MS4: Municipal Stormwater Rules in Massachusetts

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Why Pay Attention to Stormwater?

- Single largest source of water pollution statewide
- ~60% of water contamination for impaired waters is caused by excess bacteria and phosphorus
- ~50% of watersheds don't have enough water in summer

What Parts of the Environment Are Affected by Stormwater?

- Wetlands
- Water Supplies
- Stressed Basins – not enough water
- Impaired Waters – too much pollution

Stormwater Impacts

- Runoff from the "Urbanized Area"

Stormwater Impacts

- Ipswich River Fish Kill

Stormwater Impacts

- Charles River Dam - Summer Cyanobacteria Algae Bloom

Stormwater Impacts

- Water Quality Impairment

What Pollutants are in Stormwater?

- Nutrients
  - Phosphorus and Nitrogen
  - e.g., Fertilizers, leaves
- Sediments
  - e.g. Clay, silt and sand
- Pathogens/Bacteria
  - e.g. animal and human feces
- Chemicals
  - e.g. cleaners, pesticides, motor oil

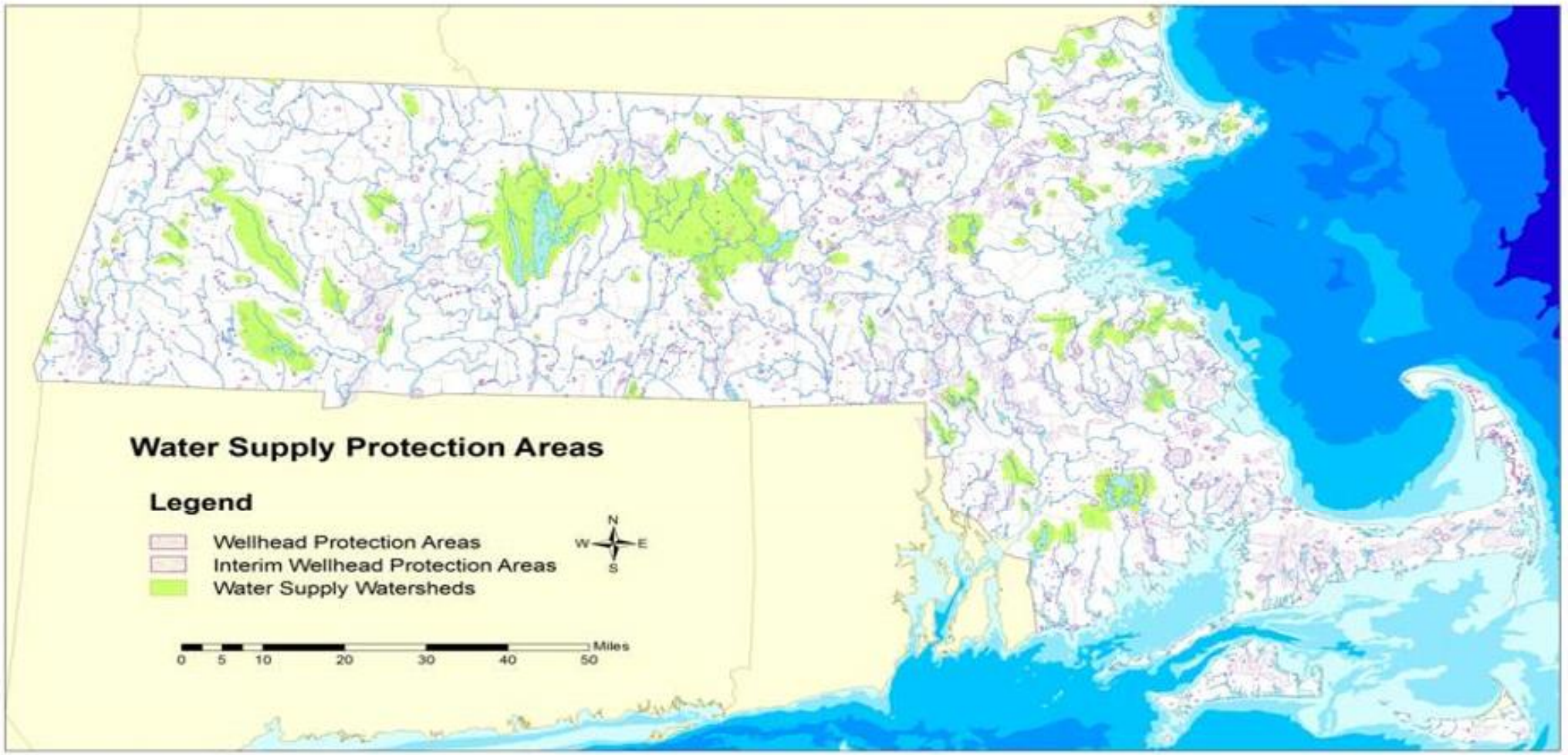
How Do Those Pollutants Get Into Rivers, Streams and Ponds?

