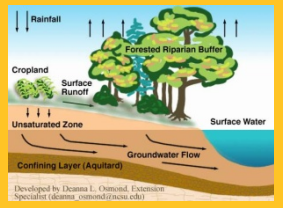
Stormwater Management in Acton *and* *Compliance with NPDES II*

WRAC, August, 2014



R. Beck, J. Clymer, B. Rosen, H. Probst, M. Mosteller, R. Bukowski, M Kreuze

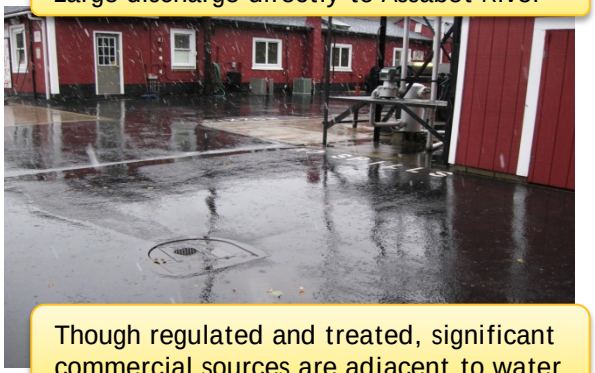
Storm water in Acton – impacts streams and the groundwater

Excessive runoff from a commercial site

Large discharge directly to Assabet River

Poorly Maintained outfall at Rte 27/Gt Rd

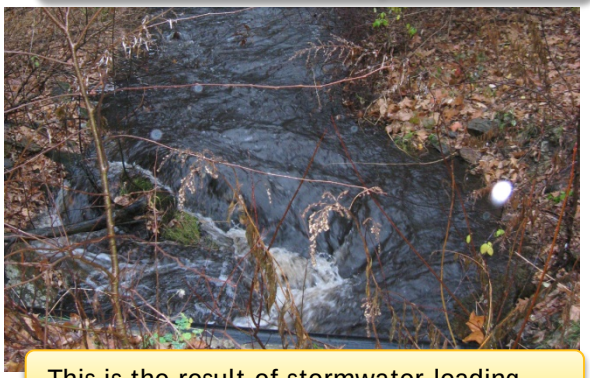
Untreated outfall to brook from large parking area



Though regulated and treated, significant commercial sources are adjacent to water

Many MS4 Sources discharge randomly

Streams are stressed during storms



This is the result of stormwater loading

In Burlington, Public Education is Followed

Agenda for BOS Discussion

- BOS Action Items
- Why Stormwater Regulations in Acton?
- The bylaw development process
- Key elements of the bylaw
- Why is this good for Acton?
- Whom does this affect
- Costs
- Summary

