

# EPA Phase II MS4 Permit

## Management and Compliance

Southeastern Massachusetts Stormwater  
Collaborative (SEMSWC)

Community Innovation Challenge Grant Program



Natalie Pommersheim  
Robert Rafferty, P.E.

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# Topics to be Covered

- Permit Background
- What is an MS4?
- Who is Involved?
- Overview of the Draft Permit
- Recommended Actions



# Regulatory Background

- Federal Clean Water Act – 1972
  - Initial Focus: Wastewater treatment plants
  - Implemented through National Pollutant Discharge Elimination System (NPDES) permit program
  - NPDES permit: License to discharge - may be revoked for cause



# Regulatory Background

- Federal Clean Water Act Amendments – 1987
  - Focus: Stormwater, Construction Sites
  
- 1990: Phase 1 Stormwater
  - Municipal Separate Storm Sewer Systems (MS4) with population > 100,000 people
  - ~900 Phase 1 MS4's in the United States
  - Construction Sites > 5 acres
  - Stormwater discharges associated with 11 categories of industrial activities

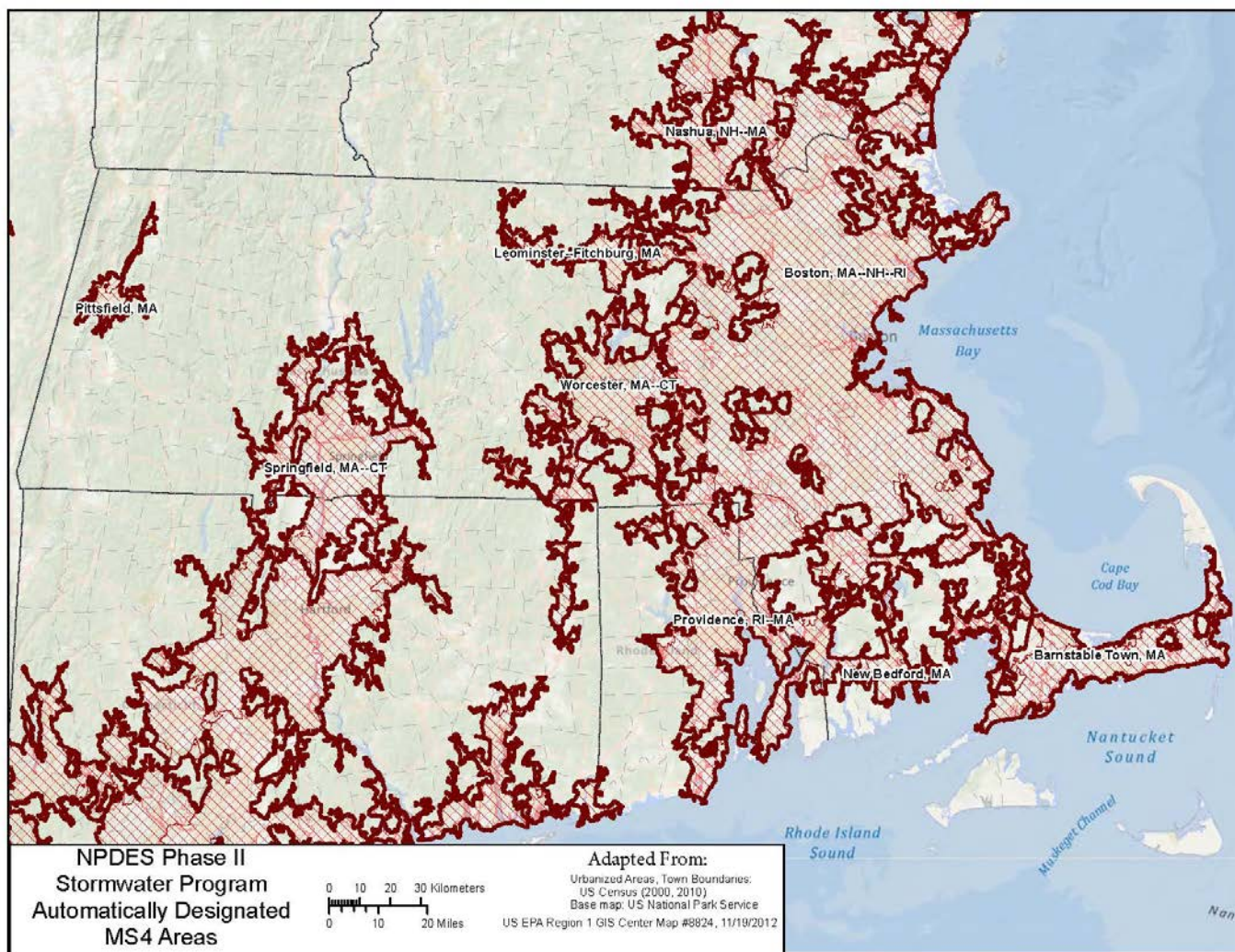


# Regulatory Background

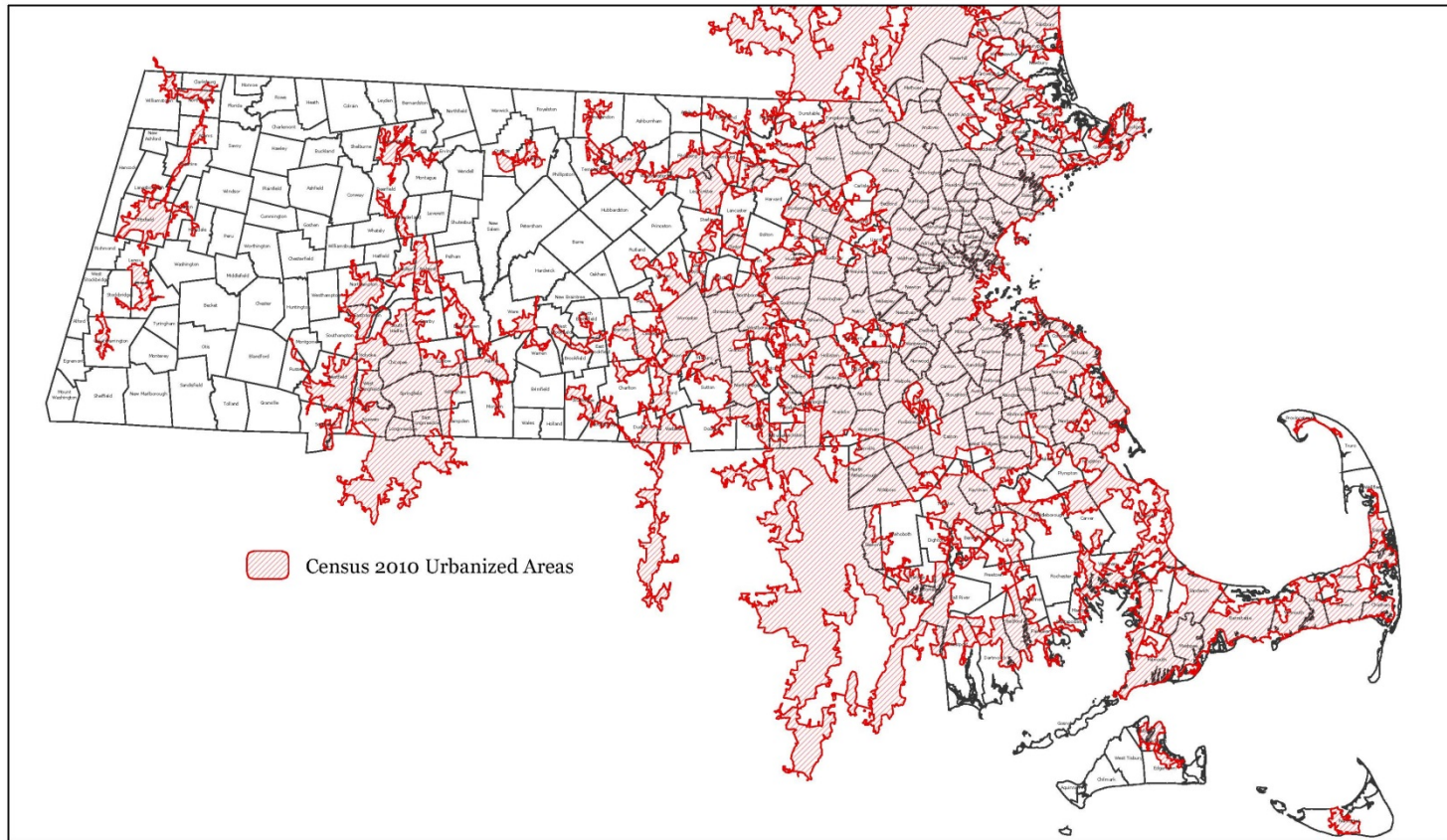
- 2003: Phase 2 Stormwater Program
  - Discharges shall not cause or contribute to an exceedance of applicable water quality standards
  - "Small MS4": Serving a population >50,000 people or Urban Density of >1,000 people per square mile
  - Still in effect until new FINAL Permit is released



