



CITY OF NORTHAMPTON

Flood Control and Stormwater Utility Proposal



September 2013

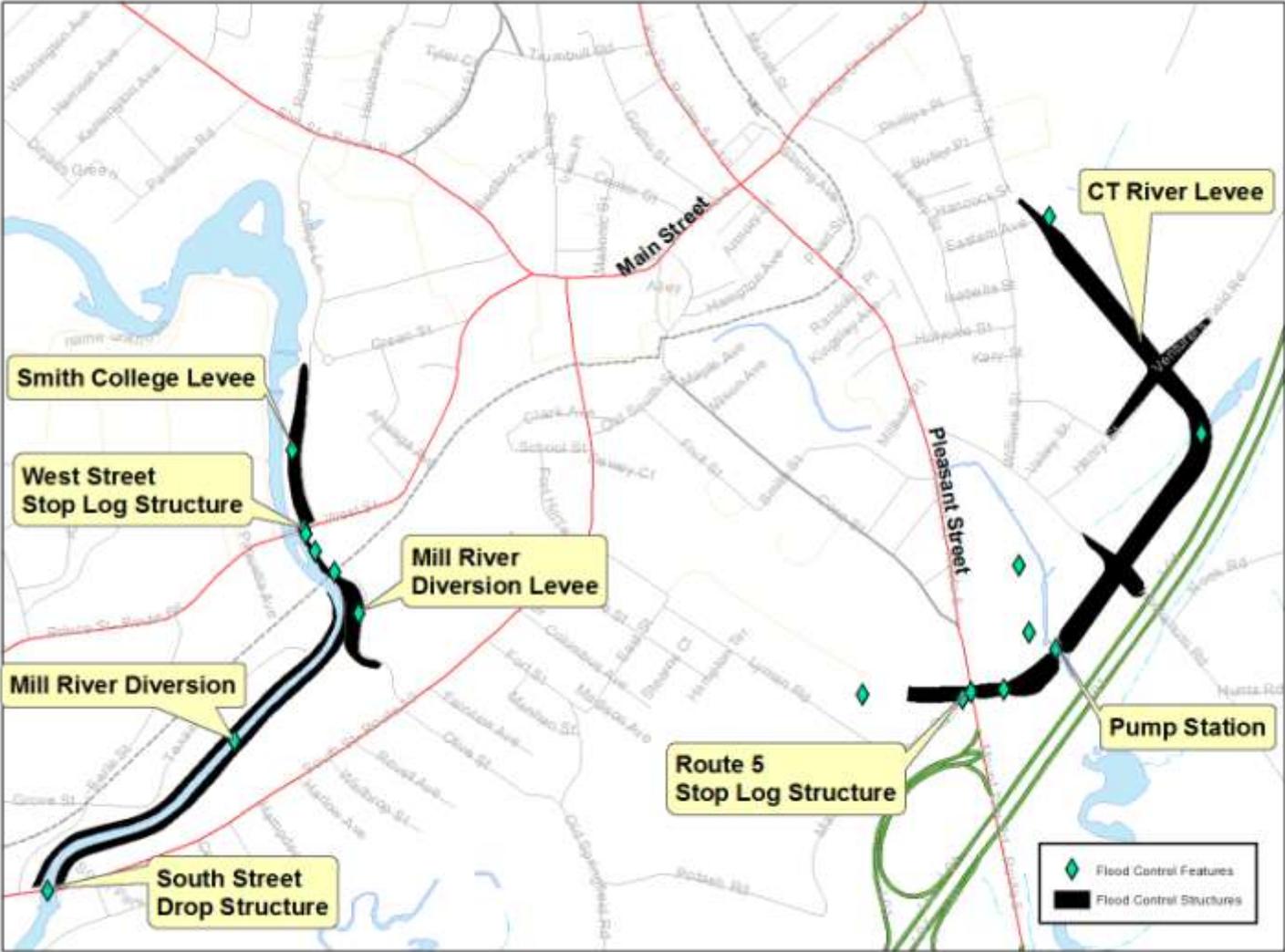
Infrastructure Challenges

- Flood Control
- Stormwater

Flood Control - Overview

- Two Systems Constructed by Federal Government (Army Corps) – 1940
- Levees and Pumps built in response to Flooding in 1936 and 1938
- Connecticut River Levee and Pump Station
- Mill River Levee, Pump Station and River Diversion

Northampton Flood Control Structures



Northampton Public Works

1:10,000

Northampton Flooding at Elevation 127' with no Flood Control System



Northampton Public Works

1:10,000

Pleasant Street Flood of 1936



Downtown Underpass Flood of 1936



Connecticut River 2011



Property Values - Cost of Failure

- 2012 Assessor's values includes inside-the-dike value of land & buildings inundated:
\$ 199,610,148