- Pollutants come from many sources
  - Sediment from construction sites
  - Oil, grease and other chemicals from cars, trucks, buses
  - Particulates and toxics from motor vehicles
  - Nutrients from plants and trees
  - Pesticides and nutrients from lawns and gardens
  - Viruses, bacteria and nutrients from pet waste and failing septic systems
  - Road salts
  - Heavy metals from roof shingles, motor vehicles and other sources
  - Particulates and nutrients transported from out side New England
- Pollutants end up on roads, roofs, impervious surfaces
- Stormwater washes those pollutants into the stormwater collection system
- Pollutants go untreated into rivers, ponds and streams

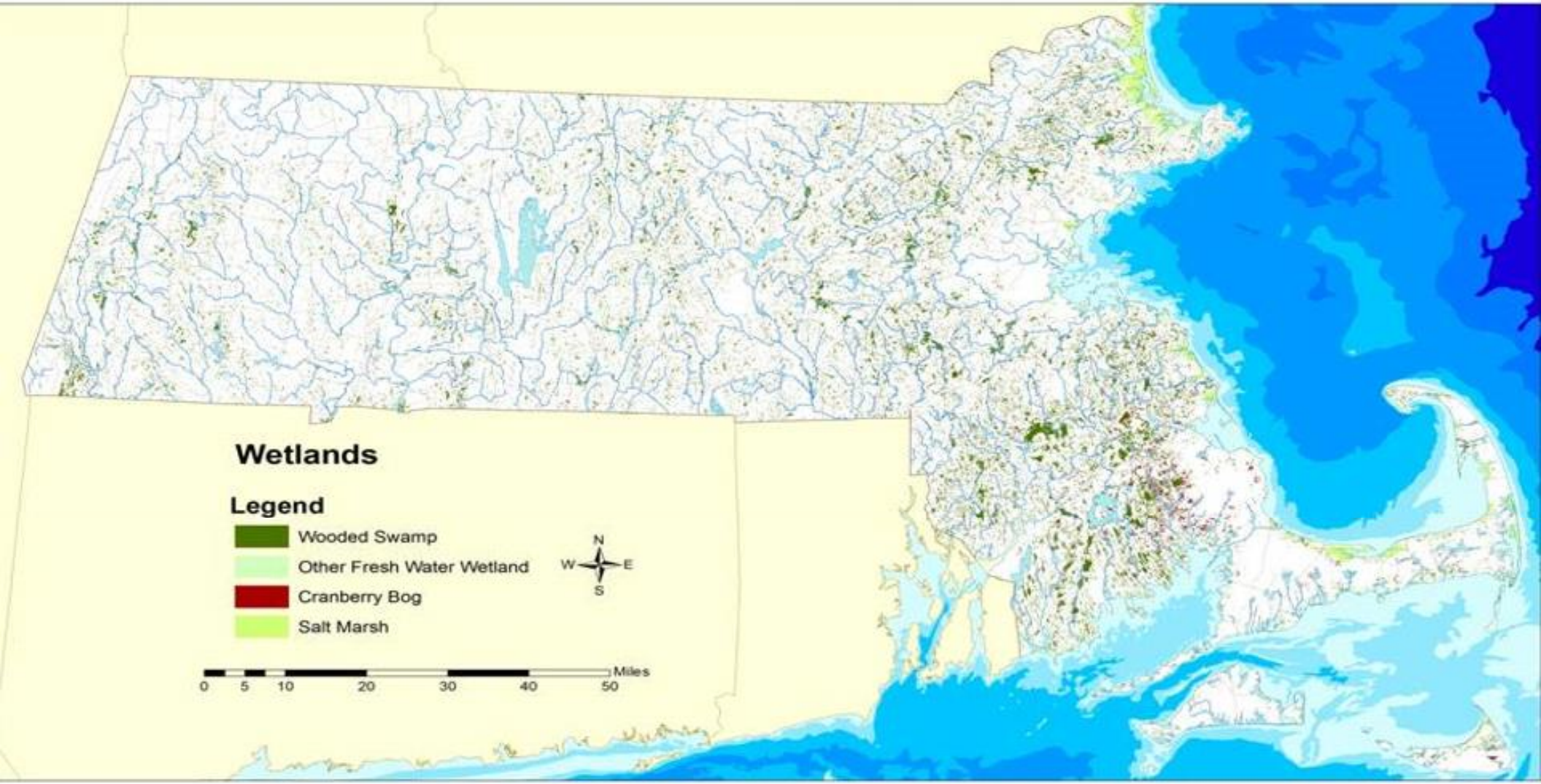
What Harm Comes from Stormwater?