# 2010 Urbanized Areas



# 2010 Urbanized Areas



# What is an MS4?

- A municipal separate storm sewer system (MS4)
- A conveyance or system of conveyances ...owned by a municipality that discharges to **waters of the U.S.** and is:
  - Designed or used for collecting or conveying stormwater (includes swales, ditches)
  - Not a combined sewer
  - Not part of a Publicly Owned Treatment Works



# What is an MS4?



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# Who is Involved?

- According to Sharon's 2014 Annual Report:
- Town Engineer
- Highway Department
- Volunteers
- Superintendent / Department of Public Works
- Conservation Agent
- Planning Department
- Zoning Department
- Board of Health
- Board of Selectmen



# MS4 Stormwater 2014 Draft Permit

- Draft permit in Federal Register
  - September 30, 2014
  - 90 day public comment period
  - Applies to 246 of 351 towns in MA
  - **All SERSG communities**



# EPA MS4 General Permit Process

- Submit NOI within 90 days
- Update SWMP within 1 year
  - Describes your goals over the next 5 year period
  - Responsible parties
  - Endangered species
  - Historic properties
  - Receiving water bodies (impairments, number of outfalls, etc.)
  - Descriptions of compliance with all of the following requirements

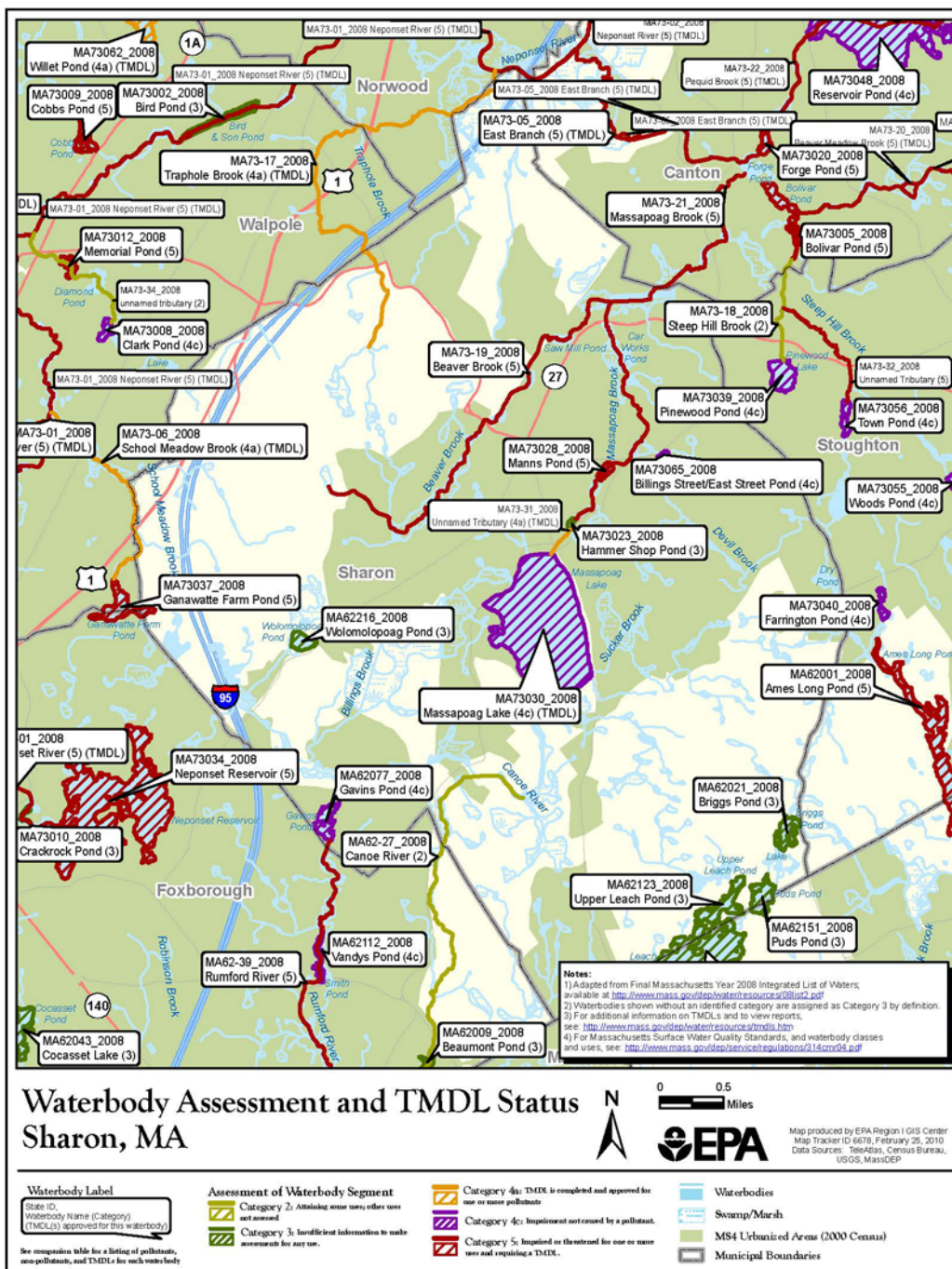


# MS4 Permit General Structure

- Two Primary Categories
  - Water Quality Based Effluent Limitations and Requirements
    - Cause or contribute to a violation of water quality standards
    - Antidegradation – no net increase in loading of impairment
    - Special condition of a water body with TMDL
    - Special condition of an impaired water body
  - Reduce Pollution to the Maximum Extent Practicable
    - 6 Minimum Control Measures



# Bacteria TMDL



# Water Quality Based Limits

## Waters with an Approved TMDL

- Bacteria or Pathogens