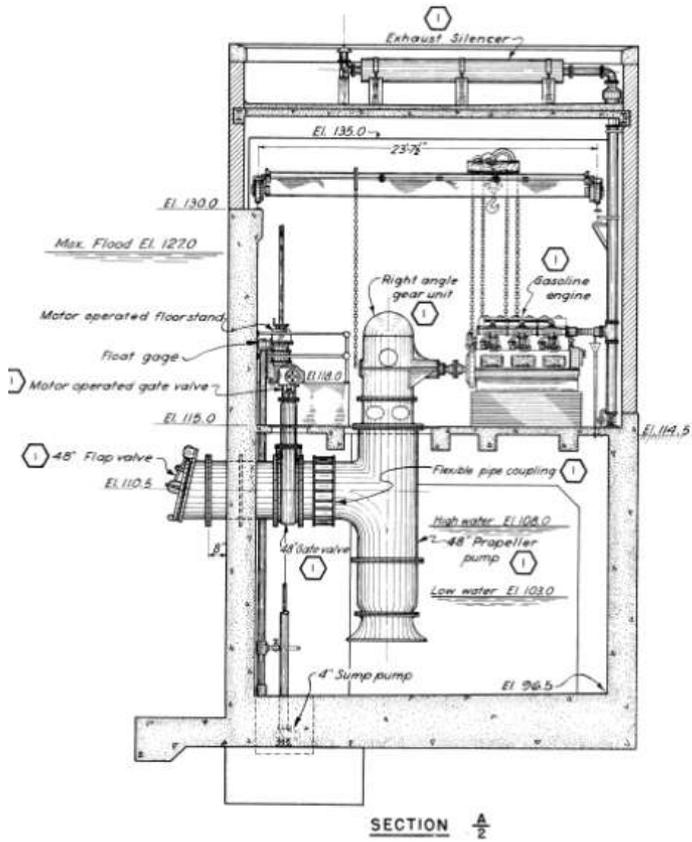
Total building value: \$ 54,203,450

Acres: 189 (under water inside the dike system in a 127' elevation flood)

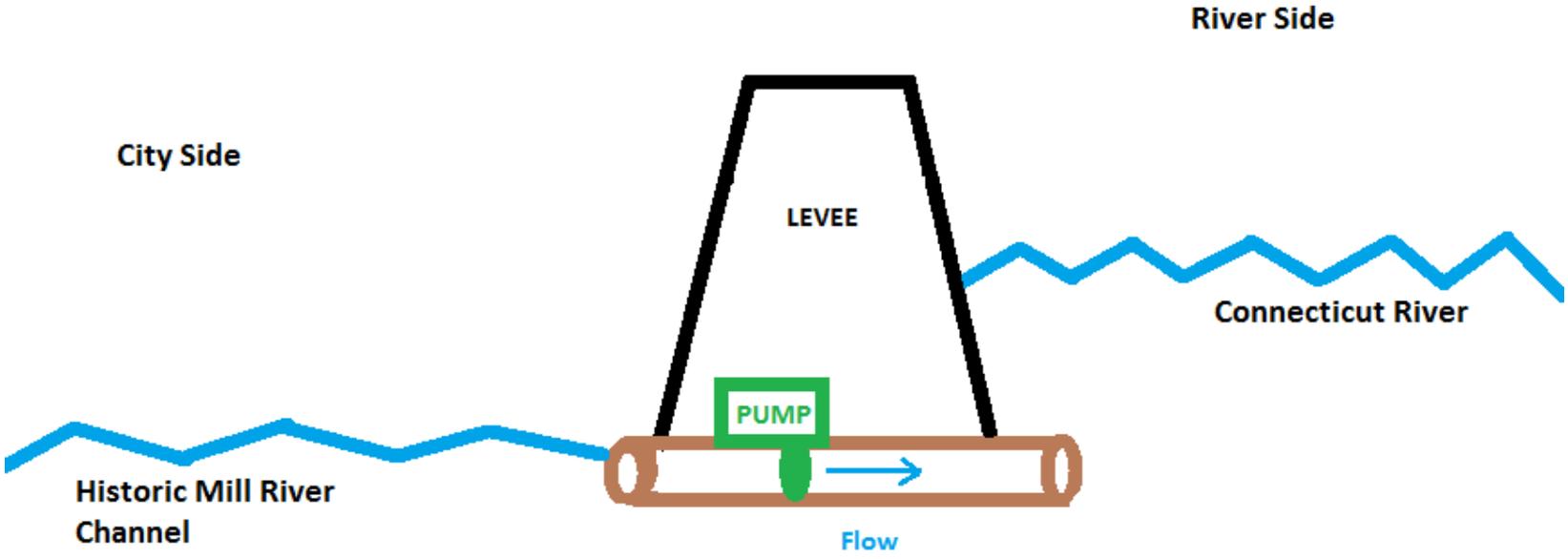
Hockanum Road Pump Station



Pump Engine



Flood Control Pump Station at Flood Stage



West Street (Mill River) August 2011



Flood Control Mandates

- Army Corps mandated engineering studies and maintenance requirements
 - Analysis includes seismic, hydraulics, stability and settlement, topographic surveys and geotechnical borings.
- Mill River System - Maintenance and Analyses
Deadline - January 2013
- Connecticut River System - Maintenance and Analyses
Deadline - January 2014