- Affects plants and animals
  - Algae blooms harm human uses and cause oxygen depletion that can suffocate plants and animals
  - Bacteria make it unsafe for swimming or boating
  - Litter releases toxins as it breaks down
- Increased runoff and increased speed of runoff erodes and degrades streams and wetlands
- Piping water directly to streams instead of letting it "recharge" watershed reduces underground flow to streams and to aquifers

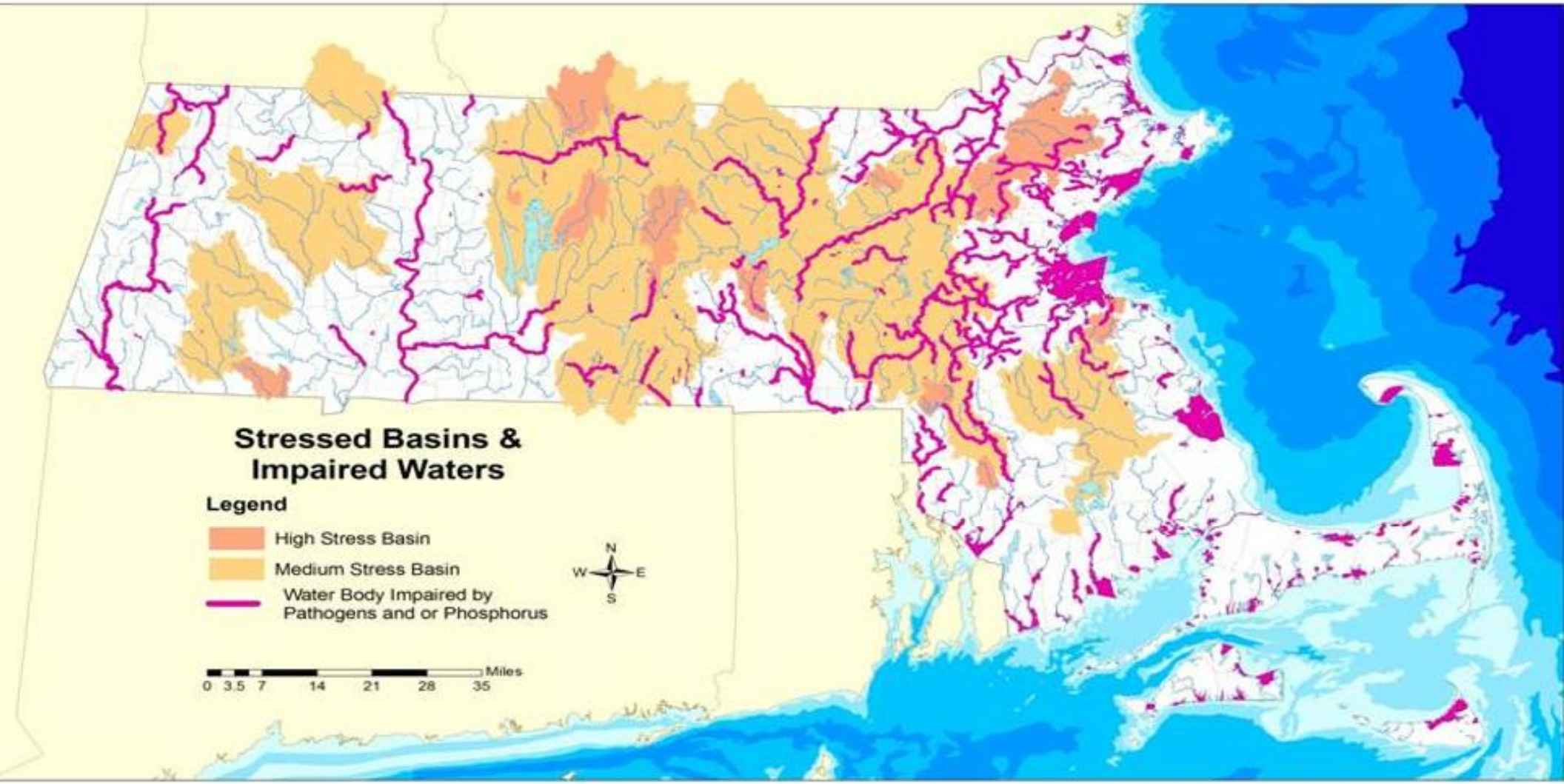
Water Supply Protection Areas



Wetlands

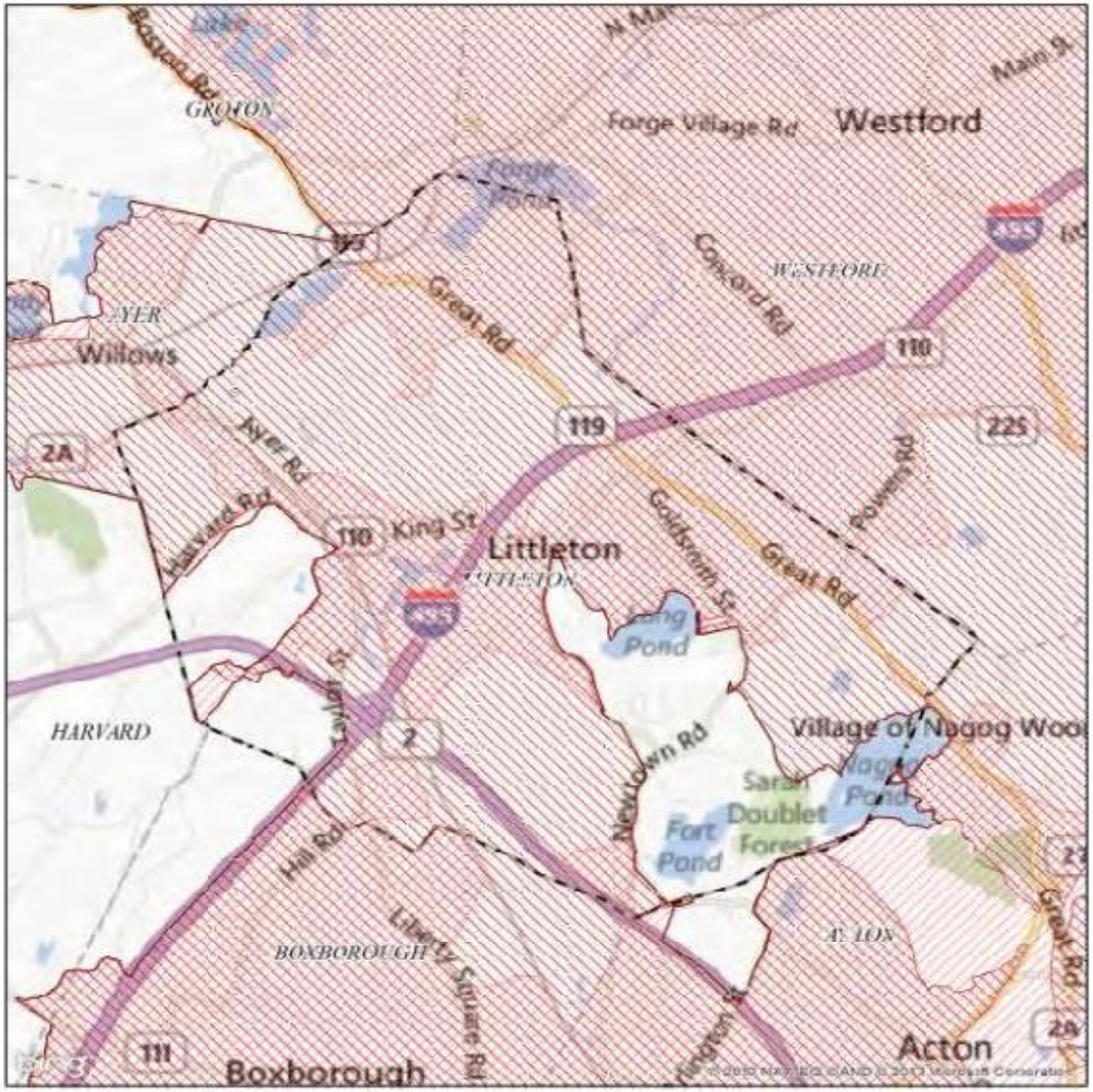

Wetlands
Legend
Wooded Swamp
Other Fresh Water Wetland
Cranberry Bog
Salt Marsh
N
W
E
S
0 5 10 20 30 40 50
