Stormwater and the National Pollutants Discharge Elimination System (NPDES) Phase II Small Municipal Separate Storm Sewer System (MS4) General Permit

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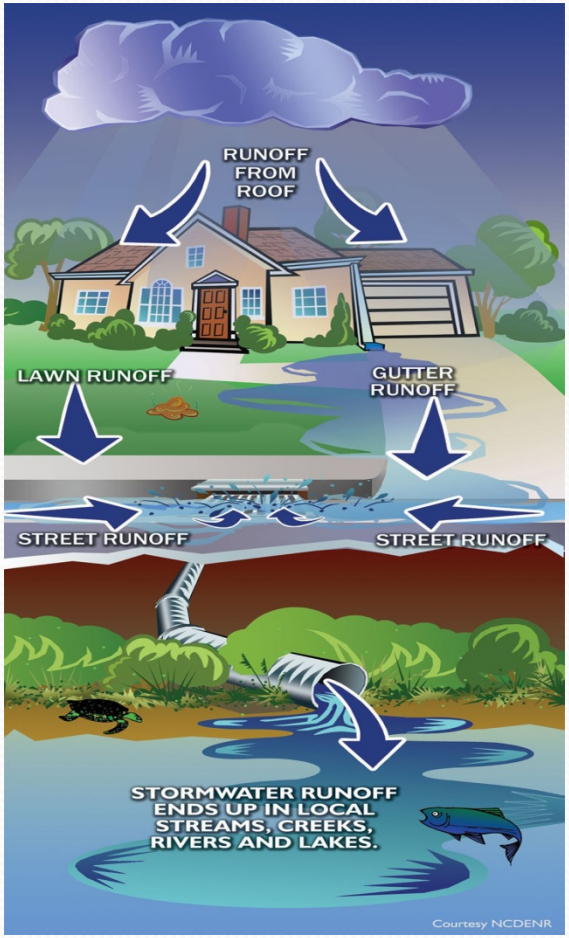
What is Stormwater?

- Stormwater is from rain or melting snow that “runs off” across the land instead of seeping into the ground. This runoff usually flows into the nearest stream, creek, river, lake or ocean.



Why is Stormwater important?

- Water is directly linked to many of our daily activities and the quality of life in our communities.
- Many people do not know that much of the pollution in our waterways comes from our daily activities around the home, in the yard, in the car, at work, and outdoors.
- Stormwater is not treated by a wastewater treatment plant. It goes directly into storm drains, swales, culverts or pipes that flow into our local streams, rivers and lakes that we fish and swim in.
- Often times, these waterways are also the source for our drinking water.

(Courtesy form the Kentucky Transportation Cabinet Website)

How do We Protect this Great Resource?

The Clean Water Act

- It establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.

- The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. "Clean Water Act" became the Act's common name with amendments in 1977.

- Under the CWA, EPA has implemented pollution control programs such as setting water quality standards for all contaminants in surface waters.

- The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained.

- EPA's National Pollutant Discharge Elimination System (NPDES) permit program controls discharges.

- Point sources are discrete conveyances such as pipes or man-made ditches.

- Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.

What counts as a Pollutant?

- Dredged Spoils
- Trash
- Incinerator Residue
- Filter Backwash
- Sewage
- Chemical Waste
- Heat
- Sediment
- Grease and Oils
- Heavy Metals

The Effects of Development on Stormwater Runoff

- Increases impervious area
- Increases stormwater volume and velocity
- Causes floods
- Decreases stormwater quality
- Decreases groundwater recharge

Different Types of NPDES Permits

- Individual – WWTP, industrial facilities
- General – Towns, States, State Schools
- Construction – Sites being disturbed between 1 and 5 acres

Two Phases of the Permit

Phase 1 began in 1990

- Medium to large municipalities
- Construction sites with 5 acres or more being disturbed
- Industrial activities

Phase 2 began in 1999

- Small municipalities
- Construction sites between 1 and 5 acres being disturbed

Municipal Separate Storm Sewer System (MS4)

- MS4 is a system of conveyances owned by State, City, or Town that discharges to waters of the United States.
- It is designed or used for collecting Stormwater.
- It can not be a combined sewer system.
- It can not be part of a publicly owned treatment works (POTW).

How Does this work?

First Step – Submit a Notice of Intent (NOI) to EPA. Proceed with a 30 day Public Notice. Get it Approved ✓

Second Step – Submit a Stormwater Management Program (SWMP) for the 5 year permit. Get it Approved ✓

Third Step – Submit an Annual Report on the progress for the Permit.

Notice of Intent

This document gives the Operator of the Small MS4 an opportunity to identify what action items are proposed as part of the future permit.