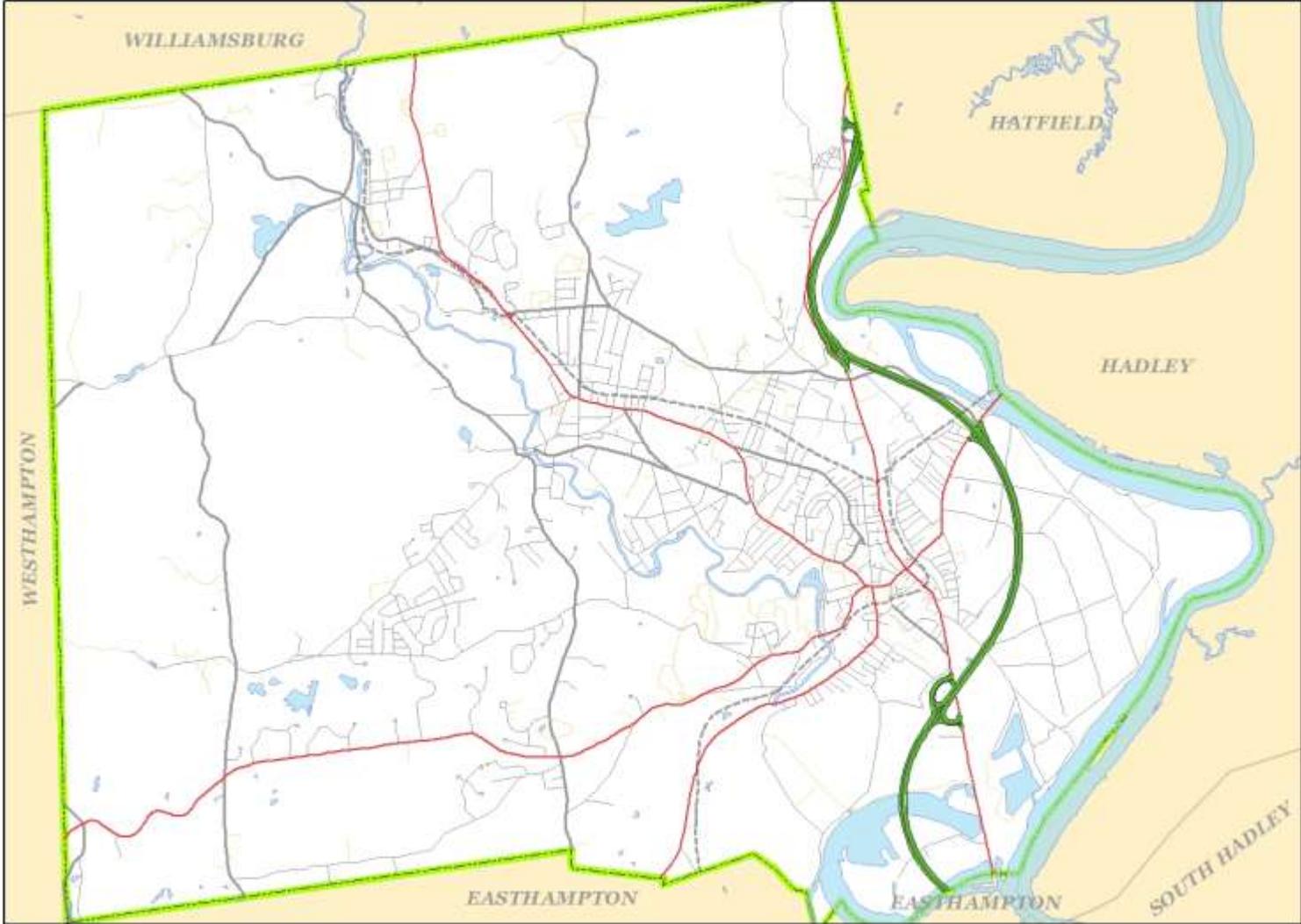
Flood Control Mandate (cont.)

- Estimated minimal cost is \$1,200,000 for engineering and maintenance construction
- Unknown \$\$ to repair possible deficiencies
- Estimated mandates at the pump station are in the \$1,000,000 range