Miles

Stressed Basins and Impaired Waters



Municipal Separate Storm Sewer System – MS4

- Trigger:
  - EPA-listed "urbanized area"
- How to File with EPA:
  - written NOI
- Regulatory Standard:
  - discharges from Town/agency systems must meet federal and state clean water laws
- Effective Date:
  - 2003 permit continued; 2014 is draft



NPDES Phase II Stormwater Program
Automatically Designated MS4 Areas
Littleton MA

Regulated Area:

UA Based on 2000 Census | UA Based on 2010 Census

0 1 2 3 4 Kilometers
0 1 2 3 Miles

Town Population:	**8924**
Regulated Population:	**8179**

(Populations estimated from 2010 Census)

EPA

Urbanized Areas, Town Boundaries:
US Census (2000, 2010)
Base map © 2013 Microsoft Corporation and its data suppliers
US EPA Region 1 GIS Center Map #8824, 8/9/2013

The MS4 Permit: "Six Minimum Control Measures"

- Public Outreach
- Public Involvement
- Illicit Discharge Detection and Elimination
- Manage Stormwater During Construction
- Manage Stormwater "Post-Construction"
- "Good Housekeeping" for Town facilities

Illicit Discharge Detection and Elimination - IDDE

- Ordinance
- Sanitary Sewer Overflow Inventory
- Identification of Responsibility
- Outfall inventory and map
- Catchment rankings
- Detailed written IDDE program
- Tracking progress
- Screening

How Fast Do Illicit Discharges Need to be Fixed?