<u>What information is required?</u>

Map of the Infrastructure

Bylaws (Construction, Post-Construction, Illicit Discharge Detection and Elimination (IDDE))

Summary of Receiving Waters

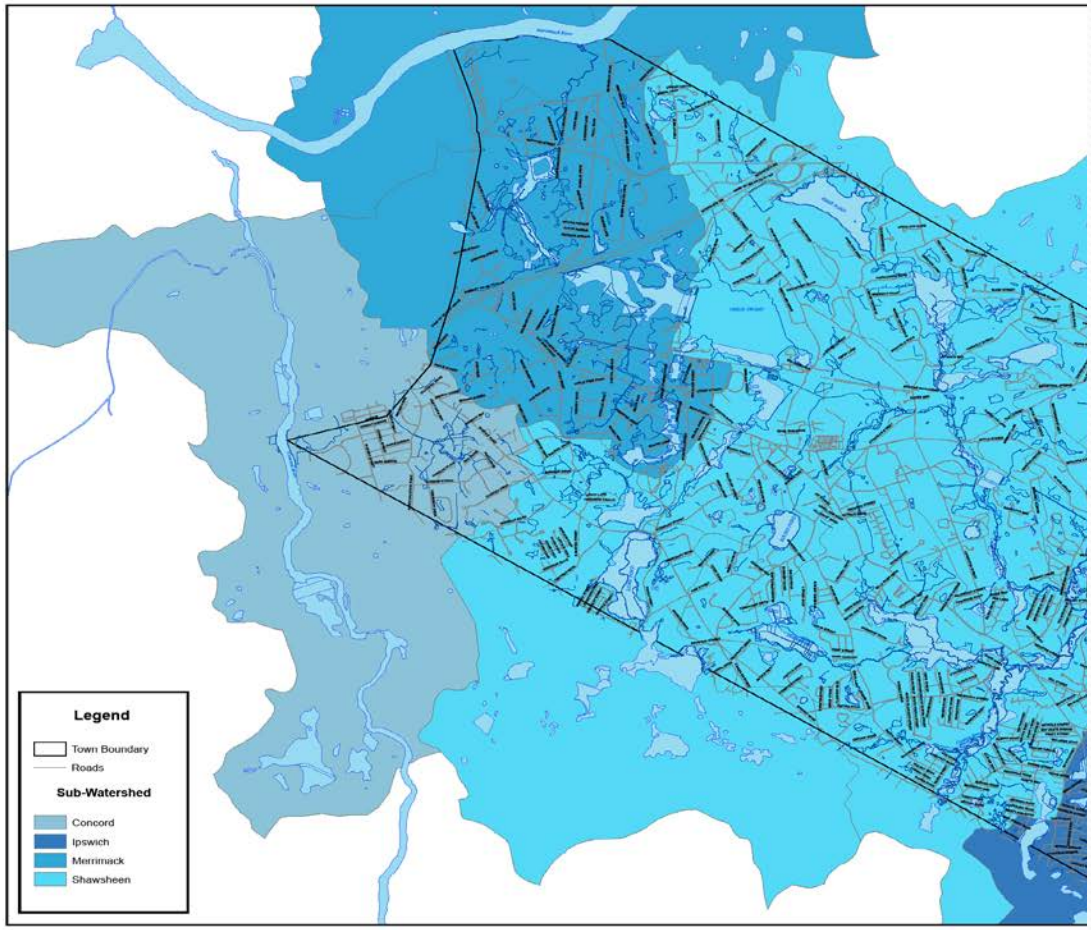
Measurable Goals and Best Management Practices (BMP)

Stormwater Management Program

Includes:

- Identification of who is responsible for program implementation.
- Listing for receiving waters, their classification under the applicable state water quality standards, impairments, number of outfalls, identification of all public drinking water sources.
- Documentation regarding Endangered Species and Historic Properties.
- A map of the storm sewer system.
- Description of practices to achieve stormwater control.
- Outfall Monitoring Program Details.
- Annual program evaluation.

Watershed Map of Tewksbury



Contents Needed for a Storm Sewer System Map

- Required within first two years of permit.
  - All drainage mapping including municipal and private
    - Pipes, structures, ponds
  - All sewer mapping
    - Pipe materials, size, age, structures, pump stations
  - Catchment delineations
  - Waterbodies identified
  - Water Resource information
    - Topography, seasonal high groundwater table, orthophotography
  - A list of operations and maintenance, investigations and remediations.
  - Outfall Inventory
  - Locate suspected, confirmed and corrected illicit discharges.

Stormwater Controls

"The permittee shall reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP). MEP is generally a focus on pollution prevention and source control in combination with structural controls and treatment." – EPA 2010 Draft NPDES General Permit.

