NEXT STEPS

The municipalities within the Pequonnock River watershed have developed and implemented programs to protect water quality from bacterial contamination. Future mitigative activities are necessary to ensure the long-term protection of the Pequonnock River and have been prioritized below. Some of these actions are provided in more detail in the 2011 Pequonnock River Watershed Based Plan (http://www.ct.gov/dep/lib/dep/water/watershed_management/wm_plans/pequonnock/pequonnock_wbpfinal.pdf).

1) Continue monitoring of permitted sources and conducting routine water quality monitoring throughout the Pequonnock River watershed.

Previous sampling of discharge from permitted sources within the watershed has shown elevated levels of fecal coliform bacteria, an indicator of bacterial pollution (Tables 6 and 7). The Pequonnock River Watershed Based Plan (2011) prioritized continued water quality monitoring to assess impacts from potential point and non-point pollution sources in the watershed, measure progress toward meeting watershed management goals, and ultimately support removal of the Pequonnock River from the impaired waters list.

Further monitoring will provide information essential to better locate, understand, and reduce pollution sources. If any current monitoring is not done with appropriate bacterial indicator based on the receiving water, then a recommended change during the next permit reissuance is to include the appropriate indicator species. If facility monitoring indicates elevated bacteria, then implementation of permit required, and voluntary measures to identify and reduce sources of bacterial contamination at the facility are an additional recommendation. Regular monitoring should be established for all permitted sources to ensure compliance with permit requirements and to determine if current requirements are adequate or if additional measures are necessary for water quality protection.

Section 6(k) of the MS4 General Permit requires a municipality to modify their Stormwater Management Plan to implement the TMDL within four months of TMDL approval by EPA if stormwater within the municipality contributes pollutant(s) in excess of the allocation established by the TMDL. For discharges to impaired waterbodies, the municipality must assess and modify the six minimum measures of its plan, if necessary, to meet TMDL standards. Particular focus should be placed on the following plan components: public education, illicit discharge detection and elimination, stormwater structures cleaning, and the repair, upgrade, or retrofit of storm sewer structures. The goal of these modifications is to establish a program that improves water quality consistent with TMDL requirements. Modifications to the Stormwater Management Plan in response to TMDL development should be submitted to the Stormwater Program of DEEP for review and approval.

Table 11 details the appropriate bacteria criteria for use as waste load allocations established by this TMDL for use as water quality targets by permittees as permits are renewed and updated, within the Pequonnock River Watershed.

For any municipality subject to an MS4 permit and affected by a TMDL, the permit requires a modification of the SMP to include BMPs that address the included impairment. In the case of bacteria related impairments municipal BMPs could include: implementation or improvement to existing nuisance wildlife programs, septic system monitoring programs, any additional measures that can be added to the required illicit discharge detection and elimination (IDDE) programs, and increased street sweeping above basic permit requirements. Any non-MS4 municipalities can implement these same types of initiatives in effort to reduce bacteria source loading to impaired waterways.

Any facilities that discharge non-MS4 regulated stormwater should update their Pollution Prevention Plan to reflect BMPs that can reduce bacteria loading to the receiving waterway. These BMPs could include nuisance wildlife control programs and any installations that increase surface infiltration to reduce overall stormwater volumes. Facilities that are regulated under the Commercial Activities Stormwater Permit should report any updates to their SMP in their summary documentation submitted to DEEP.

