



Public Forum Water & Sewer System Evaluations

February 7, 2008

Forum Participants:

Robin Crosbie, Town Manager

Mike Wrabel, DPW Director

Thom Martens, P.E., Town Engineer

Pete Thurber, Assistant DPW Director, Water and Sewer

Ron Michalski, P.E., Tighe & Bond

Dave Prickett, P.E., Tighe & Bond

Tom LeCourt, P.E., Tighe & Bond

Tighe&Bond

Introduction

- Water and Sewer (W&S) Management History
 - Board of Water and Sewer Commissioners (until July 1, 2005)
 - Town Manager/Selectboard (since July 1, 2005)
- Longmeadow W&S Systems are Old
 - Aging infrastructure is a national concern
- W&S Systems Must Be Maintained
- W&S System Attention Has Increased Since July 1, 2005

Tighe&Bond

Recent Sewer System Initiatives Include:

■ Wheelmeadow Brook Sewer Project	\$4,100,000 (C)
(Ely Road, Wheelmeadow Drive, Greenacre Avenue, Laurel Street, Dartmouth Road, York Drive)	
■ Comminutor Replacement @ Pump Station	\$43,400 (C)
■ Maintenance Dump Truck	\$167,500 (C)
■ DPW Staff Additions	\$50,000 (C)
■ Sewer System Evaluation	\$58,000 (C)
■ TOTAL	\$4,418,900

(C) = Completed

Tighe&Bond

Recent Water System Initiatives Include:

■ Dunn Road Water Main	\$298,000 (C)
■ Greenacre/York Water Main Replacement	\$600,000 (C)
■ Wenonah Road Water Main Replacement	\$263,000
■ Water Tank Painting	\$270,000
■ Leak Detection	\$17,000
■ Valve Exerciser	\$30,000 (C)
■ Staff Additions	\$50,000 (C)
■ Water Well Abandonment/Capping	\$45,000
■ Water Tank Radio Transmitter	\$16,000 (C)
■ Water System Evaluation	\$62,000 (C)

TOTAL \$1,651,000

(C) = Completed

Tighe&Bond

What Are You Going To Hear About?

	<u>Sewers</u>	<u>Water</u>
Infrastructure Value	> \$60,000,000	> \$60,000,000
System Age	Old	Old
Maintenance Status	Needs Attention	Improvements Needed
Operating Budget Needs	\$205,000+	\$75,000
Capital Cost Needs	Moderate	Significant

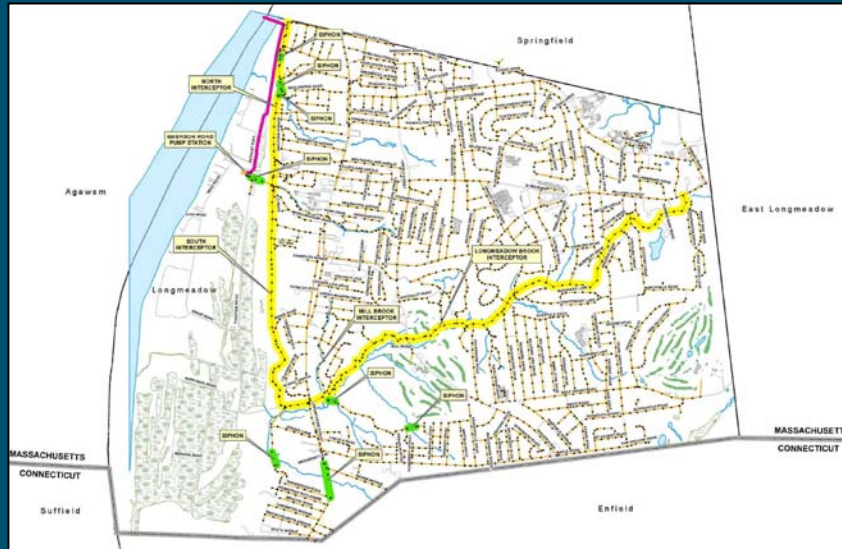
Tighe&Bond

Collection System Background

- Gravity sewers
 - Date back to early 1900s
 - 432,000 feet (82 miles)
 - 6-inch to 24-inch diameter
 - 2,100 manholes
- 8 Siphons
- Cross-country interceptor sewers
 - North Interceptor (1950s)
 - South Interceptor (reconstructed in 1984)
 - Longmeadow Brook (reconstructed in 1984)
 - Mill Brook (1960s)

