

**Update on U.S. EPA  
Small MS4 General Permit  
Stormwater Program**

*Massachusetts Highway Association*

*February 10, 2011*

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**Environmental  Partners**  
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# Topics to be Covered

- Program Overview
- Schedule for Implementation
- Draft Small MS4 Stormwater Permit
  - Permit Conditions
  - Changes from the previous Permit
- Recommended Actions for DPW Directors/Superintendents



# Regulatory Background

- Federal Clean Water Act – 1972
  - 33 USC 1251 et. seq.
  - Initial Focus: Wastewater Treatment Plants
  - Implemented through National Pollutant Discharge Elimination System (NPDES) permit program
  - NPDES permit: License to discharge and may be revoked for cause
  
- Federal Clean Water Act Amendments – 1987
  - Focus: Stormwater, Construction Sites



# Regulatory Background

- 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
- 2003: Phase 2 Stormwater
  - **"Small MS4": Serving a population >50,000 people or Urban Density of >1,000 people per square mile (237 Towns in Mass.)**
  - Construction Sites > 1 acre



# What is an MS4?

- A municipal separate storm sewer system (MS4)
- A conveyance or system of **conveyances....owned by a state, city, town, or other public entity 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

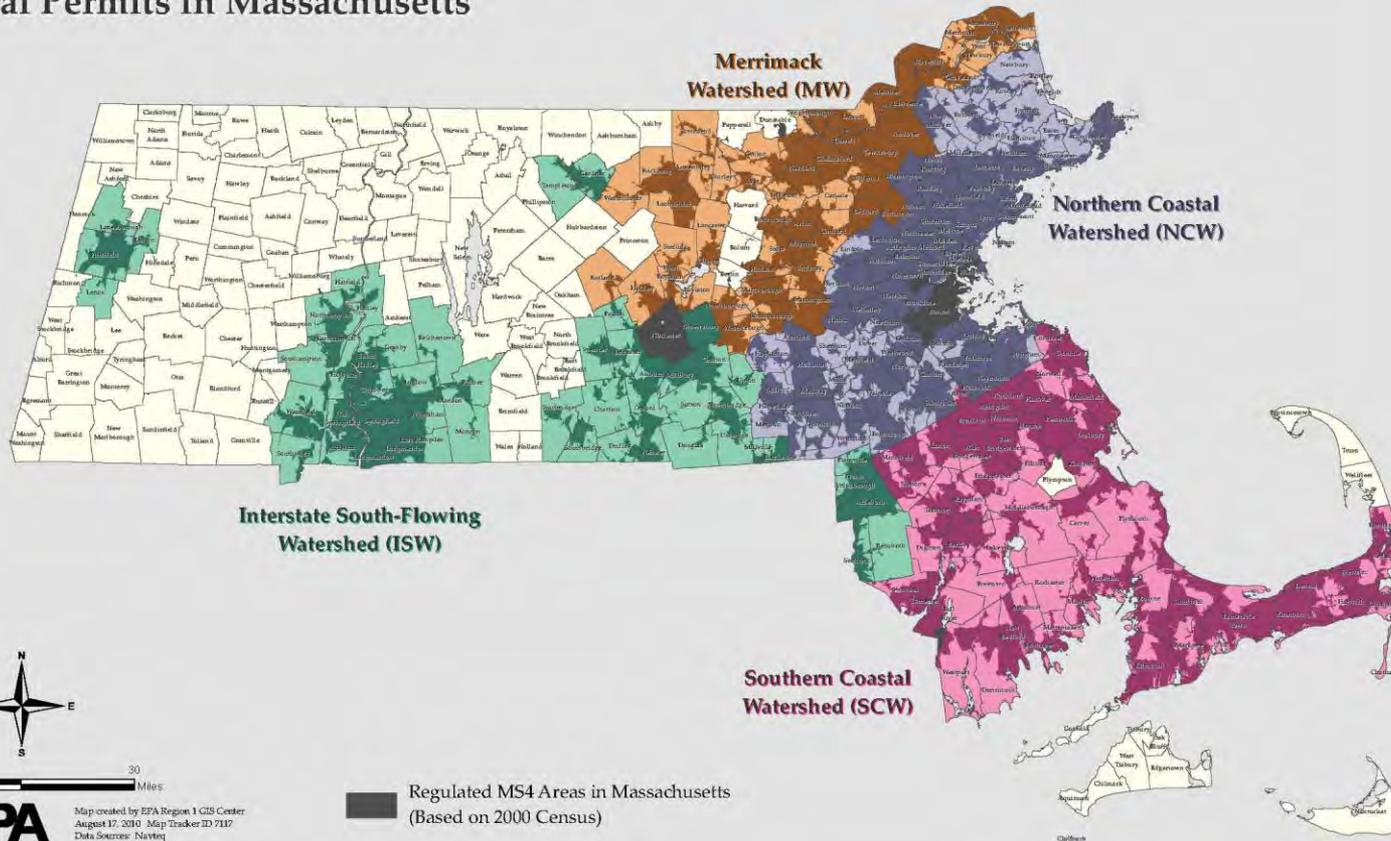


# What is an MS4?



# MS4's in Massachusetts

## Regulated MS4 Areas and Applicable Watershed-Specific General Permits in Massachusetts



# MS4 Stormwater Permit

- **EPA Issues a “General Permit”**
  - First Small MS4 Permits issued in 2003 for five years (expired in 2008, but extended into 2011)
- MS4 Cities/Towns – Submit Notice of **Intent (NOI) for “Coverage”** under General Permit
- NOI made available for public comment
- Authorization after public comment