Table 11. Bacteria (e.coli) TMDLs, WLAs, and LAs for Recreational Use

		Instantaneous *E. coli* (#/100mL)						Geometric Mean *E. coli* (#/100mL)	
Class	**Bacteria Source**	**WLA[6]**			**LA[6]**			**WLA[6]**	**LA[6]**
	Recreational Use	1	2	3	1	2	3	**All**	**All**
A	Non-Stormwater NPDES	0	0	0				0	
	CSOs	0	0	0				0	
	SSOs	0	0	0				0	
	Illicit sewer connection	0	0	0				0	
	Leaking sewer lines	0	0	0				0	
	Stormwater (MS4s)	235[7]	410[7]	576[7]				126[7]	
	Stormwater (non-MS4)				235[7]	410[7]	576[7]		126[7]
	Wildlife direct discharge				235[7]	410[7]	576[7]		126[7]
	Human or domestic animal direct discharge[5]				235	410	576		126

(1) **Designated Swimming.** Procedures for monitoring and closure of bathing areas by State and Local Health Authorities are specified in: Guidelines for Monitoring Bathing Waters and Closure Protocol, adopted jointly by the Department of Environmental Protections and the Department of Public Health. May 1989. Revised April 2003 and updated December 2008.

(2) **Non-Designated Swimming.** Includes areas otherwise suitable for swimming but which have not been designated by State or Local authorities as bathing areas, waters which support tubing, water skiing, or other recreational activities where full body contact is likely.

(3) **All Other Recreational Uses.**

(4) Criteria for the protection of recreational uses in Class B waters do not apply when disinfection of sewage treatment plant effluents is not required consistent with Standard 23. (Class B surface waters located north of Interstate Highway I-95 and downstream of a sewage treatment plant providing seasonal disinfection May 1 through October 1, as authorized by the Commissioner.)

(5) Human direct discharge = swimmers

(6) Unless otherwise required by statute or regulation, compliance with this TMDL will be based on ambient concentrations and not end-of-pipe bacteria concentrations

(7) Replace numeric value with "natural levels" if only source is naturally occurring wildlife. Natural is defined as the biological, chemical and physical conditions and communities that occur within the environment which are unaffected or minimally affected by human influences (CT DEEP 2011a). Sections 2.2.2 and 6.2.7 of this Core Document deal with BMPs and delineating type of wildlife inputs.

2) Identify areas in the Pequonnock River watershed to implement Low Impact Development (LID) and Best Management Practices (BMPs) to control stormwater runoff.

As noted previously, 60% of the Pequonnock River watershed is considered urban and the towns within the Pequonnock River watershed are MS4 communities regulated by the MS4 program. Portions of the watershed in Trumbull and Bridgeport near the impaired segments have an impervious cover greater than 16%. As such, stormwater runoff is likely contributing bacteria to the Pequonnock River.

The Pequonnock River Watershed Based Plan (2011) made specific recommendations to reduce the impacts of stormwater runoff on water quality. The plan recommends adopting LID techniques throughout the watershed. LID is an approach to land development (or re-development) that works with nature to manage stormwater as close to its source as possible. LID employs principles such as

preserving and recreating natural landscape features, and minimizing imperviousness to create functional and appealing site drainage that treats stormwater as a resource rather than a waste product. Recommended actions throughout the watershed include:

- Implement LID demonstration projects at highly visible locations throughout the watershed;
- Highlight private development projects that utilize LID techniques;
- Provide education and outreach programs (seminars, training workshops, web resources, etc.) for developers, designers, land use commissioners, municipal staff and the public;
- Incorporate LID stormwater requirements into local land use plan regulations;
- Explore the feasibility of implementing a stormwater fee in the watershed.

The plan also recommends specific BMPs in Monroe, Trumbull, and Bridgeport. The southern portion of the watershed is more heavily developed and many of these BMPs are located in the downstream sections of the river. Towns within the watershed should review the recommendations in the plan to protect and help mitigate impacts to downstream sections. BMPs that would affect the water quality in the impaired segments of the Pequonnock River are listed in Table 12.

Table 12: Recommended structural BMPs from the 2011 Pequonnock River Watershed Based Plan

Location	Town	Recommended BMPs
Wolfe Park	Monroe	Stormwater retrofit demonstration project.
Wolfe Park	Monroe	Increase vegetated buffer in the Wolfe Park area.
Upstream of Wolfe Park	Monroe	Improve stream bank scour upstream of Wolfe Park.
Stepney Elementary School	Monroe	Install bioretention swales, pervious pavement, and woodland edge plantings.
Bart Shopping Center	Monroe	Install green gutters and pervious pavement for LID retrofit.
Beardsley Park	Monroe	Restore riparian zone of Bunnell's Pond and install pervious pavement, and bioretention swales.
Trumbull Public Library	Trumbull	Install LID retrofits such as tree box filters.
Old Mine Park	Trumbull	Construct grass drainage swale and rain garden.