Tighe&Bond

Current Collection System



Tighe&Bond

Treatment/Disposal Background

- 1900s through 1950s
 - Sewage discharged to River
- 1960s to mid-1970s
 - Longmeadow Primary WWTP
- 1970s to present
 - IMA with Springfield (ample capacity available)
 - Emerson Road Pump Station (1976)
 - Force main through Agawam (12,900 feet)
 - Sewage treated at Springfield Regional WWTP

Tighe&Bond

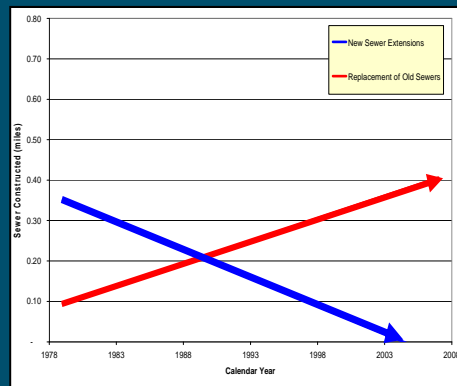
Status of Collection System

- **Vitrified clay (VC) pipes**
 - Up through 1950s
 - 25% of system
- **Asbestos cement (AC) pipes**
 - 1960s and 1970s
 - 60% of system
- **Roughly ½ the system is at least 50 years old**

Tighe&Bond

Status of Collection System (cont)

- Longmeadow's sewers can be described as a "mature asset"
- Serves the Town on a continuous basis
- Shift from growth to maintenance/rehabilitation



Tighe&Bond

Age of Collection System (by Pipe Type)



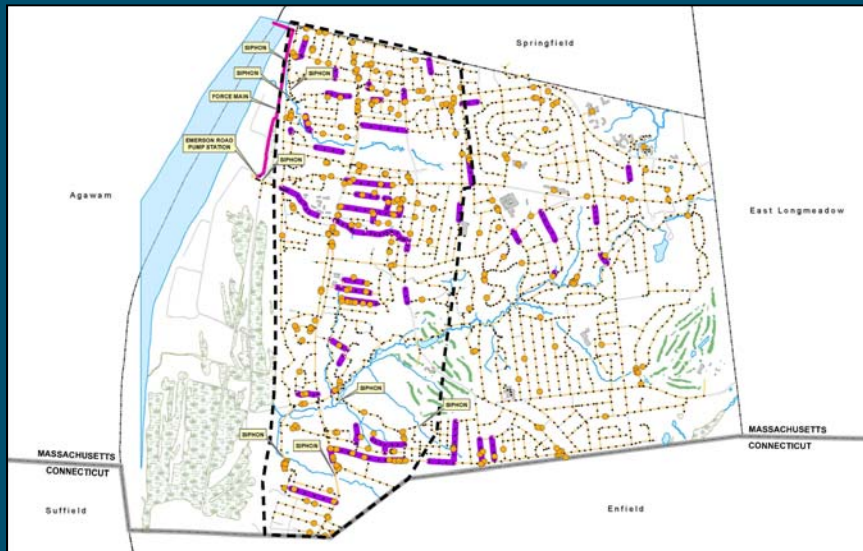
Tighe&Bond

Town Maintenance Activities

- Respond to sewer backup calls
 - Pin maps maintained since 1987
 - 35 backups in sewer mains annually
 - 126 backups in service laterals annually
- Limited equipment
 - Sewer jet (push obstruction downstream)
 - Push rods (manually free obstructions)
- Television inspection
 - 34,000 feet over past 20 years
- Develop schematic sewer mapping