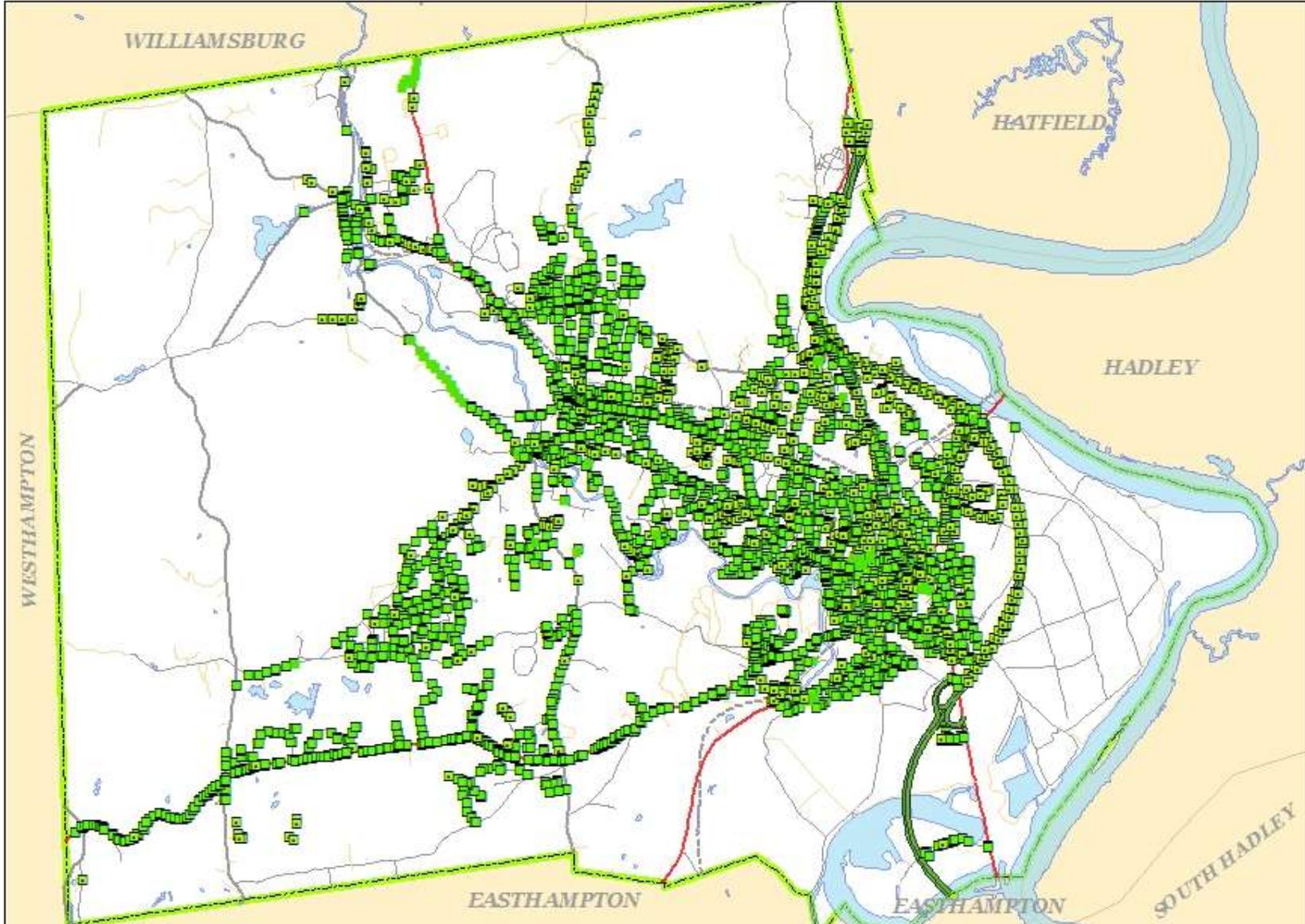
Stormwater Drainage System

- Keeps roadways clear of water and ice
- Prevents localized flooding
- Minimizes damaging erosion and protects our infrastructure