To identify other areas that are contributing bacteria to the impaired segments, the Towns of Monroe and Trumbull should conduct wet-weather sampling at stormwater outfalls that discharge directly to the impaired segments of the Pequonnock River watershed. Outfalls that have previously shown high bacteria concentrations should be prioritized for BMP installation (Table 6). To treat stormwater runoff, all watershed towns should identify areas along the developed sections of the river to install BMPs designed to encourage stormwater to infiltrate into the ground before entering the waterbodies. These BMPs would disconnect impervious areas and reduce pollutant loads to the river. More detailed information and BMP recommendations can be found in the core TMDL document.

3) Develop a system to monitor septic systems.

Residents of the northern half of the Pequonnock River watershed rely on septic systems. Towns within the watershed should establish a program to ensure that existing septic systems are properly operated and maintained. For instance, communities can create an inventory of existing septic systems through

mandatory inspections. Inspections help encourage proper maintenance and identify failed and sub-standard systems. Policies that govern the eventual replacement of the sub-standard systems within a reasonable timeframe could be adopted. Towns can also develop programs to assist citizens with the replacement and repair of older and failing systems.

The Pequonnock River Watershed Based Plan (2011) recommends that the Towns of Monroe and Trumbull work with the Trumbull-Monroe Health District to identify and map areas with failing or insufficient septic systems and other potential problem areas, particularly in areas that could result in system discharge to the storm sewer system or directly to surface water bodies and in areas near the impaired segments of the Pequonnock River.

4) Evaluate municipal education and outreach programs regarding animal waste.

Any education and outreach program in the watershed should highlight the importance of not feeding waterfowl and wildlife and managing waste from horses, dogs, and other pets. The towns and residents can take measures to minimize waterfowl-related impacts such as allowing tall, coarse vegetation to grow in the riparian areas of the impaired segments that are frequented by waterfowl. Waterfowl, especially grazers like geese, prefer easy access to water. Maintaining an uncut vegetated buffer along the shore will make the habitat less desirable to geese and encourage migration. In addition, any educational program should emphasize that feeding waterfowl, such as ducks, geese, and swans, may contribute to water quality impairments in the Pequonnock River watershed and can harm human health and the environment. Animal wastes should be disposed of away from any waterbody or storm drain system. BMPs effective at reducing the impact of animal waste on water quality include installing signage, providing pet waste receptacles in high-uses areas, enacting ordinances requiring the clean-up of pet waste, and targeting educational and outreach programs in problem areas.

5) Ensure there are sufficient buffers on agricultural lands along the Pequonnock River.

If not already in place, agricultural producers should work with the CT Department of Agriculture and the U.S. Department of Agriculture Natural Resources Conservation Service to develop conservation plans for their farming activities within the watershed. These plans should focus on ensuring that there are sufficient stream buffers, that fencing exists to restrict access to livestock and horses, and that animal waste handling, disposal, and other appropriate Best Management Practices (BMPs) are in place. Particular attention should be paid to those agricultural operations located near the impaired segments of the Pequonnock River (Figure 4).