BOS Actions Items

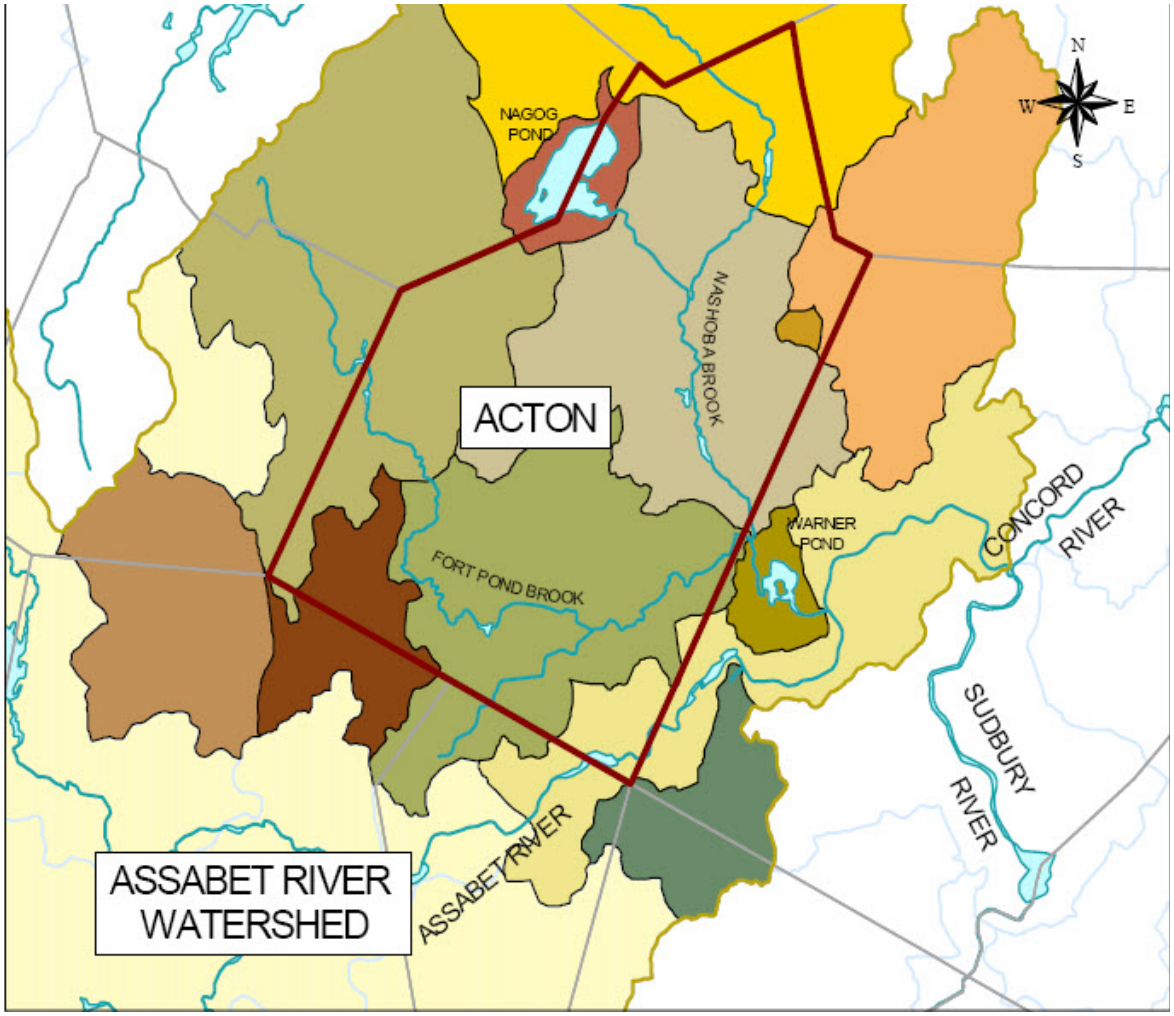
- Review and Approve Bylaw
- Confirm administrative authority
- Schedule of bringing to town meeting

What is the NPDES

- NPDES = National Pollutant Discharge Elimination System
- Stormwater is regulated through NPDES permits
- EPA issues NPDES permits under the Clean Water Act
- In Massachusetts, EPA has kept control over stormwater NPDES permits, rather than 'designating' Mass DEP
  (six other states are also administered by EPA)
- Acton manages stormwater under its NPDES Stormwater Permit
- Under the current permit that is in force, Acton committed to putting stormwater regulations in place some years ago
- Acton stormwater which runs off instead of "recharging" into groundwater loads and degrades streams and rivers

Acton watersheds:

Unmanaged stormwater enters Assabet River instead of recharging Acton's groundwater



- Storm water management is required under the US Clean Water Act
- Acton discharges and manages stormwater under an NPDES permit from EPA
- The permit requires Acton to promulgate a Stormwater ByLaw

… NPDES is focused on minimizing the MS4 "structural" stormwater flow

- Stormwater collects and runs off from impervious surfaces
- Collected by stormwater system

Standing stormwater – Great Rd

- Enters MS4 (municipal separate storm sewer system)
- … reducing groundwater recharge

Photos: R Beck

Why this Bylaw

- EPA mandates action under the Clean Water Act:
  - EPA Issues "NPDES" permit to Town of Acton
  - Permit stipulates that Acton enact Stormwater Bylaw
  - For EPA, stormwater is a key priority
  - Acton is at least 5 years late in acting & at risk
- Originally Dept of Health was assigned, but stated it had no expertise to develop bylaw and recommended WRAC
- BOS assigned WRAC in late 2010 to begin developing Bylaw
- The proposed Bylaw meets the EPA rules, meets Acton's needs and does not go "too far", and is designed to be self-funding

WRAC Bylaw Development Process

- Assigned by BOS in Sept '10 following "U" passage
- Evaluated other towns' and sample bylaws
- Systematic process followed
  - Looked at approaches, objectives of other towns
  - Attended regional forums, consulted with experts
  - Acton uniquely has groundwater priorities, while other towns focus on stream flow
- Consultant (AMEC) used our initial work to assist drafting bylaw during 2013
- Now conducting department and board reviews
- Next steps will be finalizing costs & public information

New Chapter*(bylaw)* will give Acton …

- Compliance with EPA NPDES Permit
- Improved ground water and surface water
- Better long term safeguarding of water supply
- Improved maintenance of storm water systems

Main St crosses water supply zone one

What is the scope of the Bylaw?