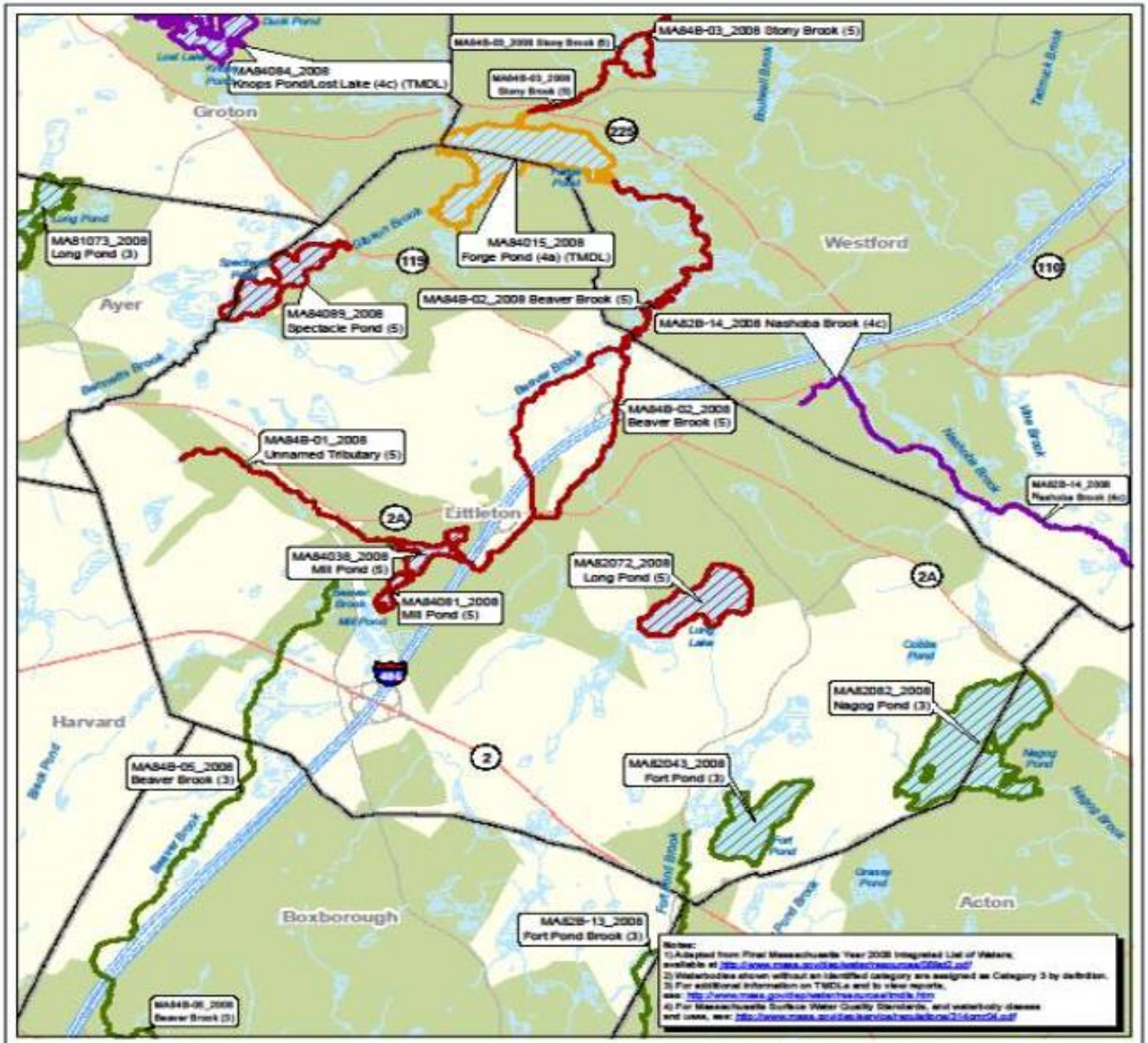
- *"Where elimination of an illicit discharge within 60 days of its identification as an illicit discharge is not possible, the permittee shall establish an expeditious schedule for its elimination . . .*
- *"The permittee shall immediately commence actions necessary for elimination."*
- *"The permittee shall diligently pursue elimination of all illicit discharges."*