- Charles River Phosphorus
- Lake and Pond Phosphorus
- Cape Cod Nitrogen
- Assabet River Phosphorus
- Long Island Sound Nitrogen
- Phosphorus and Metals for Rhode Island Waters



# Water Quality Based Limits

## Waters with an Approved TMDL

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# Water Quality Based Limits

## Waters with an Approved TMDL

### ■ **Bacteria or Pathogens**

- Rumford River MA62-039 40308
- Traphole Brook MA73-017 2592
- Unnamed Tributary MA73-031 2592

## Requirements

1. Annual Residential Public Education  
Dog Waste, Septic Systems

3. IDDE

Designate as a Problem or High Priority  
Catchment



# Water Quality Based Limits

## Waters without an Approved TMDL

- Special requirements for waters impaired by
  - Bacteria
  - Nitrogen
  - Phosphorus
  - Solids
  - Chloride
  - Metals
  - Oil and Grease



# Water Quality Based Limits

## Waters without an Approved TMDL

- Special requirements for
  - Bacteria
  - **Nitrogen**
  - **Phosphorus**
  - **Solids**
  - Chloride
  - Metals
  - Oil and Grease



# Water Quality Based Limits

## Waters without an Approved TMDL

- Special requirements for
  - **Nitrogen**
    - Taunton River Watershed
  - **Phosphorus**
    - Beaver Brook MA73-19
    - Ganawatte Farm Pond MA73037
    - Massapoag Brook MA73-21

Oxygen, Dissolved  
Total Phosphorus





Taunton River Watershed Boundary



# Water Quality Based Limits

## Waters without an Approved TMDL

- Requirements for Nitrogen and Phosphorus
  - 1. Annual Residential/Business Public Education
    - Fertilizer, Grass Clippings; Dog Waste; Leaf Litter
  - 5. Stormwater Management
    - BMPs for reduction of nutrient of concern
  - 6. Pollution Prevention
    - Fertilizer, clippings, leaf litter
    - Street sweeping 2 times per year