- Minimize Impervious surfaces:
  - Regulates Post-Construction Stormwater Runoff
  - Projects fall under permit process based on amount of impervious surface and parcel location
  - Companion Bylaw to the Acton's 2010 Chapter U Bylaw
  - Goal is for rainwater to stay where it falls: maximize "infiltration"
- Permitting Process and Management Plans:
  - Requires "best available" methods used to mitigate stormwater (Mass Stormwater Manual)
  - Permit intended to demonstrate stormwater impact and mitigation approach
- Inspection, Monitoring and Enforcement:
  - Bylaw sets framework to ensure ongoing performance of stormwater solutions
- Relationship to other Bylaws:
  - Consistent with and complementary to Conscom and Planning reviews of projects

Key Features of Stormwater Bylaw

- Significant projects creating impervious surfaces require stormwater permit
  - 5000 square feet of impervious surface created and/or
  - Greater than 1 acre of disturbance and/or
  - In a zone 2 or zone 1 groundwater area
- Permits require an application/review process. Proposed administrative authority will be the WRAC
- Certain types of activities are exempted; especially all residential parcels outside of zones 1 & 2 (see section 4.2)
- Best management practices, such as rain gardens, berms, artificial wetlands, pervious paving are allowed and encouraged

Key Features of Bylaw (cont)

- The existing Mass Stormwater Handbook is the basic document governing assessment of impacts and design of mitigating measures
- Some stormwater plans will require maintenance plans, monitoring and reporting
- The town is enabled to enforce conditions of issued permits
- The goal is for the bylaw to be self-funding through the permitting fee process

Recommended Administrative Authority

- WRAC is the recommended administrative authority because:
  - The Bylaw is interdiscipinary, cutting across the areas of expertise of several departments and areas of authority of various boards
  - This impacts (a) drinking water; (b) surface environment; (c) development
  - Other boards are heavily loaded with statutory activities
  - Requires an independent view
- WRAC structure should be to include representation from Conscom, Planning, Health

Stormwater management under the Bylaw:
Examples of "Best Management Practices"

- Constructed wetland at Staples plaza

- Storm water retention and infiltration in local condo development

Photos: R Beck

Why is this Good for Acton?

- Bylaw is federally mandated
- This will protect Acton's Drinking Water:
  - Acton gets 100% of our drinking water from the groundwater ("aquifer"), aquifer is at shallow depth
  - Stormwater can introduce contaminants and pollutants into the groundwater
- Also protects and/or improves surface water quality
  - Manage impervious surface quantities
  - Reduce runoff through management techniques

Cost and Benefit Scoreboard

Net Results of Implementing Chapter "W" in Acton:

Benefits:

- **Compliance with US EPA**
- **Long term protection of Acton water supply**
- **Improved surface water quality**
- **Preserve impervious surface ratio at 15% town-wide**

Costs:

- **Permit review costs (self funded)**
- **Town staff review time**
- **Permit application cost to landowner/developer**
- **Ongoing maintenance cost to property manager**

Consequences to Acton of not implementing this Bylaw

- Town in violation of Clean Water Act (and of the NPDES permit that the town prepared and signed and was issued)
- EPA possible actions if a town violates:
  - comprehensive monitoring requirements
  - extensive program activities required
  - inspections and oversight
  - financial penalties

  (Several MA towns, including Concord, were fined substantial amounts five years ago)

Cost Analysis

- *Assumption is +- 50 permits per year **
- Application fees are intended to cover cost of permit fee review and oversight as follows:

	Application Fee	Addl Fee for Professional review on Town's behalf **
– Projects < 3 acres;	$ 500	$ 500
– Projects of 3-10 acres;	$ 850	$ 1000
– Projects over 10 acres;	$ 1100	$ 1500

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**** Based on Historical permit data obtained from the Building Dept with the assistance of Frank Ramsbottom***