IDDE Screening

- Requires Dry Weather Monitoring at all outfalls within 3 years
- Doesn't require wet weather monitoring at all outfalls; only if there are:
  - Indications of septic runoff
  - Wet Weather Screening in Spring only
  - Based on "Systems Vulnerability Factors"
    - Any one of 12 factors is a trigger
    - Investigate the catchment area
  - Catchment Investigation Procedure
    - 80% of MS4 served by "Problem catchments" in 3 years
    - 40% of all MS4 and 100% of problem catchments in 5 years

Municipal Separate Storm Sewer System – Draft 2014 MS4

- Requirements:
  - Meet the 6 minimum control measures
  - Begin dealing with impaired waters
- 2014 Draft Issues: Going from general to specific
  - Cost increases
  - Many administrative and reporting requirements
  - Moving away from a BMP-based program
  - Instead of new criteria, use the MA SW Standards


MA84B-03_2008 Stony Brook (5)
MA84084_2008 Knops Pond/Lost Lake (4c) (TMDL)
Groton
MA84B-03_2008 Stony Brook (5)
MA81073_2008 Long Pond (3)
MA84015_2008 Forge Pond (4a) (TMDL)
Westford
Ayer
MA84089_2008 Spectacle Pond (5)
MA84B-02_2008 Beaver Brook (5)
MA82B-14_2008 Nashoba Brook (4c)
MA84B-02_2008 Beaver Brook (5)
MA84B-01_2008 Unnamed Tributary (5)
Littleton
MA84038_2008 Mill Pond (5)
MA84081_2008 Mill Pond (5)
MA82072_2008 Long Pond (5)
MA82082_2008 Nagog Pond (3)
Harvard
MA84B-05_2008 Beaver Brook (3)
MA82043_2008 Fort Pond (3)
Boxborough
Acton
MA82B-13_2008 Fort Pond Brook (3)
MA84B-05_2008 Beaver Brook (3)
Waterbody Assessment and TMDL Status
Littleton, MA
N
0
0.5
Miles
EPA
Waterbody Label
Assessment of Waterbody Segment
Category 2:
Category 3:
Category 4a:
Category 4c:
Category 5:
Waterbodies
Swamp/Marsh
Unbounded Areas (2000 Census)
Municipal Boundaries

"No, Thursday's out. How about never—is never good for you?"

The MS4 Permit: How Does It Address "Impaired Waters"

- Start to work on improving impaired waters
- Requirements vary with watershed/lake/pond/stream and go from 5 to 20 years
- Example: Lake and Pond Requirements
  - Planning
  - Implementation of non-structural BMPs
  - Implementation of structural BMPs

Proposed MS4 Permit Timing

- Adoption by EPA – End of 2015?
- Effective date – July 2016?
- NOIs due from MS4 Towns - 90 days after effective date
- Coverage granted by EPA - after public review of NOI
- Towns' Stormwater Management Plans – due 1 year after effective date of permit
- Permit length - 5 years
- Impaired Waters implementation timeline – 5-20 years

Cost to Implement Proposed MS4 permit

- EPA initial estimate
  - average cost range: $66,000 to $518,000 annually
  - excludes contingency costs and TMDL implementation
  - Now EPA says will cost 20% more than meeting 2003 permit
- EPA projected annual costs of previous 2010 draft
  - Bellingham ~$200k up to ~$800k 3 – 4 times more
  - Franklin ~ $940k up to ~$1.6 million almost twice as much
  - Milford ~ $670k up to ~ $1 million 25-33% more
- WPI student estimate increase 25% – 75%

DEP comments on MS4 draft

- Increased costs are significant
- EPA should reduce administrative and reporting requirements
- EPA should use MA Stormwater Standards instead of a new federal standard
- EPA is moving away from a BMP-based program

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