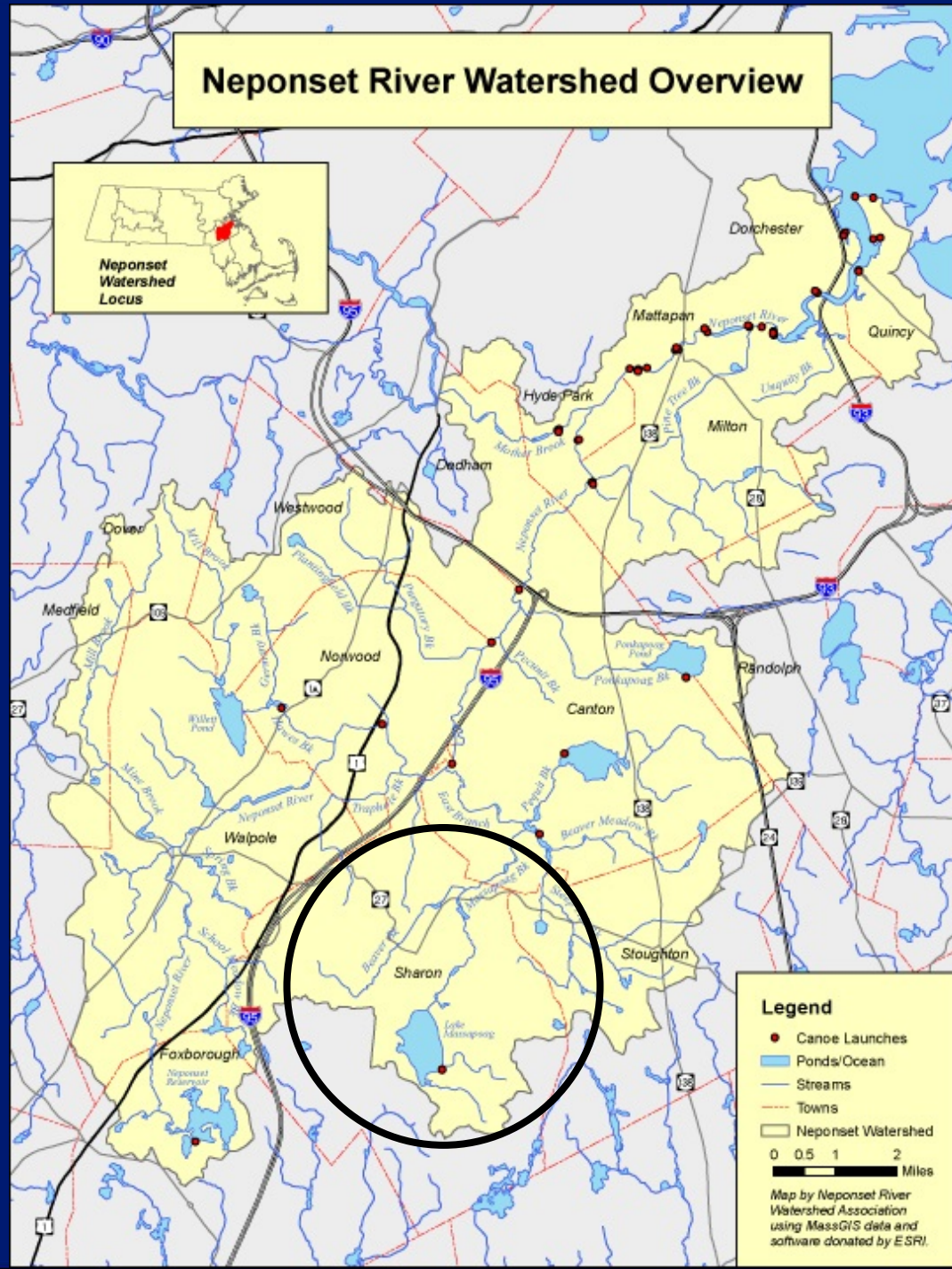
# Water Quality Based Limits

## Waters without an Approved TMDL

- **Year 4:** Source Identification Report
  - Calculate total MS4 area to N/P-limited waters
  - IC and DCIA for catchments
  - ID & map catchments with potential for high N/P
  - ID potential retrofits on municipal property
- **Year 5:** Evaluate all BMP opportunities (cost)
- **Year 6:** Install one structural BMP
- Annual tracking and reporting



# Neponset River Watershed Overview



## Legend

- Canoe Launches
  - Ponds/Ocean
  - Streams
  - Towns
  - Neponset Watershed
- 0 0.5 1 2 Miles

Map by Neponset River Watershed Association using MassGIS data and software donated by ESRI.