Tighe&Bond

Historical Sewer Maintenance Calls and Response Work



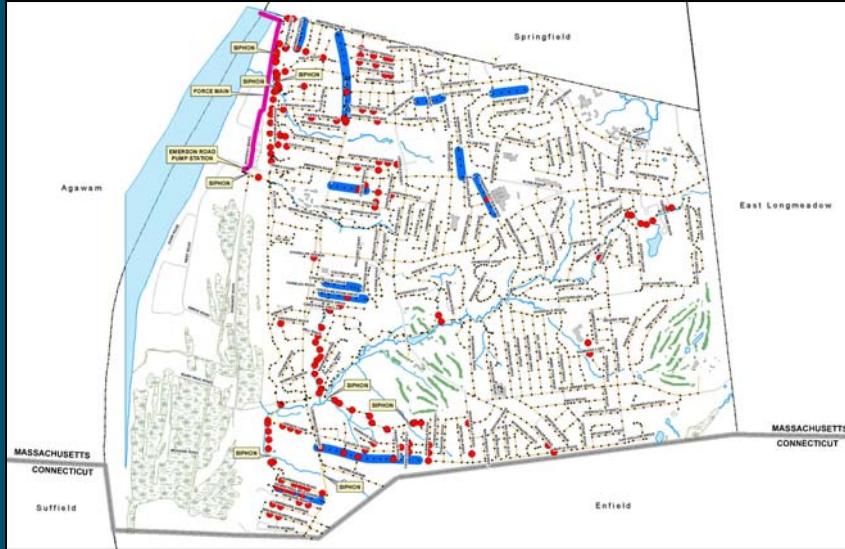
Tighe&Bond

Overview of Investigative Field Work

- Manhole inspections (150)
- TV inspection (15,000 feet)
- Observe cross-country interceptor routes
- Confirm results of previous I/I projects
- Evaluate Emerson Road Sewage Pump Station
- Provide recommendations for an annual preventative maintenance program
- Develop preliminary capital improvements program based on investigative field work

Tighe&Bond

2007 Tighe & Bond Investigative Field Work Summary



Tighe&Bond

A Clean Well-Constructed Manhole



Tighe&Bond



Sewer Evaluation Findings

1. Most I/I recommendations were addressed
2. Ample available wastewater capacity via IMA with Springfield
3. Old sewers (1/2 system >50 years)
4. Preventative maintenance needed
 - Manholes in need of repair
 - Sewer lines need to be cleaned
 - Access improvements needed at cross-country interceptors
5. Additional sewer rehabilitation is needed
6. Mechanical upgrades needed at Emerson Road Pump Station

Sewer System Recommendations

■ Administrative measures

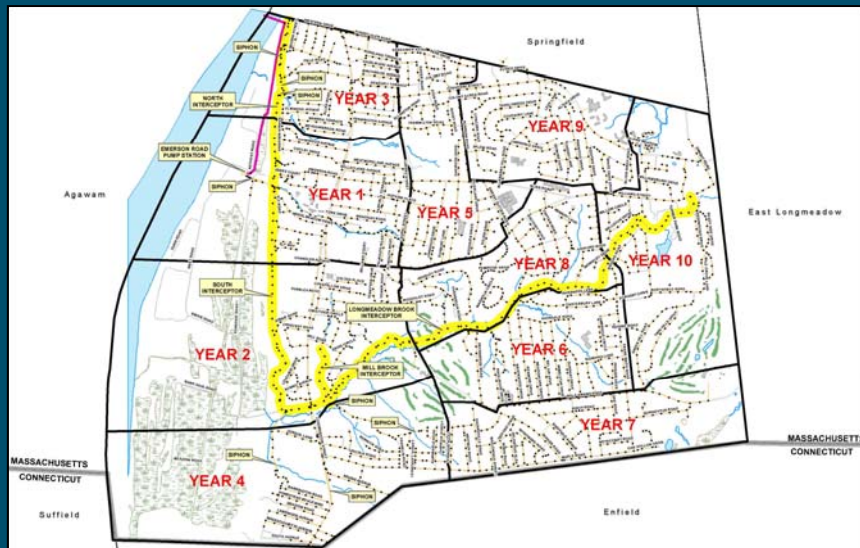
- An additional person is needed to improve sewer maintenance (+\$50,000)
- Longmeadow needs a GIS system to improve recordkeeping and facilitate preventative maintenance (+\$150,000)

■ Annual preventative maintenance program

- TV inspection work (+\$50,000)
- Annual cleaning program (+\$20,000)
- More emphasis on repairs & maintenance (+\$85,000)

Tighe&Bond

Annual Sewer System Preventative Maintenance Program



Tighe&Bond

Sewer System Recommendations (cont)

■ Preliminary capital improvements

- Access improvements to cross-country sewers (+\$150,000)

 - » North Interceptor

- Sewer replacement (+\$855,000)

 - » Maple Road

 - » Longfellow Drive



Tighe&Bond

Sewer System Improvement Recommendations



Tighe&Bond

Pump Station Recommendations

- Short-Term Improvements (\$390,000)
 - Wet well ventilation/electrical (+\$135,000)
 - Pump motor replacements (+\$165,000)
 - Instrumentation upgrades (+\$75,000)
 - Security improvements (+\$15,000)



Tighe&Bond

Pump Station Recommendations (cont.)