BACTERIA DATA AND PERCENT REDUCTIONS TO MEET THE TMDL

Table 13: Pequonnock River Bacteria Data

Waterbody ID: CT7105-00_02

Characteristics: Freshwater, Class A, Potential Public Drinking Water Supply, Habitat for Fish and other Aquatic Life and Wildlife, Recreation, and Industrial and Agricultural Water Supply

Impairment: Recreation (*E. coli bacteria)*

Water Quality Criteria for E. coli:

Geometric Mean: 126 colonies/100 mL

Single Sample: 410 colonies/100 mL

Percent Reduction to meet TMDL:

Geometric Mean: **82%**

Single Sample: **98%**

Data: 2009-2010 from Earthplace volunteer monitoring, 2012 TMDL Cycle

Single sample *E. coli* data (colonies/100 mL) from all stations on the Pequonnock River (Segment 2) with annual geometric means calculated

Station Name	Station Location	Date	Result	Wet/Dry	Geomean
6062	Just before Bunnell's Pond at Beardsley Park	5/5/2009	1460	wet	133
6062	Just before Bunnell's Pond at Beardsley Park	5/20/2009	64	dry	
6062	Just before Bunnell's Pond at Beardsley Park	6/3/2009	68	dry	
6062	Just before Bunnell's Pond at Beardsley Park	6/17/2009	84	dry	
6062	Just before Bunnell's Pond at Beardsley Park	7/15/2009	168	dry	
6062	Just before Bunnell's Pond at Beardsley Park	7/29/2009	232	wet	
6062	Just before Bunnell's Pond at Beardsley Park	8/12/2009	76	dry	
6062	Just before Bunnell's Pond at Beardsley Park	8/26/2009	140	dry	
6062	Just before Bunnell's Pond at Beardsley Park	9/9/2009	88	dry	
6062	Just before Bunnell's Pond at Beardsley Park	9/23/2009	88	dry	

Single sample *E. coli* data (colonies/100 mL) from all stations on the Pequonnock River (Segment 2) with annual geometric means calculated (continued)

Station Name	Station Location	Date	Result	Wet/Dry	Geomean
6062	Just before Bunnell's Pond at Beardsley Park	5/13/2010	160	wet	**374* (66%)**
6062	Just before Bunnell's Pond at Beardsley Park	5/27/2010	1360	dry	
6062	Just before Bunnell's Pond at Beardsley Park	6/10/2010	**1500* (73%)**	wet	
6062	Just before Bunnell's Pond at Beardsley Park	6/24/2010	800	dry	
6062	Just before Bunnell's Pond at Beardsley Park	7/8/2010	232	dry	
6062	Just before Bunnell's Pond at Beardsley Park	7/29/2010	212	dry	
6062	Just before Bunnell's Pond at Beardsley Park	8/12/2010	140	dry	
6062	Just before Bunnell's Pond at Beardsley Park	8/26/2010	340	wet	
6062	Just before Bunnell's Pond at Beardsley Park	9/9/2010	200	dry	
6062	Just before Bunnell's Pond at Beardsley Park	9/23/2010	440	dry	
6057	Bunnell's Pond near inlet	5/5/2009	264	wet	53
6057	Bunnell's Pond near inlet	5/20/2009	28	dry	
6057	Bunnell's Pond near inlet	6/3/2009	20	dry	
6057	Bunnell's Pond near inlet	6/17/2009	148	dry	
6057	Bunnell's Pond near inlet	7/15/2009	260	dry	
6057	Bunnell's Pond near inlet	7/29/2009	84	wet	
6057	Bunnell's Pond near inlet	8/12/2009	8	dry	
6057	Bunnell's Pond near inlet	8/26/2009	28	dry	
6057	Bunnell's Pond near inlet	9/9/2009	42	dry	
6057	Bunnell's Pond near inlet	9/23/2009	40	dry	
6057	Bunnell's Pond near inlet	5/13/2010	340	wet	**707* (82%)**
6057	Bunnell's Pond near inlet	6/10/2010	3660	wet	
6057	Bunnell's Pond near inlet	6/24/2010	680	dry	
6057	Bunnell's Pond near inlet	7/8/2010	400	dry	
6057	Bunnell's Pond near inlet	7/29/2010	128	dry	
6057	Bunnell's Pond near inlet	8/12/2010	72	dry	
6057	Bunnell's Pond near inlet	8/26/2010	3260	wet	
6057	Bunnell's Pond near inlet	9/9/2010	240	dry	
6057	Bunnell's Pond near inlet	9/23/2010	**18000* (98%)**	dry	