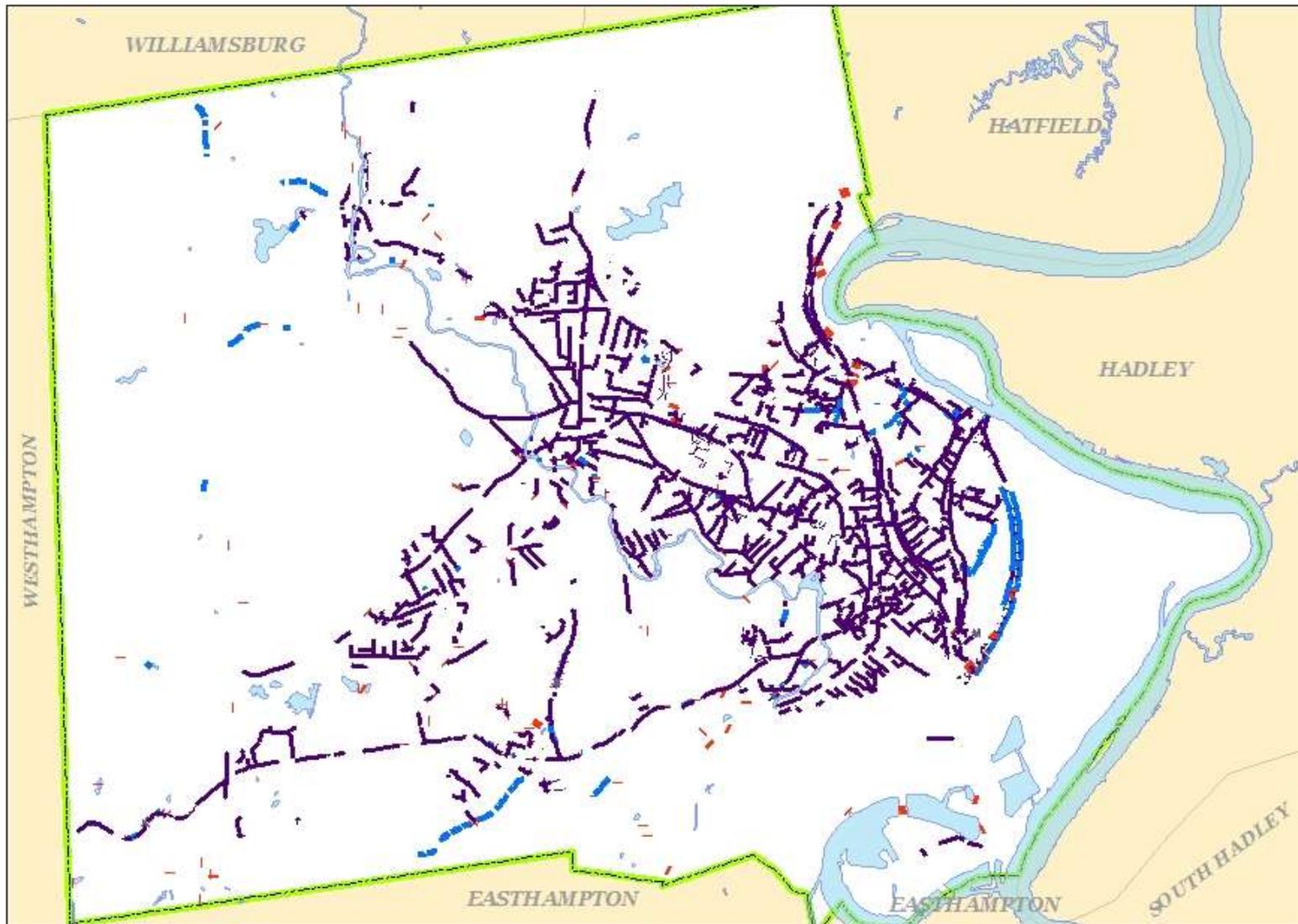
NORTHAMPTON



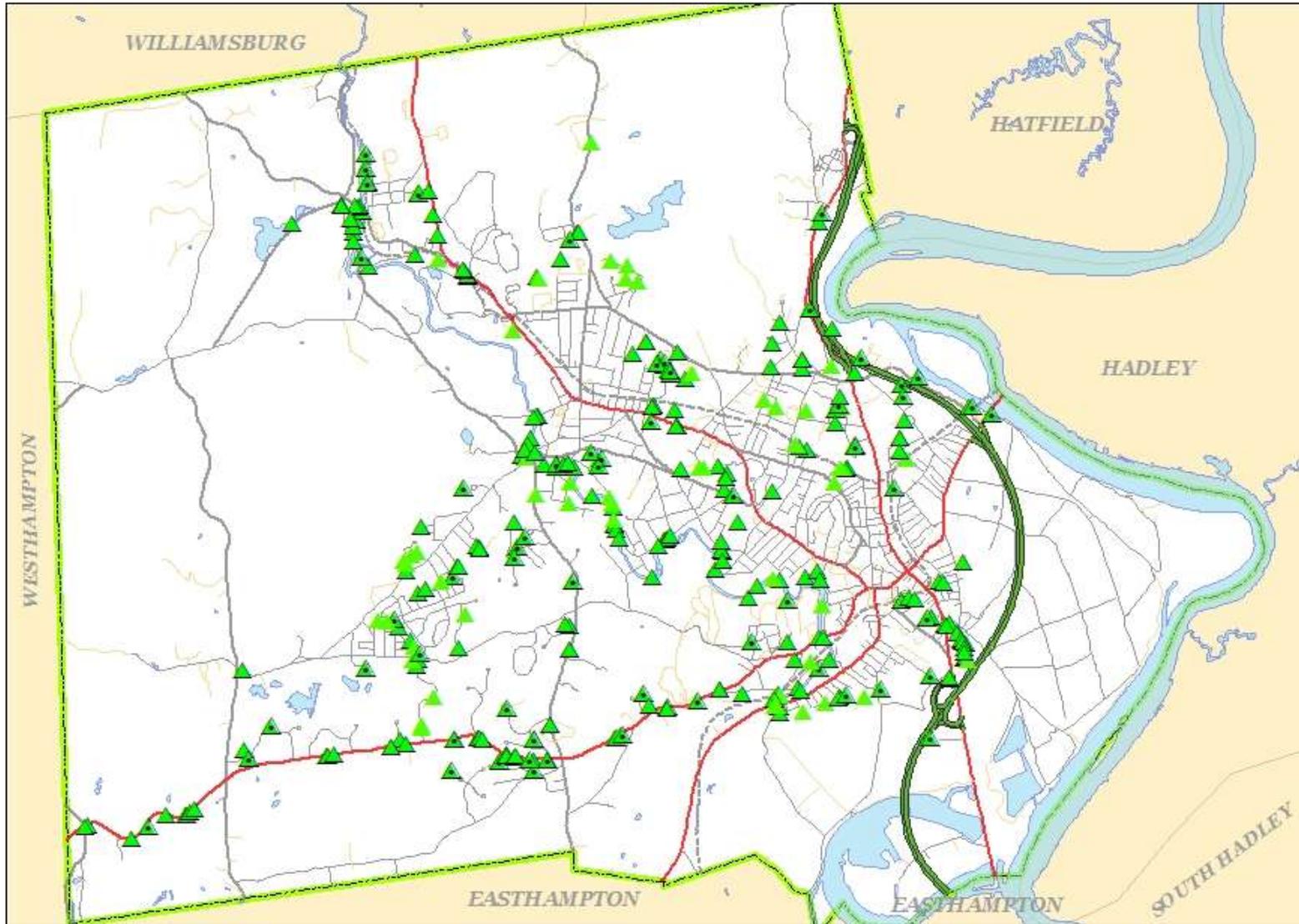
4,835 Catch Basins



114 Miles of Pipe, 190 Culverts & Drainage Channel



326 Drain Outfalls



Aging Stormwater Infrastructure

- System is over 100 years old in many areas
- System is under capacity in many areas
- Some City areas don't have drainage systems and need improvements
- Limited funds for replacing/repairing/constructing



Main Street Drainage

Under capacity stormwater drainage system causes surcharging of drain manhole during this rain event



North Street Flooding 2010

Under capacity
stormwater drainage
system causes
ponding in the
underpass after
thunderstorm



Hatfield Street Drainage

Hatfield Street emergency drainage repair completed in 2011. (Note yellow gas pipeline).



Prospect Street Culvert Collapse 2004

Emergency Repair required costing \$29,000



Florence Street

Stormwater drainage pipe – emergency repair by Public Works personnel.



Elm/Riverside/Milton Streets Flooding

Under capacity stormwater drainage system causes brook to overflow and flood the roadway and properties during rain storm



Vicinity of Austin Circle

Example of location that may require new drainage infrastructure.

New EPA Stormwater Permit - Mandates

- EPA permit regulates City stormwater discharges to Brooks and Streams
- New permit expected late 2013 or 2014
- The new EPA permit drastically increases costs for stormwater systems



EPA MANDATE - Catch Basin Cleaning

New EPA permit will require all catch basins to be maintained at less than 50% full with sediment. Currently, only certain catch basins are routinely cleaned of sediment.



Catch Basin Cleaning with Vactor Truck



EPA MANDATE - Street Sweeping