# MS4 Stormwater 2011 Permit

- **To be finalized in “Spring 2011”**
  - Draft permit under public comment
  - 2003 Permit – “Spring Training”
  - 2011 Permit – “Major League Season”
- MS4 Cities/Towns – Submit Notice of Intent (NOI) within 90 Days after EPA issues 2011 General Permit
- Update Stormwater Management Plan (SWMP) within 120 days of approval of NOI from EPA



# Stormwater Management Plan

- Revised from the 2003 Plan
- Describes the Goals for the MS4 Permittee over the next 5 year period (2011-2016)
- Must address Six Updated Minimum Control Measures (MCM's)



# MS4 Minimum Control Measures

- Public Education and Outreach
- Public Involvement and Participation
- Illicit Discharge Detection and Elimination
- Construction Site Runoff Control
- Post-Construction Stormwater Mgmt
- Pollution Prevention for Municipal Ops



# 1. Public Education & Outreach

- Identifies Specific Audiences
  - Residents
  - Businesses
  - Developers/Construction
  - Industrial
- Two educational messages to each of the four audiences over the 5 years
- Evaluation of Effectiveness



## 2. Public Participation and Involvement

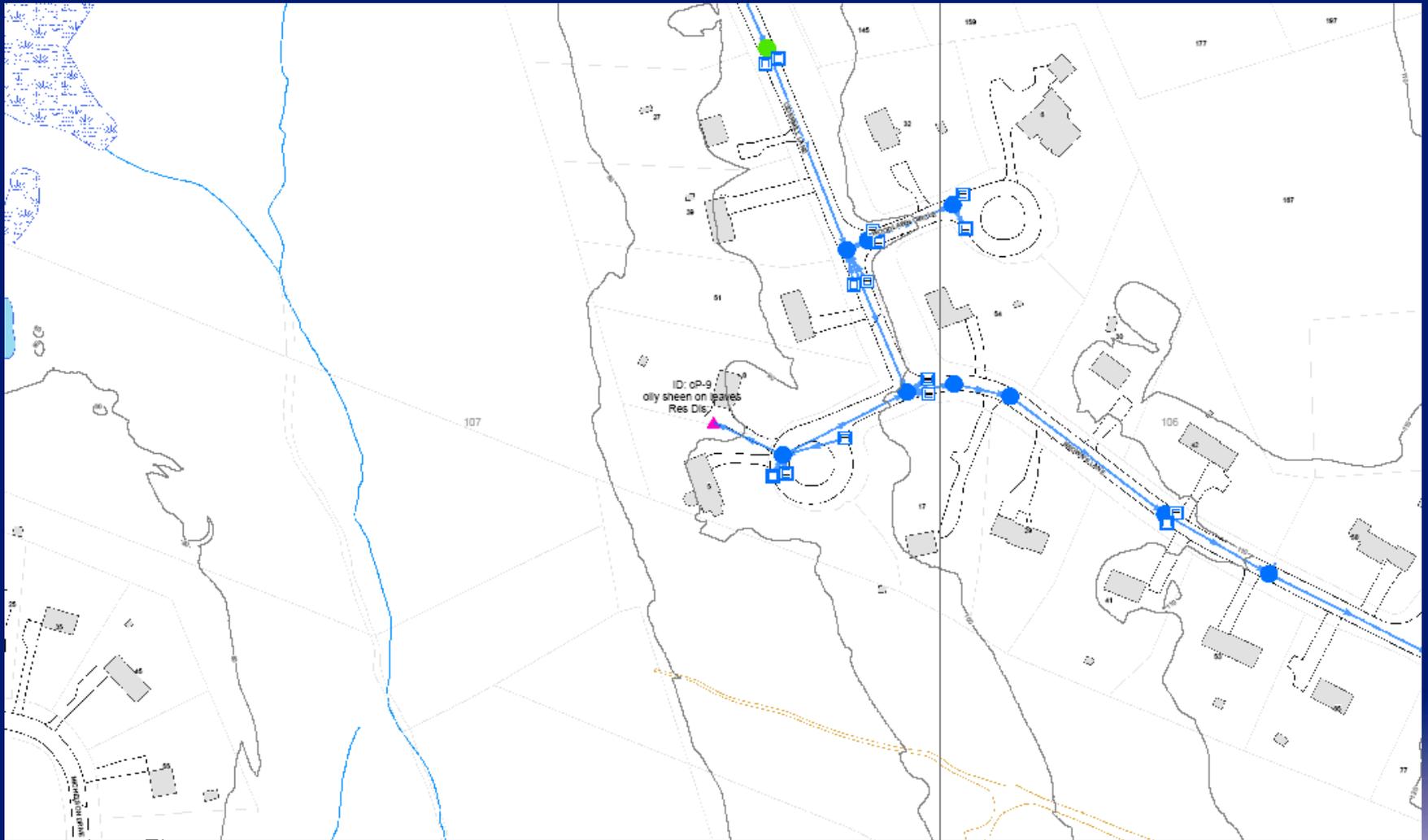
- Report on Activities undertaken to provide public participation opportunities
  - Volunteer Sampling
  - Labeling Storm Drains
  - Input into Stormwater Plan
  - Interaction with Watershed Groups