Shaded cells indicate an exceedance of water quality criteria

†Average of two duplicate samples

**** Weather conditions for selected data taken from Hartford because local station had missing data**

***Indicates single sample and geometric mean values used to calculate the percent reduction**

Wet and dry weather *E. coli* (colonies/100 mL) geometric mean values for all stations on the Pequonnock River (Segment 2)

Station Name	Station Location	Years Sampled	Number of Samples		Geometric Mean		
			Wet	Dry	All	Wet	Dry
6062	Just before Bunnell's Pond at Beardsley Park	2009-2010	5	15	223	488	172
6057	Bunnell's Pond near inlet	2009-2010	5	14	181	618	117

Shaded cells indicate an exceedance of water quality criteria

Weather condition determined from rain gages at Tweed_New Haven_KHVN in New Haven, CT.

Table 14: Pequonnock River Bacteria Data

Waterbody ID: CT7105-00_03

Characteristics: Freshwater, Class A, Potential Public Drinking Water Supply, Habitat for Fish and other Aquatic Life and Wildlife, Recreation, and Industrial and Agricultural Water Supply

Impairment: Recreation (*E. coli bacteria)*

Water Quality Criteria for E. coli:

Geometric Mean: 126 colonies/100 mL

Single Sample: 410 colonies/100 mL

Percent Reduction to meet TMDL:

Geometric Mean: **50%**

Single Sample: **49%**

Data: 2006, 2009-2010 from Earthplace volunteer monitoring, 2012 TMDL Cycle

Single sample *E. coli* data (colonies/100 mL) from all stations on the Pequonnock River (Segment 3) with annual geometric means calculated

Station Name	Station Location	Date	Result	Wet/Dry	Geomean
6060	Daniel's Farm Road Bridge	5/5/2009	168	wet	75
6060	Daniel's Farm Road Bridge	5/20/2009	20	dry	
6060	Daniel's Farm Road Bridge	6/3/2009	96	dry**	
6060	Daniel's Farm Road Bridge	6/17/2009	72	dry	
6060	Daniel's Farm Road Bridge	7/15/2009	68	dry**	
6060	Daniel's Farm Road Bridge	7/29/2009	100	wet**	
6060	Daniel's Farm Road Bridge	8/12/2009	68	dry	
6060	Daniel's Farm Road Bridge	8/26/2009	144	dry**	
6060	Daniel's Farm Road Bridge	9/9/2009	72	dry	
6060	Daniel's Farm Road Bridge	9/23/2009	52	dry	

Single sample *E. coli* data (colonies/100 mL) from all stations on the Pequonnock River (Segment 3) with annual geometric means calculated (continued)

Station Name	Station Location	Date	Result	Wet/Dry	Geomean
6060	Daniel's Farm Road Bridge	5/13/2010	134	wet	**253* (50%)**
6060	Daniel's Farm Road Bridge	5/27/2010	680	wet**	
6060	Daniel's Farm Road Bridge	6/10/2010	**800* (49%)**	wet	
6060	Daniel's Farm Road Bridge	6/24/2010	340	wet	
6060	Daniel's Farm Road Bridge	7/8/2010	212	dry	
6060	Daniel's Farm Road Bridge	7/29/2010	440	dry	
6060	Daniel's Farm Road Bridge	8/12/2010	80	dry**	
6060	Daniel's Farm Road Bridge	8/26/2010	228	dry	
6060	Daniel's Farm Road Bridge	9/9/2010	104	dry	
6060	Daniel's Farm Road Bridge	9/23/2010	244	dry**	
1031	Downstream Whitney Avenue in Town Park	11/2/2006	440	wet	NA

Shaded cells indicate an exceedance of water quality criteria

†Average of two duplicate samples

**** Weather conditions for selected data taken from Hartford because local station had missing data**

***Indicates single sample and geometric mean values used to calculate the percent reduction**

Wet and dry weather *E. coli* (colonies/100 mL) geometric mean values for all stations on the Pequonnock River (Segment 3)