***** This is an estimate; actual fees may be higher and may increase over time***

Summary

- US EPA has mandated a stormwater bylaw under the authority of the Clean Air Act
- Stormwater bylaw "W" has been designed to comply with EPA and protect Acton groundwater
- Projects involving over 5000 square feet of impervious surface are impacted (plus all in zones 1 & 2)
- Majority of residential projects are exempted
- Regulation will be self funding
- "Best management practices" are preferred and encouraged to minimize impervious surfaces

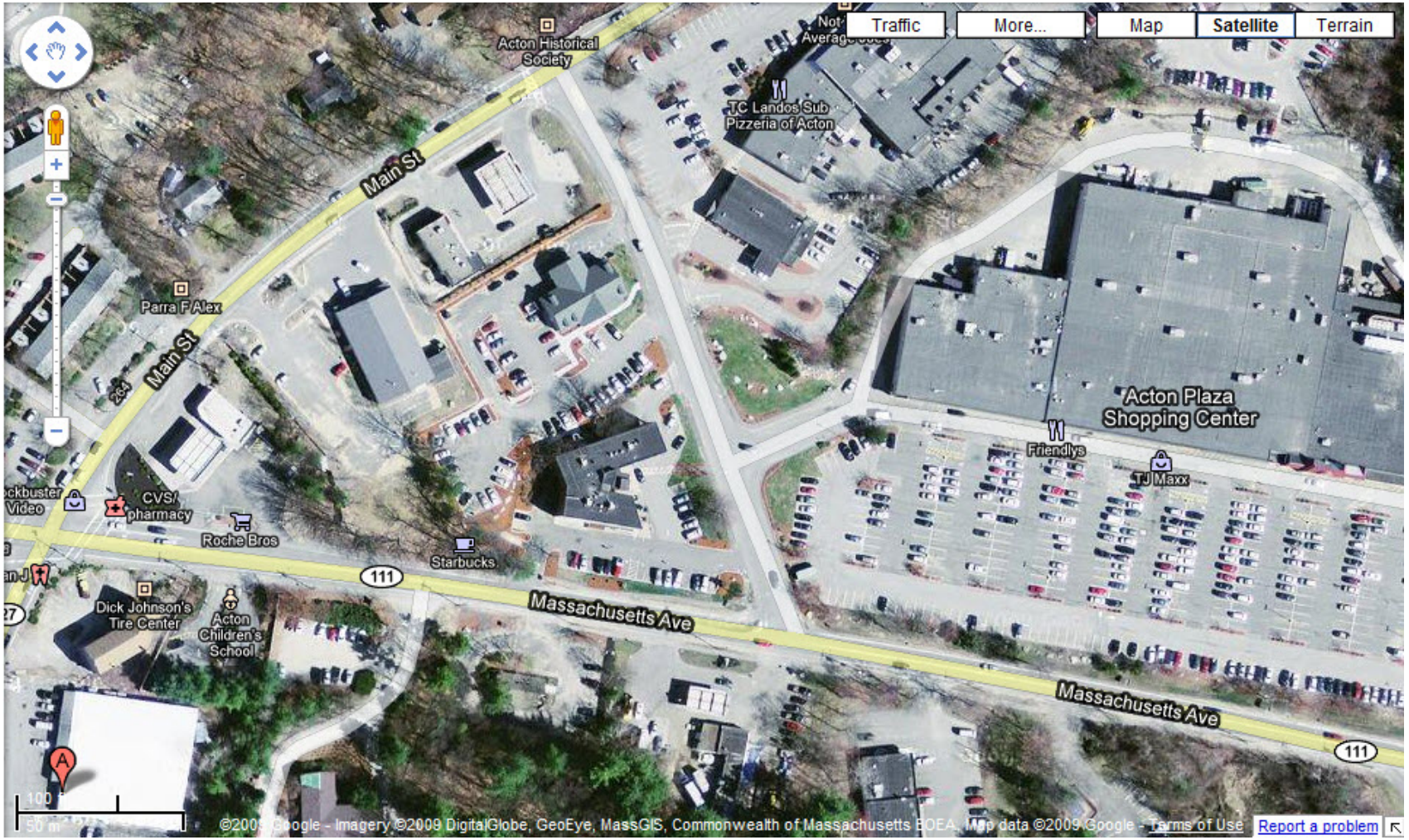
What you can do …

- Never dump anything down a storm drain
- Reduce usage of phosporus and nitrogen-rich fertilizers and pesticides
- Pick up pet wastes and dispose of properly
- Adopt low impact develop measures to reducing your storm water runoff:
  - Rain barrels, pervious paving, rain gardens
- Report spills and hazardous conditions
- Non-phosphate car washing
- Use a drip pan when changing oil