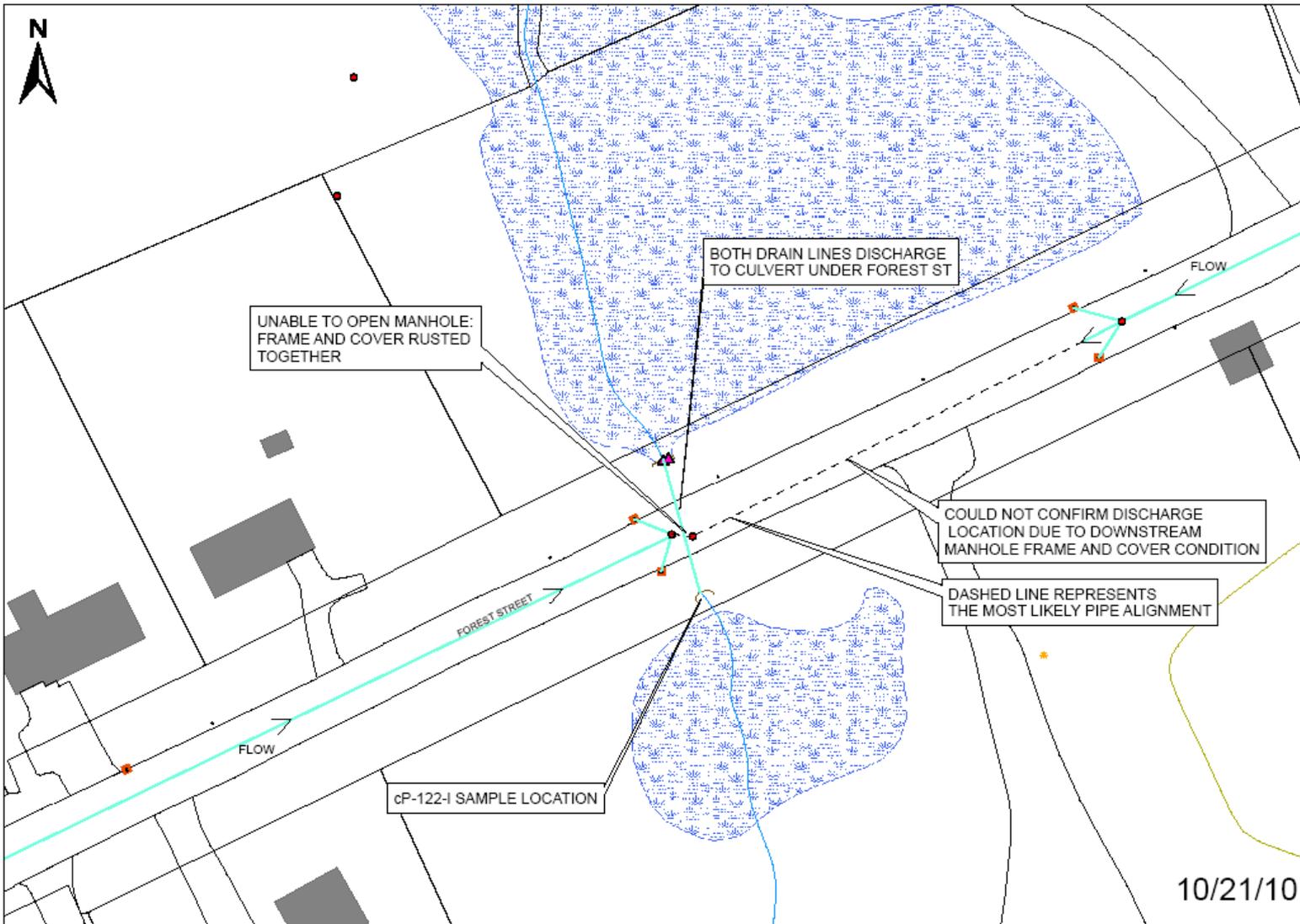


# 3. Illicit Discharge Detection and Elimination Program

- **Most difficult of the 6 MCM's**
- Map of the Entire MS4 System
  - Catch Basins
  - Outfalls (label w/ unique identifier)
  - Treatment Structures
- Systematic procedure for locating and removing illicit connections



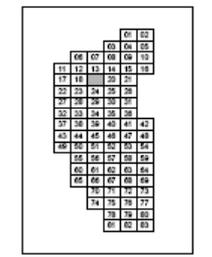




### Legend

- Manhole
- Drain Pipe
- ▲ Outlet
- Catchbasins
- ★ Light
- Utility Pole
- Headwalls