Station Name	Station Location	Years Sampled	Number of Samples		Geometric Mean		
			Wet	Dry	All	Wet	Dry
6060	Daniel's Farm Road Bridge	2009-2010	6	14	138	273	103
1031	Downstream Whitney Avenue in Town Park	2006	1	0	NA	NA	NA

Shaded cells indicate an exceedance of water quality criteria

Weather condition determined from rain gages at Danbury Station in Fairfield, CT.

Table 15: Pequonnock River Bacteria Data

Waterbody ID: CT7105-00_04

Characteristics: Freshwater, Class A, Potential Public Drinking Water Supply, Habitat for Fish and other Aquatic Life and Wildlife, Recreation, and Industrial and Agricultural Water Supply

Impairment: Recreation (*E. coli bacteria)*

Water Quality Criteria for E. coli:

Geometric Mean: 126 colonies/100 mL

Single Sample: 410 colonies/100 mL

Percent Reduction to meet TMDL:

Geometric Mean: **11%**

Single Sample: **85%**

Data: 2009-2010 from Earthplace volunteer monitoring, 2012 TMDL Cycle

Single sample *E. coli* data (colonies/100 mL) from all stations on the Pequonnock River (Segment 4) with annual geometric means calculated

Station Name	Station Location	Date	Result	Wet/ Dry	Geomean
6064	Spring Hill Bridge DS of confluence with unnamed brook	5/5/09	136	wet	69
6064	Spring Hill Bridge DS of confluence with unnamed brook	5/20/09	60	dry	
6064	Spring Hill Bridge DS of confluence with unnamed brook	6/3/09	84	dry**	
6064	Spring Hill Bridge DS of confluence with unnamed brook	6/17/09	48	dry	
6064	Spring Hill Bridge DS of confluence with unnamed brook	7/15/09	60	dry**	
6064	Spring Hill Bridge DS of confluence with unnamed brook	7/29/09	116	wet**	
6064	Spring Hill Bridge DS of confluence with unnamed brook	8/12/09	64	dry	
6064	Spring Hill Bridge DS of confluence with unnamed brook	8/26/09	96	dry**	
6064	Spring Hill Bridge DS of confluence with unnamed brook	9/9/09	44	dry	
6064	Spring Hill Bridge DS of confluence with unnamed brook	9/23/09	40	dry	

Single sample *E. coli* data (colonies/100 mL) from all stations on the Pequonnock River (Segment 4) with annual geometric means calculated (continued)

Station Name	Station Location	Date	Result	Wet/ Dry	Geomean
6064	Spring Hill Bridge DS of confluence with unnamed brook	5/13/10	400	wet	**141* (11%)**
6064	Spring Hill Bridge DS of confluence with unnamed brook	5/27/10	370	wet**	
6064	Spring Hill Bridge DS of confluence with unnamed brook	6/10/10	92	wet	
6064	Spring Hill Bridge DS of confluence with unnamed brook	6/24/10	220	wet	
6064	Spring Hill Bridge DS of confluence with unnamed brook	7/8/10	**1080* (62%)**	dry	
6064	Spring Hill Bridge DS of confluence with unnamed brook	7/29/10	80	dry	
6064	Spring Hill Bridge DS of confluence with unnamed brook	8/12/10	28	dry**	
6064	Spring Hill Bridge DS of confluence with unnamed brook	8/26/10	92	dry	
6064	Spring Hill Bridge DS of confluence with unnamed brook	9/9/10	24	dry	
6064	Spring Hill Bridge DS of confluence with unnamed brook	9/23/10	196	dry**	
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	5/5/09	28	wet	24
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	5/20/09	30	dry	
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	6/3/09	50	dry**	
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	6/17/09	20	dry	
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	7/15/09	20	dry**	
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	7/29/09	8	wet**	
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	8/12/09	100	dry	
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	8/26/09	20	dry**	
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	9/9/09	12	dry	
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	9/23/09	16	dry	
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	5/13/10	16	wet	116
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	5/27/10	220	wet**	
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	6/10/10	40	wet	
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	6/24/10	40	wet	
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	7/29/10	**2800* (85%)**	dry	
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	8/12/10	72	dry**	
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	8/26/10	92	dry	
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	9/9/10	28	dry	
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	9/23/10	1280	dry**	