- Long-Term Improvements (\$655,000)
 - New generator (+\$110,000)
 - New boiler (+\$25,000)
 - Wet well improvements (+\$70,000)
 - Control building improvements (+\$115,000)
 - General site improvements (+\$135,000)
 - Odor control (+\$70,000)
 - Misc. (+\$130,000)



Tighe&Bond

Summary of Recommended Sewer Improvements

■ Annual Operating Budget Items	
– One Additional Staff for Improved Sewer Maintenance	\$50,000
– TV Inspection Work	\$50,000
– Sewer Cleaning	\$20,000
– Manhole Rehabilitation	\$35,000
– Sewer Pipe Repairs	\$50,000
Total	\$205,000
■ Preliminary Capital Improvement Projects	
– Develop Sewer System GIS Database	\$150,000
– Interceptor Sewer Access Improvements	\$150,000
– Replace Longfellow Sewer	\$400,000
– Study/Replace a Portion of Maple Street Sewer	\$425,000
– North Interceptor Sewer Study	\$30,000
– Emerson Road Pump Station (Short Term Improvements)	\$390,000
– Emerson Road Pump Station (Long Term Improvements)	\$655,000
Total	\$2,200,000

Tighe&Bond

Water System Background Information

- Springfield Connections
- Forest Glen Road Booster Pump Station
- Academy Drive Elevated Storage Tank – 1.0 MG
- 524,000 feet (99 miles) of water mains
- 5,700 meters
- 1,100 hydrants
- Numerous valves

Tighe&Bond

Water Distribution System is Old

- 65% asbestos cement (1950's to 1970's)
- 24% unlined cast iron (1900's to 1950's)
- 11% ductile iron (1975 to present)

- 2.5% 4-inch diameter or less
- 33% 6-inch diameter
- MADEP Guidelines – minimum 8-inch diameter

Tighe&Bond

Distribution System by Pipe Diameter



Tighe&Bond

Distribution System by Pipe Material



Tighe&Bond

Town Records Reviewed

- Water system map
- Interviews w/ DPW staff
- Water consumption and usage data
 - Amount of water purchased from Springfield
 - Customer billing data (73%)
 - Unaccounted for water (27%)
- Water quality data
- Springfield intermunicipal agreement
- Storage tank inspection report
- Hydrant flushing program
- Water meter records

Tighe&Bond

Water Quality Review

- Water quality is good
- Longmeadow is in compliance with all current drinking water regulations:
 - Stage 1 Disinfection Byproducts Rule (DBPR)
 - Lead and Copper Rule
 - Total Coliform Rule
 - Stage 2 DBPR
 - » Town is currently conducting required monitoring

Tighe&Bond

Water System Operations Need Emphasis

- Recommendations include:
 - Dedicated staff
 - GIS System (\$150,000)
 - » Improved record management
 - Valve Exercising (+\$50,000 – Valve Maintenance)
 - Improved Hydrant Flushing Program (+\$25,000 – Hydrant Maintenance)
 - Improved Water Meter Maintenance
 - » \$2,050,000 in replacements needed