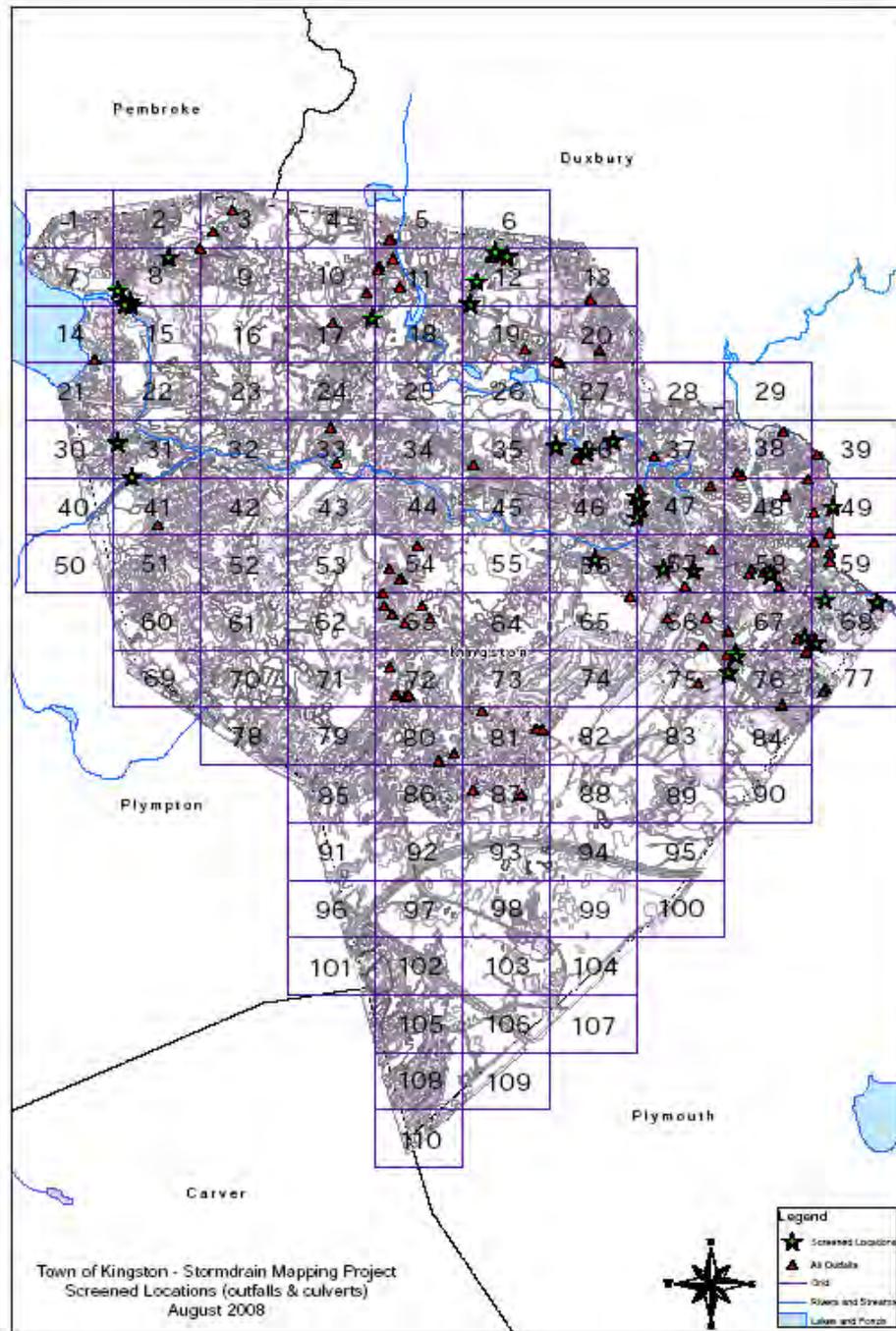
- ~ Streams
- ~ Dirt\_Roads
- ~ Abandoned\_RR
- ~ Guard\_Rails
- ▨ Easement
- Parcel
- Buildings
- Ruins
- Marsh
- Ponds
- Rivers



CP-122  
Connectivity

10/21/10







# 3. Illicit Discharge Detection and Elimination Program

- Prioritizing Catchment Areas
- Sampling of all outfalls
  - Dry Weather/Wet Weather
- Documented Enforcement Actions on illicit connections (sanitary sewer)
  - Written Notification to Violator
  - Written Notice to EPA/DEP of violation



# 3. Illicit Discharge Detection and Elimination Program

- Sampling Required if flow observed
  - Conductivity
  - Turbidity, pH, Chlorine
  - Temperature, Potassium
  - Ammonia, E.coli
  - Enterococcus
  - Surfactants/Detergents



# 3. Illicit Discharge Detection and Elimination Program



# 3. Illicit Discharge Detection and Elimination Program

- Train Employees about the IDDE Program
- EPA webcast on implementing an effective IDDE program:  
[http://cfpub2.epa.gov/npdes/outreach.cfm?program\\_id=0&otype=1](http://cfpub2.epa.gov/npdes/outreach.cfm?program_id=0&otype=1)
- Annually report on effectiveness of IDDE program



# 4. Construction Site Stormwater Runoff Control

- Program must include ordinance or regulatory mechanism for erosion control at Construction Sites (> 1 acre)
- Requirements for Construction operators to control wastes
- Outlines responsibilities for site review
- Annual Report - # of Site reviews