Shaded cells indicate an exceedance of water quality criteria

†Average of two duplicate samples

**** Weather conditions for selected data taken from Hartford because local station had missing data**

***Indicates single sample and geometric mean values used to calculate the percent reduction**

Wet and dry weather *E. coli* (colonies/100 mL) geometric mean values for all stations on the Pequonnock River (Segment 4)

Station Name	Station Location	Years Sampled	Number of Samples		Geometric Mean		
			Wet	Dry	All	Wet	Dry
6064	Spring Hill Bridge just downstream from confluence with unnamed brook	2009-2010	6	14	99	190	75
6061	East Branch of Pequonnock at Purdy Hill Road Bridge	2009-2010	6	13	50	33	61

Shaded cells indicate an exceedance of water quality criteria

Weather condition determined from rain gages at Danbury Station in Fairfield, CT.

Table 16: Pequonnock River Bacteria Data

Waterbody ID: CT7105-01_01

Characteristics: Freshwater, Class A, Potential Public Drinking Water Supply, Habitat for Fish and other Aquatic Life and Wildlife, Recreation, and Industrial and Agricultural Water Supply

Impairment: Recreation (*E. coli bacteria)*

Water Quality Criteria for E. coli:

Geometric Mean: 126 colonies/100 mL

Single Sample: 410 colonies/100 mL

Percent Reduction to meet TMDL:

Geometric Mean: **46%**

Single Sample: **38%**

Data: 2009-2010 from Earthplace volunteer monitoring, 2012 TMDL Cycle

Single sample *E. coli* data (colonies/100 mL) from Station 6066 on the West Branch Pequonnock River with annual geometric means calculated

Station Name	Station Location	Date	Result	Wet/Dry	Geomean
6066	West Branch of Pequonnock at Maple Drive Bridge	5/5/2009	40	wet	102
6066	West Branch of Pequonnock at Maple Drive Bridge	5/20/2009	60	dry	
6066	West Branch of Pequonnock at Maple Drive Bridge	6/3/2009	80	dry**	
6066	West Branch of Pequonnock at Maple Drive Bridge	6/17/2009	52	dry	
6066	West Branch of Pequonnock at Maple Drive Bridge	7/15/2009	108	dry**	
6066	West Branch of Pequonnock at Maple Drive Bridge	7/29/2009	92	wet**	
6066	West Branch of Pequonnock at Maple Drive Bridge	8/12/2009	128	dry	
6066	West Branch of Pequonnock at Maple Drive Bridge	8/26/2009	196	dry**	
6066	West Branch of Pequonnock at Maple Drive Bridge	9/9/2009	212	dry	
6066	West Branch of Pequonnock at Maple Drive Bridge	9/23/2009	236	dry	

Single sample *E. coli* data (colonies/100 mL) from Station 6066 on the West Branch Pequonnock River with annual geometric means calculated (continued)

Station Name	Station Location	Date	Result	Wet/Dry	Geomean
6066	West Branch of Pequonnock at Maple Drive Bridge	5/13/2010	140	wet	**235* (46%)**
6066	West Branch of Pequonnock at Maple Drive Bridge	5/27/2010	590	wet**	
6066	West Branch of Pequonnock at Maple Drive Bridge	6/10/2010	360	wet	
6066	West Branch of Pequonnock at Maple Drive Bridge	6/24/2010	500	wet	
6066	West Branch of Pequonnock at Maple Drive Bridge	7/8/2010	**660* (38%)**	dry	
6066	West Branch of Pequonnock at Maple Drive Bridge	7/29/2010	172	dry	
6066	West Branch of Pequonnock at Maple Drive Bridge	8/12/2010	184	dry**	
6066	West Branch of Pequonnock at Maple Drive Bridge	8/26/2010	300	dry	
6066	West Branch of Pequonnock at Maple Drive Bridge	9/9/2010	100	dry	
6066	West Branch of Pequonnock at Maple Drive Bridge	9/23/2010	56	dry**	