# Waters without an Approved TMDL

- Special requirements for
  - **Solids**
    - Ganawatte Farm Pond
    - Massapoag Brook
    - Rumford River MA62-39

Sedimentation/Siltation  
Secchi disk transparency  
Turbidity



# Waters without an Approved TMDL

- Special requirements for
  - **Solids**
    - **Stormwater Management**
      - Allow shutdown and containment of BMPs in commercial and industrial land use areas
      - Treat to biofilter standards
    - **Good House Keeping and Pollution Prevention**
      - Increased street sweeping per permittee discretion



# Waters without an Approved TMDL

- Special requirements for

- **Contact MassDEP**

- Beaver Brook MA73-19
    - Massapoag Brook MA73-21
    - Rumford River MA62-39

Aquatic Macroinvertebrate Bioassessments

Dioxin

PCPs

Fishes Bioassessments





Pause for Comments



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# Maximum Extent Practicable

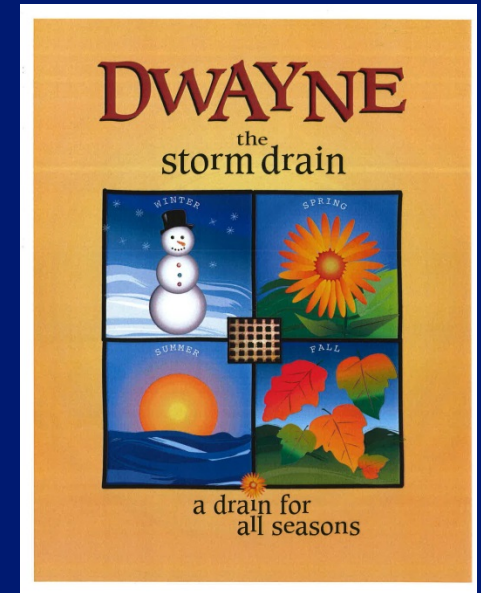
- 6 Minimum Control Measures (MCM's)
  - #1: Public Education/Outreach
  - #2: Public Involvement/Participation
  - #3: Illicit Discharge Detection & Elimination
  - #4: Construction Site Runoff Control
  - #5: Post Construction Stormwater Management
  - #6: Pollution Prevention/Good Housekeeping



# 1. Public Education & Outreach

- Identify Specific Audiences

- Residents
- Businesses
- Developers/Construction
- Industrial



- Two educational messages to each of the four audiences over the 5 years



## 2. Public Participation and Involvement

- Activities undertaken to provide public participation opportunities
  - Volunteer Sampling
  - Labeling Storm Drains
  - Input into Stormwater Plan
  - Environmental Groups



# 3. Illicit Discharge Detection and Elimination Program



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# 3. IDDE Program - Organization

Outline methodology for active, not passive, program

- Ordinance / Bylaw
  - Regulations
- SSO inventory
  - Locations
  - Dates
  - Quantities
- Outfall and interconnection inventory within 1 year



# 3. IDDE Program - Mapping

- Outfall inventory and map within 2 years
- Why?
  - “the mapping shall serve as a planning tool for the implementation and phasing of the IDDE program, demonstration of the extent of complete and planned investigations and corrections”



# 3. IDDE Program – Written Plan

Detailed written IDDE program within one year of effective date of permit

- Legal authority
- Identify responsibility
- Screen outfalls and interconnections
- Catchment Investigation Procedure
  - System Vulnerability Factors
- Systematic procedure for locating and removing illicit connections
- Track progress – Report annually



