

## Background

- 1998 - Phase I and II Infiltration and Inflow (I&I) Report (CDM)
- January 2013 - Phase III Infiltration and Inflow (I&I) Report and Presentation
- March 2013 - Town Submits Report to EPA to serve as the Town's Combined Sewer Overflow (CSO) Long Term Control Plan (LTCP)



## Key Findings (Phase III Report)

- I/I was found in sewer mains, manholes and services
- Majority of I/I was found from private service laterals
- Town must address private I/I to achieve significant I/I removal
- Direct inflow sources suspected to remain that significantly contribute to CSO events
- Additional investigation needed to identify specific inflow sources (many believed to be private)



## Recommendations 5-Year (Phase III)

- CIP Projects - \$500k to \$1,000k per year
- Capital Projects and Rehabilitations (Including Jady Hill Project)
- Additional Evaluations
- Regular Confirmation Evaluations



## CSO LTCP Implementation "Table 14-1"

Sewer Improvement Project/Program	Total Budgetary Cost ***	Project Year														
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	
<b>Initial Requirements 2</b>																
Facility Plan	\$75,000															
Design	750															
Construction	750															
Phase I On-Line (I-Reg/L) 3	750															
Phase II On-Line (I-Reg/L) 3	750															
Phase III On-Line (I-Reg/L) 3, if necessary, Top 4	750															
<b>Long Term CSO Control Plan</b>																
<b>Initial Report</b>																
Initial Report 2013	\$1,000,000															
Construction	\$1,000,000															
Construction/Assessment	\$100,000															
Additional Evaluations/Measurements/TC/Implementation	\$100,000															
Monitor Assessments	\$100,000															
Operating 10 Year/Outside Drive 14	\$400,000															
Design	\$400,000															
Construction/Implementation	\$400,000															
Construction/Assessment	\$400,000															
<b>Other/Collection 5</b>																
Northwest Avenue Sewer	\$100,000															
South Street Sewer	\$100,000															
Sewer Line Replacement	\$100,000															
<b>Subtotal Funding CIP Sewer Projects</b>																
<b>Initial, Total, LTCP AND Ongoing Annual CIP and Other Costs and Allocation</b>																
<b>Total</b>																

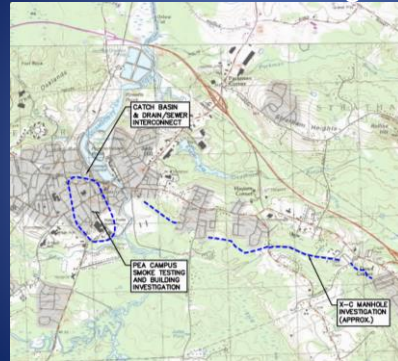


## 2014 Field Investigations

- The following investigations were performed as recommended under “Additional Evaluations” line item of the CSO LTCP (Table 14-1):
  - Cross Country Manhole Inflow Investigation
  - Smoke Testing
  - Building Inspections (PEA)



## 2014 Field Investigations

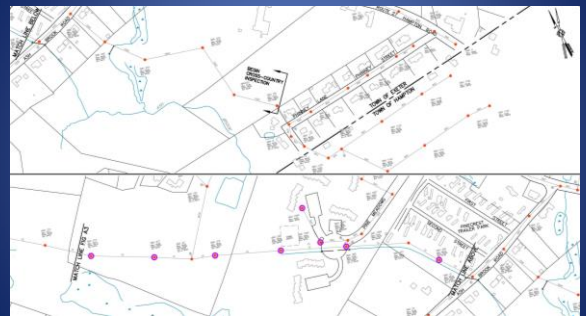


## Cross-Country Manhole Investigation

- Cross-country manholes (Ashbrook Rd. to Marlboro St.)
- Low lying areas
- Local knowledge
- Focus on inflow



## Cross-Country Manhole Investigation



### Manhole Evaluation - Inflow



### Manhole Evaluation - Inflow



### Manhole Evaluation - Inflow



### Manhole Evaluation - Infiltration



### Manhole Evaluation - Infiltration



### Manhole Evaluation - Infiltration



### Smoke Testing



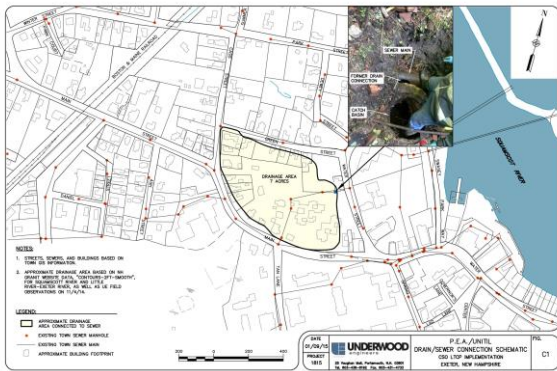
### Smoke Testing



### Smoke Testing



### Smoke Testing



### Direct Drainage Connection

- Estimated 4 – 6 million gallons/year (40" annual rainfall)
- Estimated 2 MGD peak hour flow during intense rainfall (0.5" - 1" per hour)
- Flows bypassed diversion structures with direct path to MPS



