

Finding Solutions to Our Coastal Challenges
Salem Sound Coastwatch 25th Anniversary Symposium

Sleuthing for Toilets that Flush into the Sound – Removing Illicit Connections

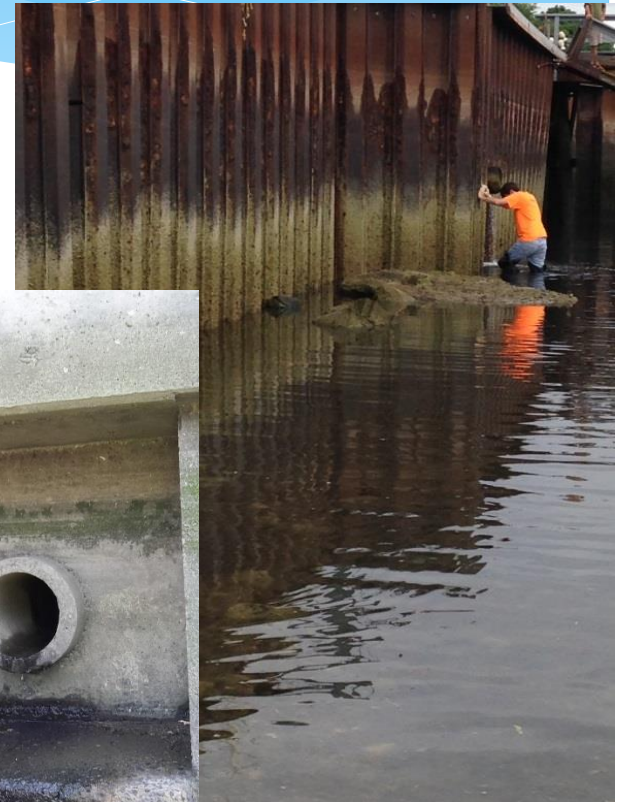


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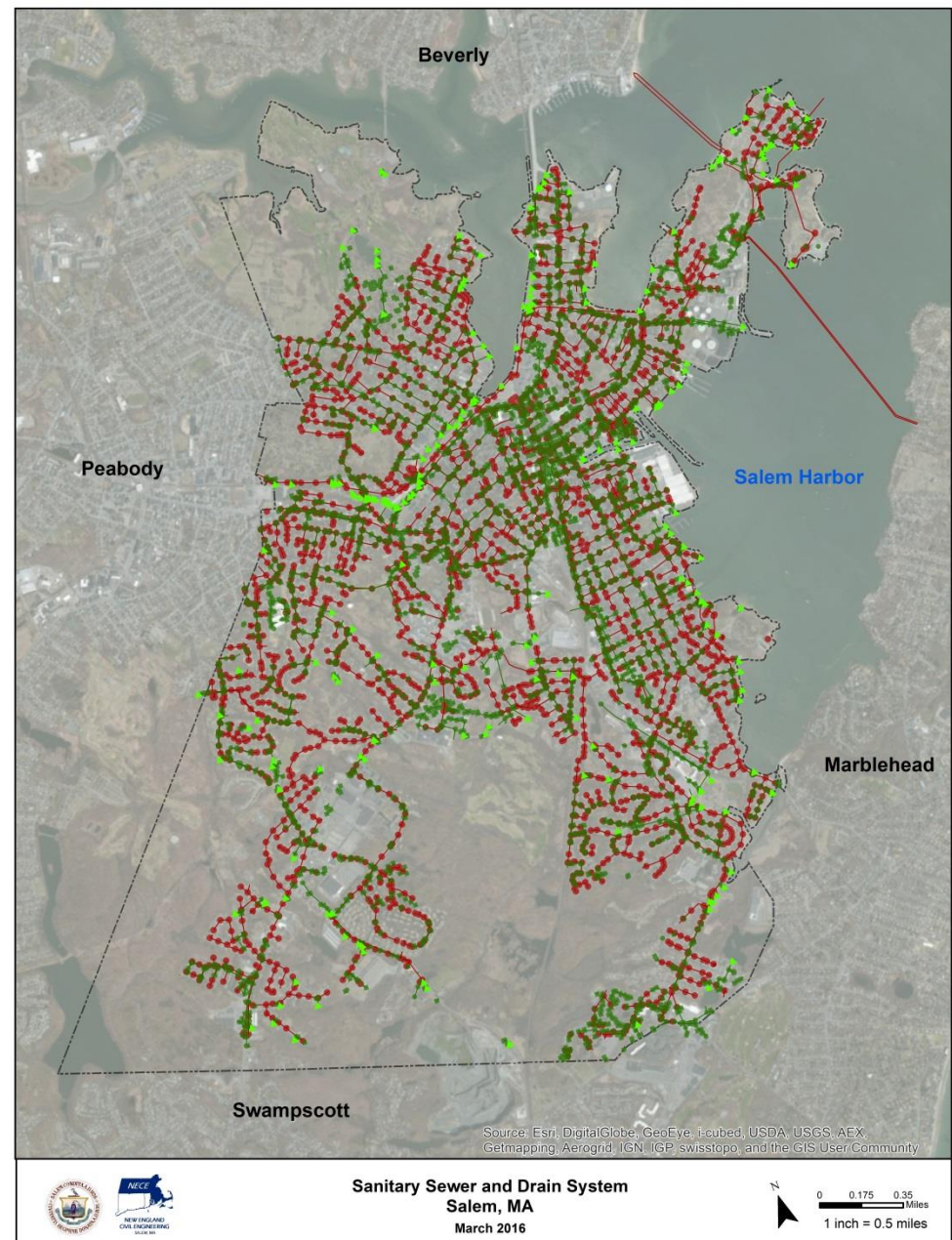
What triggers an investigation?