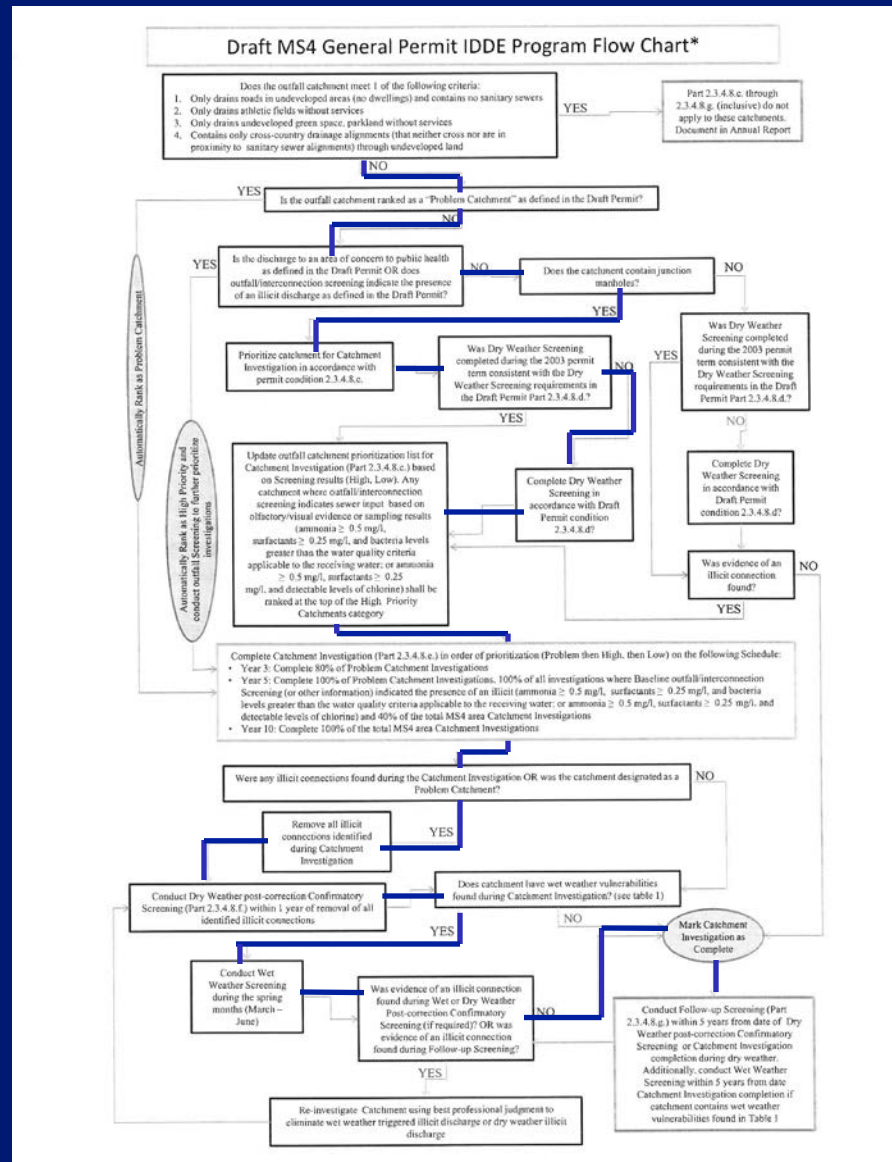
# 3. IDDE Program – Written Plan

- Catchment delineation and rankings
- Rank the catchments by screening or catchment characteristics
  - Excluded
  - Problem
    - Known Problems
  - High Priority
    - Discharging to an area of concern
  - Low Priority
- Investigate by priority within 15 months
- All catchments completed within 10 years

Ammonia > 0.5 mg/L  
Surfactants > 0.25 mg/L  
Bacteria > water quality criteria  
Or: detectable chlorine



# Draft Permit IDDE Flow Chart



# 3. IDDE Program

- Dry Weather Screening
  - Completed Year 3 (2003 permit work counts)
  - Catchments Ranked High or Low Priority only
- Wet Weather Screening (May through June)
  - Confirmatory as part of IDDE procedure
  - Catchments with "System Vulnerability Factors" only



# 3. IDDE Program Dry Weather Flow

- Sampling required if dry weather flow observed
  - Ammonia
  - Residual Chlorine
  - Conductivity
  - Salinity
  - Enterococcus, E.coli
  - Surfactants
  - Temperature
  - Pollutant(s) of concern



# 3. IDDE Program

## Wet Weather Flow

Sampling required if Catchment contains System Vulnerability Factors

- SSOs and surcharging
- Sewer and drain
  - In same trench or manhole
  - Crossing
- Underdrains
- Defects per SSES, I/I analysis
- Septic systems failures/upgrades
- Sewer and drain > 40 years old in medium and densely developed areas



# 4. Construction Site Stormwater Runoff Control



# 4. Construction Site Stormwater Runoff Control

- Ordinance
  - Site Inspection procedures
  - Sediment control requirements
  - Requirements to control waste
  - Site Plan review
- EPA checks inspection records during enforcement audits
- Annual Report - # of site reviews/ discrepancies



# 4. Construction Site Stormwater Runoff Control

## ■ Requirements

- Site Plan Review (Planning Board requirements)
- Notice of Intent (Multiple departments)
  - Stormwater Management Plan
  - Compliance with Massachusetts Stormwater Handbook
- EPA Construction General Permit
  - Stormwater Pollution Prevention Plan
- > 1-acre threshold for development and redevelopment