New EPA permit will require sweeping 2 times per year in Spring and Fall. Currently, streets are swept once each year.



EPA MANDATE – OUTFALL SAMPLING

Vernon St– Outfall to the Mill River

New EPA permit will require outfall inventory, screening, sampling, and investigation as necessary of the City's 326 outfalls to ensure good water quality.



EPA MANDATE – GREEN INFRASTRUCTURE

Drainage Green Retrofit on Conz Street – Water Quality Swale

Other EPA Permit Mandates:

- Public education programs
- Illicit Discharge Detection and Elimination
- Nitrogen Reduction in discharges
- Municipal floor drain inspection/improvements

River and Brook Erosion Threats

- City is blessed with scenic brooks and rivers
- BUT – Stream bank erosion may threaten property and infrastructure
- No funding source for these threats
- City aggressively chases limited grant money but this is inadequate funding and lacks responsiveness required for needs



River Road Retaining Wall – Mill River

This retaining wall is failing and threatens River Road and sewer interceptor line.



Federal Street Retaining Wall – Mill River

This failing retaining wall threatens sewer interceptor line. Temporary repairs have been done.



Roberts Meadow Brook – Musante Beach Area

Stream bank erosion on Roberts Meadow Brook threatens the house in the photo as well as a bridge a little further downstream.

Flood Control & Stormwater Mandates

- Army Corps mandated engineering studies and maintenance and repair requirements for Mill River and Connecticut River Systems including Levees and Pump Stations (estimated cost of \$2,200,000 over the next three years).
- EPA Stormwater Permit Mandates that includes increased operation and maintenance costs estimated at \$425,000 per year.
- River and Brook erosion repair projects