There are Six Minimum Control Measures

1. Public Education and Outreach
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination (IDDE)
4. Construction Site Stormwater Runoff Control
5. Post Construction Stormwater Management
6. Good Housekeeping and Pollution Prevention

Public Education and Outreach

- Three Audiences :
  - Residents
  - Commercial
  - Developers/Construction
- Two messages per group within the permit period.
  - Residential
    - Fertilizers
    - Septic system maintenance
    - Car washing
    - Disposal of swimming pool water
  - Commercial
    - Lawn care
    - Storage of salt/anti-icing materials
    - Dumpsters
    - Parking lot sweeping
  - Developers/Construction
    - Erosion control
    - Low impact Development

Photograph courtesy of whollycrap.com

Public Involvement and Participation

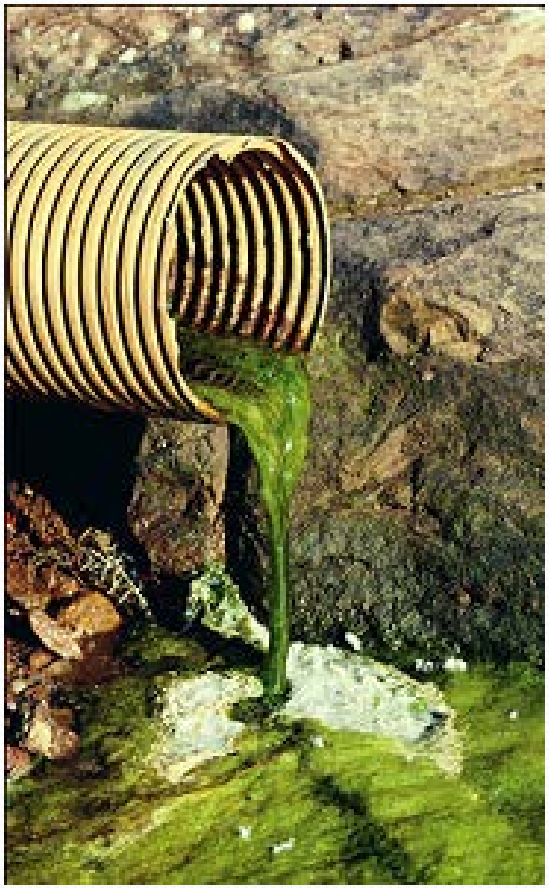
- The permittee shall provide the public an opportunity to participate in the review and implementation of the stormwater management plan.

- The permittee shall encourage opportunities for participation such as with ***websites, hotlines, clean-up teams, monitoring teams, advisory committee***

- ***Photograph courtesy of Westboroughlandtrust.org***

Illicit Discharge Detection and Elimination (IDDE) Program

- Purpose of Program is to systematically find and eliminate sources of non-stormwater from the separate storm sewer system and to implement procedures to prevent illicit connections and discharges.
- This includes:
  - System mapping
  - Outfall Inventory
  - Outfall Testing
    - (dry and wet weather)
  - Removal of illegal connections



Photograph courtesy of villageof howard.com

Outfall Monitoring Program

- GPS all outfalls locations

- Collect information such as pipe material, pipe size, flow observed, sediment or trash present.

- Test all outfalls during dry and wet weather conditions. Parameters tested include E.Coli, ammonia-nitrogen, total phosphorus, surfactants.

- There were approximately 800 outfalls identified in Tewksbury.

Photograph courtesy of flickr.com

Construction Site Stormwater Runoff Control

Purpose is to minimize or eliminate erosion and maintain sediment on site so that it is not transported in stormwater and allowed to discharge into U. S. waters.

This will be achieved by

- Minimizing disturbed areas and protecting natural resources
- Stabilizing sites with perimeter control
- Protecting slopes
- Protecting storm drains inlets
- Stabilizing construction site entrances/exits

Photographs courtesy of frontiersolutions.us and erosionrunner.com

Post Construction Stormwater Management

The objective is for the hydrology resulting from the new development to mirror the pre-development hydrology on the site or improve the hydrology and reduce the discharge of stormwater.

This can be done by minimizing impervious cover and utilizing Low Impact Designs.

Photographs courtesy of www.commonwaters.org

Good House Keeping and Pollution Prevention

Implementing an operations and maintenance program for permittee-owned operations that include a training component and a goal of preventing or reducing pollutant runoff and protecting water quality.

- Parks and Open Space
  - Fertilizers, lawn maintenance, animal waste
- Buildings and Facilities
  - O & M manuals for all schools, town offices, police, fire stations, garages
- Infrastructure Operations and Maintenance
  - Repairs of infrastructure, cleaning of catch basins, street sweeping, winter roadway maintenance, SWPPP, employee training

Photographs courtesy of toppointonline.com and sanitrol.net

Annual Program Report

Includes:

Program Evaluation

on All Control Measures

Record Keeping

all documentation needs to be retained and only submitted at the request of EPA or MassDEP

Reporting

self-assessment, status and effectiveness on all control measures, outfall monitoring data, description of activities for next reporting cycle, description of any changes to the program.

How much will all of this cost to comply with the permit?

Based on assumptions to an estimated $3.6 Million for the 5 year permit. This does not factor in staff time.

Other Town's have estimated as much as $12 Million for the 5 year permit.

What happens if communities do not follow these procedures?

EPA has filed complaints against these communities seeking penalties as follows:

- Canton - $50,000
- Concord - $50,000
- Dennis - $50,000
- Eastham - $40,000
- Gardner - $60,000
- Peabody - $70,000
- Winthrop - $70,000
- Fall River - $177,500

Questions