Appendix

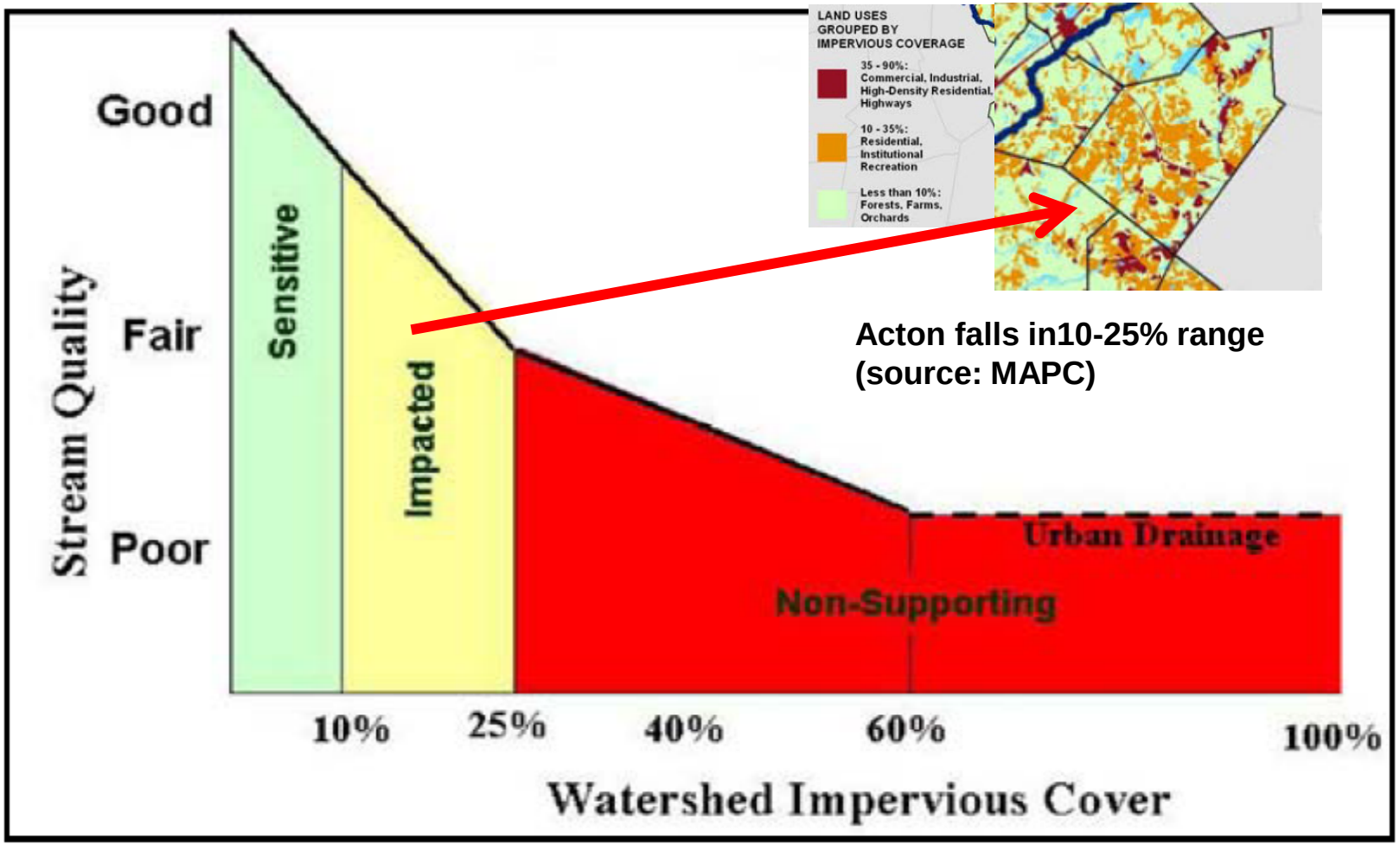
- Background Slides

Impervious surfaces ..