# 4. Construction Site Stormwater Runoff Control



# 4. Construction Site Stormwater Runoff Control

- Typical Town Requirements
  - Site Plan Review (Planning Board requirements)
  - Notice of Intent (Conservation Commission)
    - Long Term Pollution Prevention Plan
    - Compliance with Massachusetts Stormwater Handbook
  - EPA Construction General Permit
    - Stormwater Pollution Prevention Plan
- Need to get input from fellow Town agencies as part of Annual Report – tracking construction



# 5. Post Construction Stormwater Management

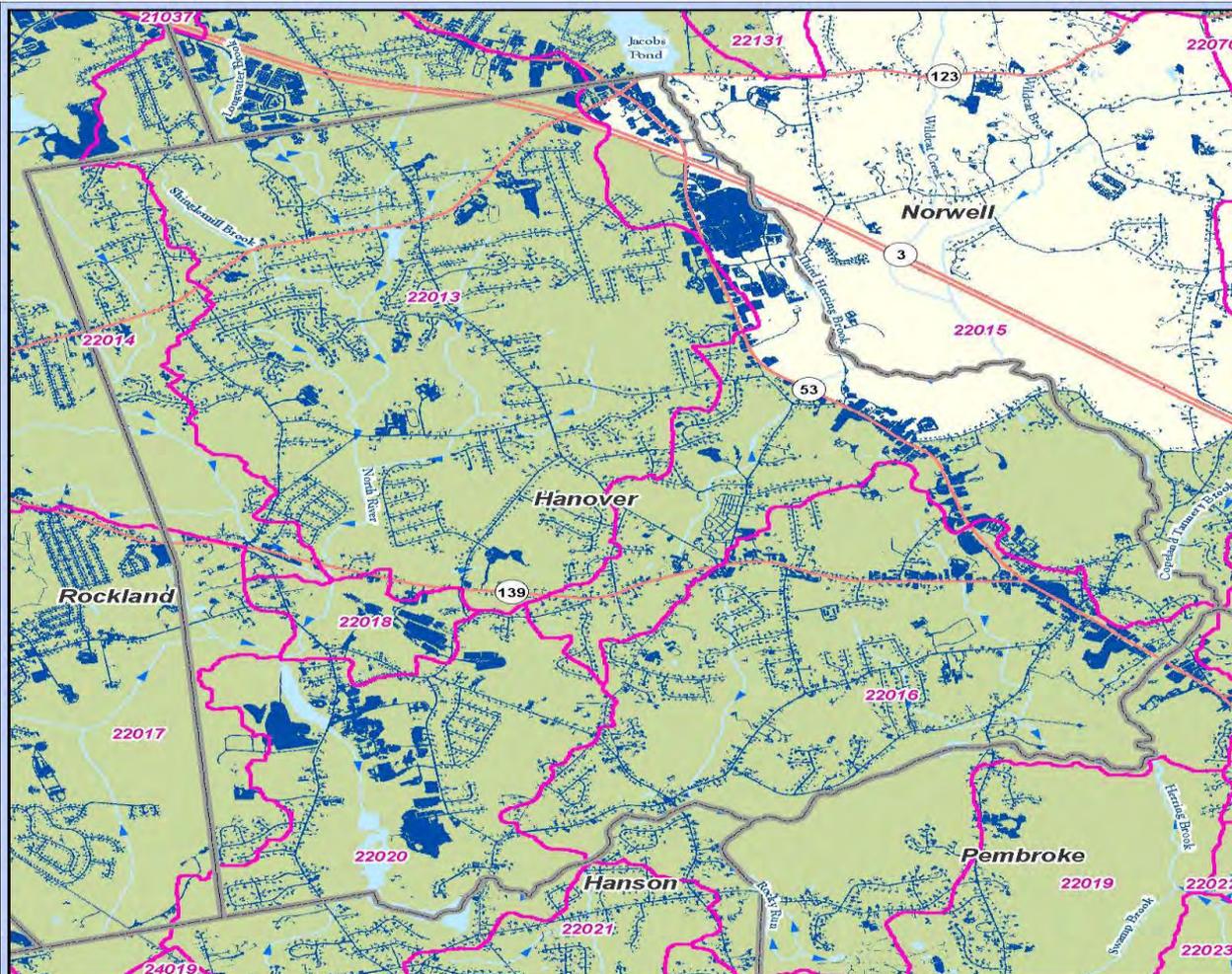
- Program must include ordinance or regulatory mechanism that regulates post-development runoff (> 1 acre)
- Requires as-built drawings within 90 days of construction completion
- Requires long term O&M of post-construction stormwater controls



# 5. Post Construction Stormwater Management

- Assessment of current Town guidelines to encourage:
  - Avoidance of impervious pavement in Street and parking lot design
  - Green Roofs
  - Infiltration Practices
- Annual estimate of change in number of acres of Impervious Area
  - Use Baseline Provided by U.S. EPA



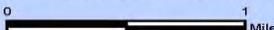


Map produced by EPA Region I OIS Center  
 Map Tracker ID #4291, March 3, 2010  
 Data Sources: TIGER/Line 2007, US Census Bureau 2000,  
 USGS 2009, MA DEP 2008, MassGIS 2007