Budget

FY 2014-16 Stormwater Expenses

	FY 2014	FY 2015	FY 2016
Existing Operation Budget Allocations			
Flood Control Personnel (Overtime Storms)	\$23,000	\$23,690	\$24,401
Flood Control O&M	\$32,625	\$33,884	\$35,194
Stormdrain Personnel	\$111,374	\$112,928	\$116,316
Stormdrains O&M	\$54,050	\$55,672	\$57,342
Indirect Costs	\$0	\$230,000	\$240,000
<i>Total Allocated O&M</i>	<i>\$221,049</i>	<i>\$456,174</i>	<i>\$473,253</i>
Increase in O&M Budget (due to new EPA permit)			
Monitoring (Outfalls/Drain Manholes)	–	\$100,000	\$103,000
Engineering Staff	–	\$60,000	\$61,800
Operations Staff	–	\$100,000	\$103,000
Billing Clerk	–	\$50,000	\$51,500
Catch basin cleaning vehicle	–	\$26,000	\$26,000
Vactor truck	–	\$60,000	\$60,000
Public education	–	\$20,000	\$20,600
Fuel costs	–	\$20,000	\$20,600
<i>Total incremental O&M</i>	<i>\$0</i>	<i>\$436,000</i>	<i>\$446,500</i>
Infrastructure Investments			
Flood Control Pump St. Alts Anal/prelim dsn		\$200,000	
Drainage infrastructure -undefined	\$20,000	\$500,000	\$500,000
Municipal green design/construction	\$0	\$30,000	\$30,000
<i>Total Infrastructure Investments</i>	<i>\$20,000</i>	<i>\$730,000</i>	<i>\$530,000</i>
Total Operating Expenses	\$241,049	\$1,622,174	\$1,449,753
Debt Service			
General Bond (See Below)	\$94,301	\$91,801	\$90,373
<i>Ridgewood Terrace/Crescent St</i>			
<i>Barrett St/Utility Study</i>			
<i>Mill River Levee - Partial Repair</i>			
Anticipated Future Debt (See Below)			
Levee Capital Improvements		\$37,700	\$36,758
River Road Retaining Wall		\$160,800	\$156,780
Roberts Meadow Brook		\$54,600	\$53,235
Levee Certification		\$55,000	\$53,625
Total Debt Service	\$94,301	\$399,901	\$390,771
Total Revenue Requirement	\$335,350	\$2,022,075	\$1,840,524

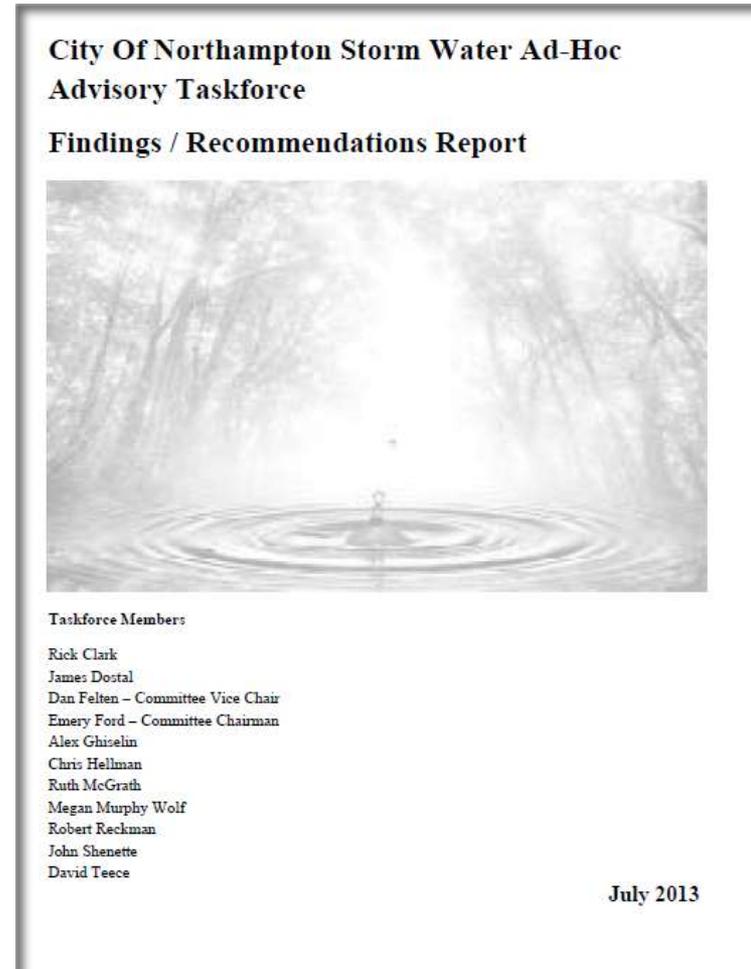
Stormwater Ad-Hoc Advisory Task Force

Examined ways in which the stormwater and flood control costs could be funded:

1. General Fund – (Current Method)
2. Use Override(s)
3. Create a new Stormwater and Flood Control Fee
4. Combination of General Fund and Fee

Task Force Recommendations

1. Create a Stormwater and Flood Control Fee
2. Suggested two possible formulas
3. Recommended offering credits and incentives



August 15, 2013 City Council Order

1. Task Force Report was accepted
2. Asked the BPW consider this report and to draft of a proposal for an ordinance

Draft Proposal

1. Billing Formula based on runoff coefficients:
 - Impervious surface area = 0.95
 - Pervious surface area = 0.1
2. Bills for 1-3 Family Homes based on average impervious and pervious areas
3. Bills for all other properties based on actual areas of impervious and pervious area on each property
4. Cap of 1 acre for pervious area