Example Kelly's Corner Source: Google Maps

.. directly impact stream quality …



Watershed IC vs. stream quality. (Source: Center for Watershed Protection: Impacts of Impervious Cover on Aquatic Systems)

… Leading to increasing stormwater runoff in Acton

- Stormwater collects and runs off from impervious surfaces
- Collected by stormwater system

Standing stormwater – Great Rd

- Enters MS4 (municipal separate storm sewer system)
- … reducing groundwater recharge

Photos: R Beck

… and directly impact surface waters

- Runoff to surface waterways adds load and pollutants to streams and ponds

Great Rd runoff to Ice Pond

- … adds to rising wetland levels

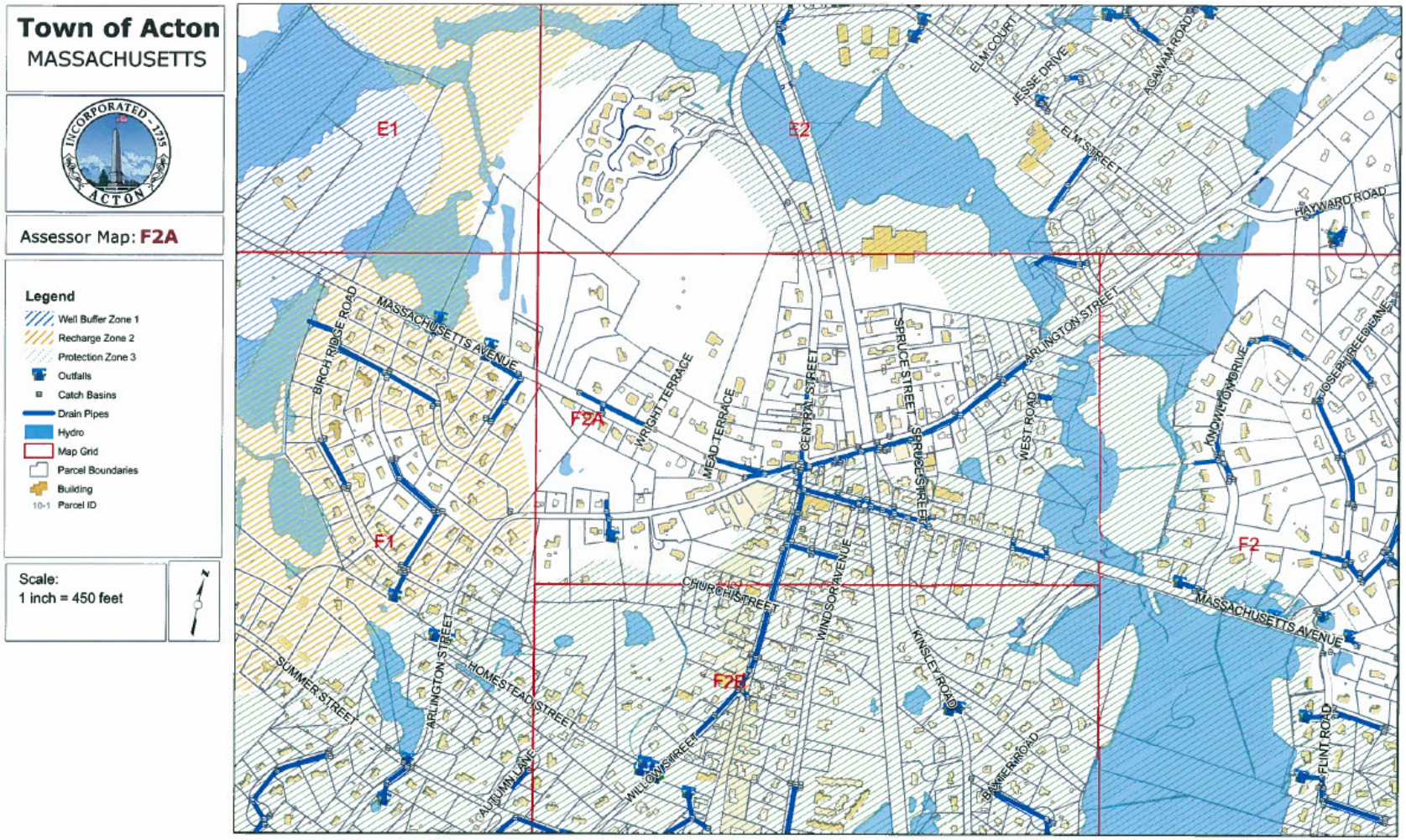
Wetland – Charter Road

- … makes storm water system challenging to maintain

Silted MS4 outfall

Photos: R Beck,

Partial map of storm water system



Blue lines = storm water system **Blue boxes = outfall**