### Impervious Cover & Watershed Delineation by Subbasin or GWCA

#### Hanover, MA

15.67 Square Miles Total  
 2.41 Square Miles Impervious  
 15.39 % Impervious



Legend	
	Subbasins
	Groundwater Contributing Areas (GWCA)
	Impervious Area
	MS4 Urban Area
	MA Towns
	Water Bodies



Subbasin ID	Entire Sub-Basin		Municipality	EPA Land Use Class Number	EPA Land Use Class Name	Unique ID	Total Area (Including Un-Regulated Areas)					Urbanized/Regulated Area Only				
							Total Area		Impervious Area (IA)		Directly Connected Impervious Area (DCIA)		All Urbanized/Regulated Area	Impervious Area (IA)		Directly Connected Impervious Area (DCIA)
	Acres	% Impervious Area					Area (acres)	Area (acres)	% of Total Area	% of Total Area	Area (acres)	Area (acres)	Area (acres)	% of Urbanized/Regulated Area	% of Urbanized/Regulated Area	Area (acres)
22013	4265.07	15.98	Hanover	1	Commercial	Hanover_22013_LU1	42.66	29.01	68.00	56.07	23.92	31.85	21.43	67.27	55.17	17.57
22013	4265.07	15.98	Hanover	2	Industrial	Hanover_22013_LU2	30.61	15.41	50.34	35.71	10.93	28.81	14.84	51.51	36.97	10.65
22013	4265.07	15.98	Hanover	3	Low Density Residential	Hanover_22013_LU3	1481.41	339.43	22.91	8.21	121.58	1481.41	339.34	22.91	8.20	121.53
22013	4265.07	15.98	Hanover	4	Medium Density Residential	Hanover_22013_LU4	2.60	0.45	17.19	7.13	0.19	2.60	0.44	17.08	7.06	0.18
22013	4265.07	15.98	Hanover	5	High Density Residential	Hanover_22013_LU5	63.93	29.85	46.69	40.29	25.75	63.93	29.86	46.71	40.30	25.76
22013	4265.07	15.98	Hanover	6	Urban Public/ Institutional	Hanover_22013_LU6	80.08	28.63	35.75	21.37	17.11	80.08	28.63	35.75	21.37	17.12
22013	4265.07	15.98	Hanover	7	Agriculture	Hanover_22013_LU7	12.86	0.60	4.63	2.14	0.28	12.86	0.61	4.75	2.26	0.29
22013	4265.07	15.98	Hanover	8	Forest	Hanover_22013_LU8	892.90	18.15	2.03	0.41	3.69	890.44	18.17	2.04	0.42	3.71
22013	4265.07	15.98	Hanover	9	Open Land	Hanover_22013_LU9	26.69	5.83	21.85	10.22	2.73	26.69	5.81	21.78	10.17	2.71
22013	4265.07	15.98	Hanover	10	Water	Hanover_22013_LU10	798.83	5.41	0.68	0.00	0.00	798.57	5.50	0.69	0.00	0.00
						<b>Subbasin Subtotal:</b>	<b>3432.57</b>	<b>472.75</b>	<b>13.77</b>	<b>6.01</b>	<b>206.17</b>	<b>3417.25</b>	<b>464.64</b>	<b>13.60</b>	<b>5.84</b>	<b>199.53</b>
22014	2611.65	19.88	Hanover	1	Commercial	Hanover_22014_LU1	4.74	2.16	45.51	30.70	1.46	4.74	2.13	44.92	30.10	1.43
22014	2611.65	19.88	Hanover	2	Industrial	Hanover_22014_LU2	7.08	4.01	56.62	42.60	3.02	7.08	4.06	57.31	43.39	3.07
22014	2611.65	19.88	Hanover	3	Low Density Residential	Hanover_22014_LU3	266.55	62.89	23.59	8.63	23.00	266.55	62.90	23.60	8.63	23.00
22014	2611.65	19.88	Hanover	4	Medium Density Residential	Hanover_22014_LU4	3.55	1.13	31.70	17.85	0.63	3.55	1.11	31.19	17.42	0.62
22014	2611.65	19.88	Hanover	5	High Density Residential	Hanover_22014_LU5	8.59	1.90	22.17	16.48	1.41	8.59	1.90	22.18	16.49	1.42
22014	2611.65	19.88	Hanover	7	Agriculture	Hanover_22014_LU7	3.54	0.08	2.13	0.45	0.02	3.54	0.08	2.28	0.52	0.02
22014	2611.65	19.88	Hanover	8	Forest	Hanover_22014_LU8	224.22	1.34	0.60	0.00	0.00	224.22	1.34	0.60	0.00	0.00
22014	2611.65	19.88	Hanover	9	Open Land	Hanover_22014_LU9	0.53	0.00	0.00	0.00	0.00	0.53	0.00	0.00	0.00	0.00
22014	2611.65	19.88	Hanover	10	Water	Hanover_22014_LU10	152.05	0.35	0.23	0.00	0.00	152.05	0.34	0.22	0.00	0.00
						<b>Subbasin Subtotal:</b>	<b>670.85</b>	<b>73.85</b>	<b>11.01</b>	<b>4.40</b>	<b>29.53</b>	<b>670.85</b>	<b>73.85</b>	<b>11.01</b>	<b>4.40</b>	<b>29.55</b>