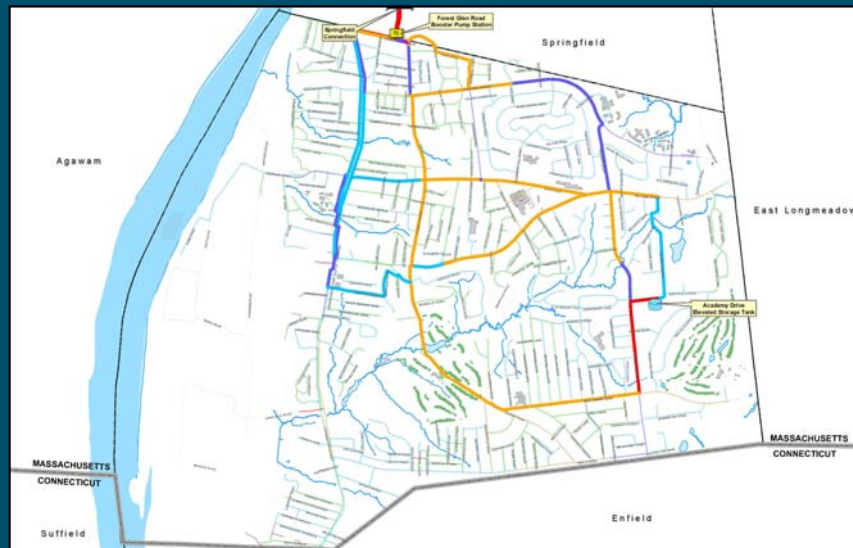
Tighe&Bond

Water Distribution System is Effective

- Water pressures are good
- Fire flows are generally OK
- Longmeadow uses a lot of water
 - Average per capita consumption – 90-110 gpcd
 - Current State Goal – 80 gpcd
 - Future State Goal – 65 gpcd

Tighe&Bond

Major Transmission Mains within Distribution System



Tighe&Bond

Water Evaluation Findings

1. Pipe upgrades needed
 - Replace undersized pipe (35% of system)
 - Address isolated fire flow needs
2. Inadequate water storage
3. No emergency water supply
4. Booster pump station needs work
5. System maintenance needs emphasis (hydrants, valves, meters)
6. High unaccounted for water (27%)
7. High water consumption (110 gpcd)

Tighe&Bond

Computer Analysis Recommends the Following Distribution Improvements:

- Minor pipe upgrades at 3 locations - \$103,000
- Residential fire flow improvements - \$2,415,000
- Non-residential fire flow improvements - \$1,128,000
 - Williams Middle School
 - Maple Road / Franklin Road

Tighe&Bond

Additional Distribution System Needs

- All 4-inch and 6-inch pipe should be replaced (\$30,000,000). Prioritize based on:
 - Pipe Material/Roughness – Cast iron pipes generally in worse condition than AC
 - Other planned DPW projects in area
 - Main break history/problem areas
 - Distinct neighborhoods
- Emergency interconnection with adjacent system (\$50,000)

Tighe&Bond

Recommended System Improvements



Tighe&Bond

Water Storage

- Existing tank – 1.0 MG
 - Needs rehabilitation - \$1,100,000
- Recommended storage – 4.1 to 4.3 MG
- Additional storage needed
 - Emergencies
 - Fire
 - Daily variations in demands
- Minimum of 1.0 MG of additional storage recommended - \$2,100,000

Tighe&Bond

Forest Glen Booster Pump Station Upgrades

- Short Term
 - Security Upgrades - \$70,000
 - Replacement of Fluoride Equipment - \$45,000
 - Safety Upgrades - \$25,000
- Long Term
 - Electrical System Upgrades - \$140,000
 - SCADA System Installation - \$84,000
- TOTAL - \$364,000

Tighe&Bond

Summary of Recommended Water Improvements

■ Operating Budget Needs

- Valve Maintenance \$50,000
- Hydrant Maintenance \$25,000

Total \$75,000

■ Short term (0-5 years)

- GIS Database \$150,000
- Meter Replacement \$2,050,000
- System Upgrades – Hydraulics \$103,000
- Residential FF Improvements \$2,415,000
- Non-residential FF Improvements \$1,128,000
- Emergency Interconnection \$50,000
- Storage Tank Repainting \$1,100,000
- Forest Glen PS Upgrades \$140,000

Total \$7,136,000

Tighe&Bond

Summary of Recommended Water Improvements (cont).

■ Long term (> 5 years)

- Forest Glen PS Upgrades \$224,000
- Small Diameter Mains \$30,000,000*
- New 1 MG Water Storage Tank \$2,100,000

Total \$32,324,000

*Annual Program of Water Main Replacement is Recommended

Tighe&Bond

Summary of Water and Sewer Recommendations

	<u>Sewers</u>	<u>Water</u>
Infrastructure Value	> \$60,000,000	> \$60,000,000
System Age	Old	Old
Maintenance Status	Needs Attention	Improvements Needed
Operating Budget Increases	\$205,000	\$75,000
Short Term Capital Needs	\$1,545,000	\$7,136,000
Long Term Capital Needs	\$655,000+*	\$32,324,000

*Will increase based on Annual TV Inspection Program and Follow-Up Studies

Tighe&Bond

Comments?

All comments on tonight's public forum should be addressed to:

Michael Wrabel
Director of Public Works
413-567-3400
mwrabel@longmeadow.org

Please respond by February 29, 2008



Questions?

Tighe&Bond