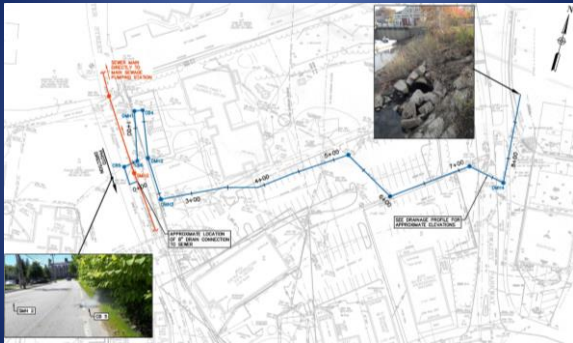
### Smoke Testing – Tidal Influence



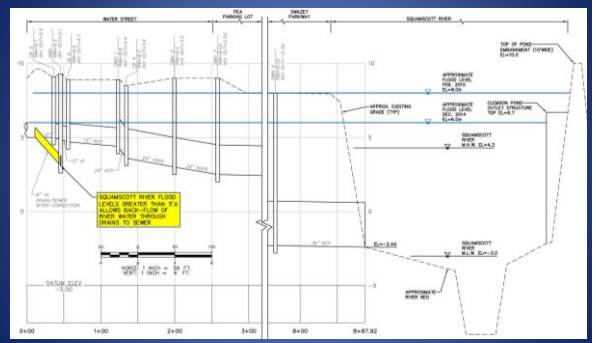
### Smoke Testing



### Tidal Drain/Sewer Interconnection



### Tidal Drain/Sewer Interconnection

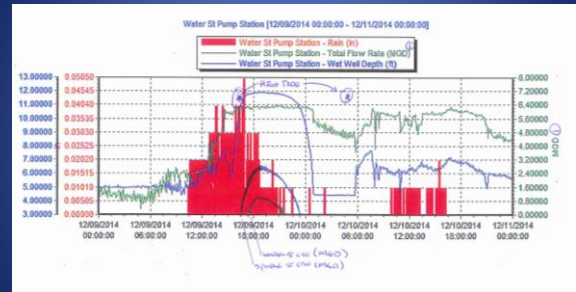


## Tide Influence

- Estimated 3-4 MGD peak flow rate into sewer during extreme high tide events from this connection
- Flows bypassed diversion structures with direct path to MPS
- Other direct connections may remain



## Tide Influence (December 9, 2014 CSO Event)

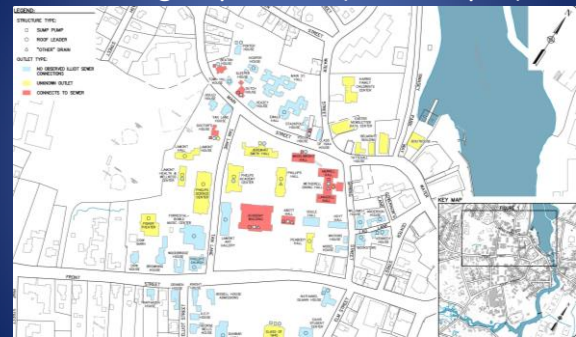


## Building Inspections (PEA Campus)

- 92 Buildings Inspected
- 46 sump pumps (35 buildings)
  - 17 sump pumps to sewer (14 buildings)
- 2 yard drains (2 buildings) connected to sewer
- 26 Follow-up inspections recommended
  - 10 sump pumps (9 buildings)
  - 36 roof leaders (8 buildings)
  - 71 other drains (8 buildings)

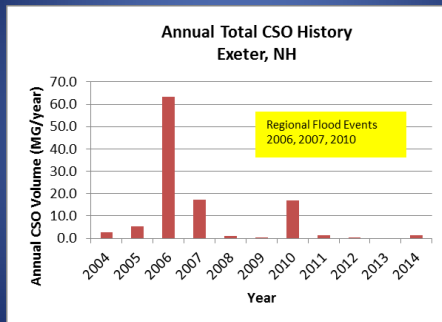


## Building Inspections (PEA Campus)





## Annual CSO



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## Flow Data Management

- Essential to have reliable flow data
- Discrepancies in the reported flows were identified in Summer 2014
- Recommend increased frequency of calibration/monitoring

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## Town-Wide Sump Pump Mitigation Program

- Policy Statement
- Approach
  - Sump pump educational tri-fold flyer
  - Compliance questionnaire
  - Compilation of results

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## QUESTIONS



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