# 5. Post Construction Stormwater Management

- Complete an Inventory and priority ranking of MS4-owned property and infrastructure that may **have the potential to be retrofitted with BMP's.**
- Post Construction Stormwater Management – 2<sup>nd</sup> most significant Minimum Control Measure behind IDDE Program to implement



# 6. Pollution Prevention/ Good Housekeeping

- Mandate Street Sweeping – 2x per year
- Catch Basin Cleaning – inventory/condition
- Program of repair/rehab of MS4 infrastructure
- Inventory of all Permittee owned facilities (updated annually) – includes all floor drains
- SWPPP required for Xfer Station/Highway Garage
- **Annually inspect stormwater BMP's** - mandatory
- Records of Inventory/Inspections available for inspection



# TMDL – Extra Requirements

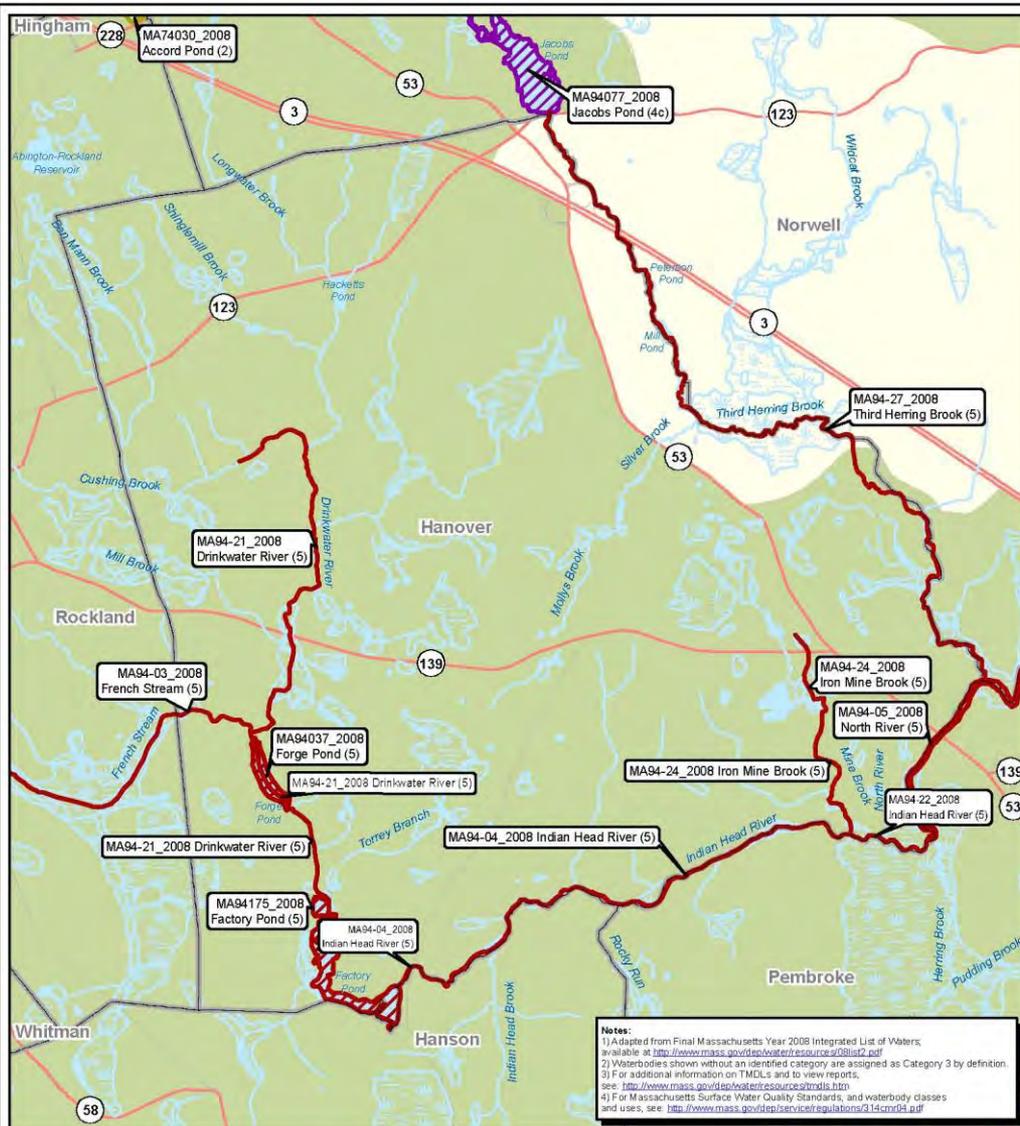
- Written plan to assess the amount of the contaminant (Phosphorus, Nitrogen, etc.)
- Plan will also include means/methods to reduce the amount of the contaminant
- Written Plan within 3 years of issuance of the General Permit (2014)