# 5. Post Construction Stormwater Management

- Program must include an ordinance/bylaw
- Requires as-built drawings
- Outlines responsibilities and requirements for site review and field inspections
- Requires long term O&M of post-construction stormwater controls



# 5. Post Construction Stormwater Management

- Assessment of current guidelines:
  - Regulations to avoid impervious pavement in street and parking lot design
  - No impediments to green infrastructure
  - Encourage infiltration practices
- Annual estimate of change in number of acres of impervious area
  - Use baseline provided by U.S. EPA



# 6. Pollution Prevention/ Good Housekeeping

- Pollution Prevention/Good Housekeeping - 2<sup>nd</sup> most cost-significant Minimum Control Measure to implement



# 6. Pollution Prevention/ Good Housekeeping

- Mandate street sweeping & catch basin cleaning
  - inventory/condition/program/track
- Program of repair/rehab of MS4 infrastructure
- Inventory/Audit of all Permittee owned facilities (Schools, Town Hall, Fire/Police) + all floor drains



# 6. Pollution Prevention/ Good Housekeeping

- SWPPP required for HWY Garage
- Annually inspect stormwater BMP's - mandatory
- Records of inventory/inspections available for inspection



# EPA - Documentation

- “Records include information used in the development of any written program required by this permit,  
any monitoring results,  
copies of reports,  
records of screening,  
maintenance records;  
inspection records;  
follow-up and elimination of illicit discharges;  
and data used in the development of the  
NOI, SWMP, SWPPP, and annual reports.
- This list provides examples of records that should be maintained, but is not all inclusive”



# Recommendations for the New Permit

- Coordinate all entities involved
  - This is a town-wide responsibility
- Complete the mapping program now
  - Priority Number One
  - Identify “impaired waters” catchments
- Conduct outfall screening to understand the extent of the issue
  - Priority Number Two
- Consolidate management/tracking
  - GIS data compilation and reporting



# Recommendations - Funding

- Ensure funding in Town Warrant Article for Year 1 (FY 2017) and continuing requirements:
  - Notice of Intent
  - SWMP
  - IDDE Program
  - Facility Audits
  - Highway Garage SWPPP, SPCC plan
  - O&M Program (MS4, Parks & Open Space)
  - Pavement/street design to minimize IC
  - Annual Reports



# Recommendations - Funding

## ■ Funding Sources

- Non-Point Source Control (CWA Section 319) Grants
- Sustainable Water Management Initiative Grants
- Water Quality (CWA Section 604(b)) Grants
- DEP State Revolving (Loan) Fund Program (SRF)
- Urban Waters Small Grants - 2016
- Establishment of a Stormwater Utility
- CIC: Regionalize - Pool resources with neighbors

## ■ Other Assistance

- Watershed groups
- Volunteers



# Stormwater Utility


- Authorized by M.G.L Ch.83, Section 16 (2006)
- Similar to a Water/Sewer Enterprise Fund
- Fee is based on amount of impervious area
  - “Pay to Pave”
  - 1-2 family homes – same flat rate (\$/Quarter)
  - Commercial Properties – based on pavement
- Successfully implemented in Reading, Newton, Fall River, North Hampton, and Chicopee
- Reading/Newton – 1 to 2.5 year implementation



# NEW PERMIT

## Implementation Recommendations

- Develop or borrow checklists for easy reference:

- 
- ✓ Outfall inspections
  - ✓ Plan review
  - ✓ SWPPP items
  - ✓ Site plan inspections
  - ✓ BMP maintenance
  - ✓ Complaints / Citizen reports
  - ✓ Catch basin cleaning



# NEW PERMIT

## Management Recommendations

- Designate a stormwater lead
- Delegate to the appropriate entity/department/boards
- Determine the manageable number of team members
- Develop tracking and document management systems
- Document, document, document...



# Questions?

Robert Rafferty, P.E.

[rjr@envpartners.com](mailto:rjr@envpartners.com)

Natalie Pommersheim

[nmp@envpartners.com](mailto:nmp@envpartners.com)

## **Environmental Partners Group, Inc.**

1900 Crown Colony Drive, Suite 402

Quincy, MA 02169

18 Commerce Way, Suite 2000

Woburn, MA 01801

Telephone: 617-657-0200



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