Example Bill

Average Residential Property:

- Impervious Surface = 3,746 sf
- Pervious Surface = 16,376 sf

$$3,746 \text{ sf} \times 0.95 = 3,559 \text{ sf}$$

$$16,376 \text{ sf} \times 0.1 = 1,638 \text{ sf}$$

$$3,559 + 1,638 = \underline{5,197 \text{ sf}} \text{ (hydraulic acreage)}$$

$$5,197 \text{ sf} \times 0.0233 \text{ (rate)} = \underline{\$121 \text{ Fee}}$$

Data Management

- Use 2005 MassGIS impervious surface and 2011 MassGIS building data
- GIS Assessors map property boundaries
- Work with a consultant to determine bills for commercial and other non-residential properties
- Add data for changes to properties since 2005 based on City permit records

Proposed Credits & Incentives

1. Incentives

- Discount on purchase of Rain Barrels

2. Credits

- Residential one time credit for construction of rain gardens or porous driveways
- Stormwater system maintenance and performance credits for commercial and other properties
- Senior and Low Income Credits
- Protected Land Credits for agriculture, forestry, and other open space with restrictions in place
- Education Credit for private and public education institutions

Proposed Exemptions

Open land with a permanent restriction would not get a bill:

1. Conservation Restriction (CR)
2. Agricultural Preservation Restriction (APR)

Proposed Appeal Process

1. A property owner could appeal a bill or credit to the Director of Public Works
2. Bills that remain unresolved could be brought to the Board of Public Works - Claims Committee for review and consideration

Sample Annual Stormwater Bills

DRAFT, Northampton DPW, 9/17/2013

Properties	Total Area (SF) ¹	Impervious Area (SF) ¹	Pervious Area (SF) ¹	Sample Bills ²
1, 2 & 3 Family Houses (6,616 properties)				
<i>Average (with 1 acre pervious cap)</i>	42,722	3,746	16,376	\$121
Example Properties:				
Undeveloped Land (1 acres)	43,560	-	43,560	\$101
Undeveloped Land (10 acres)	435,600	-	435,600	\$101
Undeveloped Land (50 acres)	2,178,000	-	2,178,000	\$101
Arcadia (1 of 10 parcels)	14,704,497	16,075	14,688,422	\$457
1-Family Property (19.2 acre lot)	837,581	3,218	834,363	\$121
Paradise Copies-21 Conz St	14,514	11,853	2,661	\$269
Coopers, 35 Main St, Forence	21,219	16,550	4,669	\$377
CVS, 366 King St	93,915	63,734	30,181	\$1,481
Hotel Northampton, 36 King St & 43 Gothic St	79,330	77,835	1,495	\$1,726
221 Pine Street	143,137	79,838	63,299	\$1,869
Clarion Hotel & Conference Center, 23 Atwood Dr	333,827	190,319	143,509	\$4,314
Lia Toyota, 246-280 King St	301,474	233,375	68,099	\$5,267
River Run Condominiums, Damon Rd	721,819	242,688	479,131	\$5,473
L-3 KEO, 50 Prince St	591,416	265,805	325,611	\$5,985
Hathaway Farms, Barrett St (207 Apartments)	794,848	380,421	414,427	\$8,522
Walmart, 180 North King St	510,525	423,020	87,505	\$9,465
Coca-Cola, 45 Industrial Dr	908,923	756,582	152,341	\$16,848
Cooley Dickinson Hospital	1,914,472	761,289	1,153,182	\$16,953
Three County Fairgrounds	1,981,631	842,349	1,139,281	\$18,747
VA Medical Center, 421 North Main St	4,548,200	1,099,758	3,448,442	\$24,445
Smith College	7,922,502	2,764,872	5,157,630	\$61,302

¹Estimated areas based on 2005 MassGIS Impervious information, 2011 MassGIS Building Information, and 2012 MassGIS Level 3 parcel data. All properties have been included except City Roadways and State Roadways.

²Uses Runoff Coefficients: Buildings=0.95, Other Impervious=0.95, Pervious=0.1

Proposed Revenue from Stormwater Fees

Property Types	Percent of Revenue	Revenue
Small Residential (1-3 Family)	41%	\$813,768
Large Residential (4+ Unit Apartments, Condos, Rooming)	9%	\$188,978
Commercial/Industrial Properties	23%	\$466,980
City Properties	9%	\$176,278
Tax Exempt Properties	10%	\$200,039
Other (Ag, Forestry, Recreation, Accessory Land)	7%	\$147,013
Grand Total		\$1,993,054

Public Process – Moving Forward

1. Board of Public Works will draft a utility ordinance
2. The draft ordinance will be submitted to the City Council
3. The Council will refer the draft ordinance to Council subcommittees
4. The City Council will determine the schedule of future public meetings

THANK YOU!

We'd be happy to address any questions!