# TMDL – Extra Requirements

- Total Maximum Daily Loads (TMDL)
- Maximum amount of pollutant that can enter an impaired waterbody
- Impaired waterbodies already classified by Massachusetts DEP
- **Requires sampling/improvements by MS4's** discharging to those waterbodies.
- **EPA has created mapping of TMDL's** for each Town in Massachusetts





## Waterbody Assessment and TMDL Status Hanover, MA



Map produced by EPA Region I GIS Center  
Map Tracker ID 6678, February 25, 2010  
Data Sources: Tce42as, Census Bureau,  
USGS, MassDEP

**Waterbody Label**  
State ID,  
Waterbody Name (Category)  
(TMDL(s) approved for this waterbody)

See companion table for a listing of pollutants,  
non-pollutants, and TMDLs for each waterbody

### Assessment of Waterbody Segment

Category 2: Attaining some uses; other uses  
not assessed

Category 3: Insufficient information to make  
assessments for any use.

Category 4a: TMDL is completed and approved for  
use or non-pollutants

Category 4c: Impairment not caused by a pollutant.

Category 5: Impaired or threatened for use or non-use  
and requiring a TMDL.

Waterbodies

Swamp/Marsh

MS4 Urbanized Areas (2000 Census)

Municipal Boundaries



APPENDIX G  
SMALL MS4 – IMS WATERSHEDS-MASSACHUSETTS

**TABLE G-1 – PHOSPHORUS TMDLS<sup>1</sup>**

MUNICIPALITY	RECEIVING WATER	POLLUTANT CAUSING IMPARIMENT	APPROVED TMDL LOAD/WASTE LOAD ALLOCATION	TMDL PERMIT REQUIREMENTS
AUBURN				
	Leesville Pond	Nutrients, Organic Enrichment, Low dissolved oxygen (DO)	50 % reduction <sup>2</sup> for HD <sup>3</sup> residential, commercial & industrial	Part 2.2.1(d) Part 2.4.2.1(c)(i)(ii) & (iv) Part 2.4.4 Part 2.4.7.1(a)(i)
	Pondville Pond	Noxious aquatic plants <sup>4</sup>	NA	
	Stoneville Pond	Noxious aquatic plants	10 % reduction for commercial & industrial	Part 2.2.1(d) Part 2.4.2.1 (c)(i)(ii) & (iv) Part 2.4.4 Part 2.4.7.1(a)(i)
	Eddy Pond	Turbidity and noxious aquatic plants	NA	
	Auburn Pond	Turbidity and noxious aquatic plants	NA	
CHARLTON				
	Granite Reservoir	Low DO, turbidity, nutrients, nuisance aquatic <sup>5</sup>	27 % reduction for HD residential, commercial	Part 2.2.1(d) Part 2.4.2.1 (c)(i)(ii) &

<sup>1</sup> Northern Blackstone Lakes, Quanaboag Pond, Quaccumaquasit Pond, Connecticut Lake Basins, French Basin Lakes, Lake Boon, Chicopee Basin Lakes and Millers Basin Lakes, Palmer River, Flint Pond, Indian Lake, Lake Quinsigamond, Leesville Pond and Salisbury Pond

<sup>2</sup> Reductions are based on the loads existing at the time of TMDL development.

<sup>3</sup> HD – High density residential

<sup>4</sup> Noxious aquatic plants-invasive, non-native plants that threaten native vegetation, fish, wildlife and their habitat



# Schedule

- May 1, 2011: Towns submit Annual Report
- Spring, 2011: General Permit Issued by EPA
- Summer/Fall, 2011: Towns submit Notice of Intent for coverage under 2011 General Permit (within 90 days of General Permit issuance)
- Fall/Winter 2011: Towns submit Revised Stormwater Management Plan to EPA (within 120 days after authorization to discharge received from EPA)
- August 1, 2012: Towns submit Annual Report



# Enforcement

- 12/22/10: EPA taking Boston Water and Sewer Commission (BWSC) to court:
  - IDDE Program not being implemented
  - Little oversight of Construction Sites
- EPA Fines on MS4 systems in the past 2 years:
  - Canton (\$50,000)
  - Concord (\$50,000)
  - Dennis (\$50,000)
  - Eastham (\$40,000)
  - Gardner (\$60,000)
  - Peabody (\$70,000)
  - Winthrop (\$70,000), Fall River (>\$100K)



# Recommendations

- Give feedback to EPA at Public Hearing on March 9, 2011 (Leominster, MA)
- Submit Comments to EPA Region 1 for the South Coastal, Merrimack and Interstate Watershed General Permit by March 11, 2011  
(public comment closes).
- Get other Town agencies (Concom, Planning, GIS) involved
  - This is a Town-wide responsibility, not just DPW



# Recommendations - Funding

- Ensure funding in 2011 Town Warrant Article for drafting new Notice of Intent and revised SWMP
- Other funding sources
  - Non-Point Source Control (CWA Section 319) Grants,
  - Water Quality (CWA Section 604(b)) Grants
  - DEP State Revolving (Loan) Fund Program (SRF)
  - Establishment of Town Stormwater Utility



# 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
  - Commercial Properties – based on pavement
- Successfully implemented in Reading, Newton, and Chicopee
- Reading/Newton – 1 to 2.5 year implementation



# Questions?

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