Shaded cells indicate an exceedance of water quality criteria

[†]Average of two duplicate samples

**** Weather conditions for selected data taken from Hartford because local station had missing data**

***Indicates single sample and geometric mean values used to calculate the percent reduction**

Wet and dry weather *E. coli* (colonies/100 mL) geometric mean values for Station 6066 on the West Branch Pequonnock River

Station Name	Station Location	Years Sampled	Number of Samples		Geometric Mean		
			Wet	Dry	All	Wet	Dry
6066	West Branch of Pequonnock at Maple Drive Bridge	2009-2010	6	14	155	195	141

Shaded cells indicate an exceedance of water quality criteria

Weather condition determined from rain gages at Danbury Station in Fairfield, CT.

Table 17: Pequonnock River Bacteria Data

Waterbody ID: CT7105-00_05

Characteristics: Freshwater, Class A, Potential Public Drinking Water Supply, Habitat for Fish and other Aquatic Life and Wildlife, Recreation, and Industrial and Agricultural Water Supply

Impairment: Recreation (*E. coli bacteria)*

Water Quality Criteria for E. coli:

Geometric Mean: 126 colonies/100 mL

Single Sample: 410 colonies/100 mL

Percent Reduction to meet TMDL:

Geometric Mean: **31%**

Single Sample: **15%**

Data: 2009 from Earthplace volunteer monitoring, 2012 TMDL Cycle

Single sample *E. coli* data (colonies/100 mL) from Station 6059 on the Pequonnock River (Segment 5) with annual geometric means calculated

Station Name	Station Location	Date	Results	Wet/Dry	Geomean
6059	Cutler Farm Rd. before river's entrance at Wolfe Park	5/5/2009	212	wet	**182* (31%)**
6059	Cutler Farm Rd. before river's entrance at Wolfe Park	5/20/2009	**480* (15%)**	dry	
6059	Cutler Farm Rd. before river's entrance at Wolfe Park	6/3/2009	66	dry**	
6059	Cutler Farm Rd. before river's entrance at Wolfe Park	6/17/2009	80	dry	
6059	Cutler Farm Rd. before river's entrance at Wolfe Park	7/15/2009	240	dry**	
6059	Cutler Farm Rd. before river's entrance at Wolfe Park	7/29/2009	148	wet**	
6059	Cutler Farm Rd. before river's entrance at Wolfe Park	8/12/2009	220	dry	
6059	Cutler Farm Rd. before river's entrance at Wolfe Park	8/26/2009	228	dry**	
6059	Cutler Farm Rd. before river's entrance at Wolfe Park	9/9/2009	204	dry	
6059	Cutler Farm Rd. before river's entrance at Wolfe Park	9/23/2009	200	dry	

Shaded cells indicate an exceedance of water quality criteria

**** Weather conditions for selected data taken from Hartford because local station had missing data**

***Indicates single sample and geometric mean values used to calculate the percent reduction**

Wet and dry weather *E. coli* (colonies/100 mL) geometric mean values for Station 6059 on the Pequonnock River (Segment 5)

Station Name	Station Location	Years Sampled	Number of Samples		Geometric Mean		
			Wet	Dry	All	Wet	Dry
6059	Cutler Farm Rd. before river's entrance at Wolfe Park	2009	2	8	182	177	183
Shaded cells indicate an exceedance of water quality criteria							
Weather condition determined from rain gauges in Danbury, CT and at Hartford Bradley International Airport							

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