- * Ongoing outfall monitoring & screening
 - * Part of City of Salem MS4Permit
- * Resident concerns/SSCW Alerts
- * DPW observations



Illicit Discharge Detection & Elimination

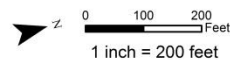
- * Begins with a map
- * Salem has approximately:
 - * 200 outfalls
 - * 2,500 drain manholes
 - * 380,000-feet drain pipe
 - * 3,400 catchbasins
 - * 3,050 sewer manholes



Outfall - Catchment Delineation



IDDE
Salem, MA
Thursday, March 17, 2016



Catchment Tracing (IDDE)

Illicit Discharge Detection and Elimination Plan



Open & observe “junction” manholes

Collect and process sample of any observed flow



IDDE
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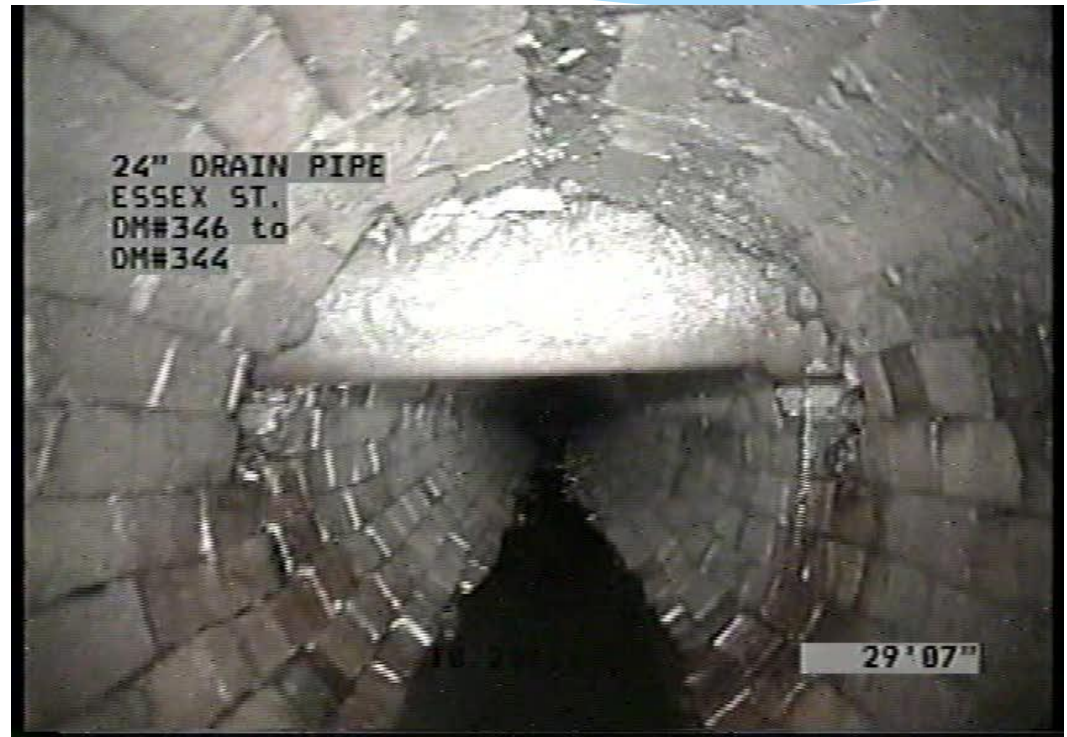
0 75 150 Feet
1 inch = 150 feet

CCTV Pipe Inspection



Types of Illicit Discharges

- * Direct sewer services to drain line
- * Broken sewer services
- * Leaking sewer services
- * Aging sewer lines
- * Sewer backups migrating into drain pipe



Types of Illicit Discharges

Direct Sanitary Sewer Service Connections & Leaking Sewer Services



Types of Illicit Discharges

Aging Infrastructure i.e. old pipes



Types of Illicit Discharges

Sanitary Sewer Backups



Cleaning wipes and grease flushed into sewer pipes are becoming constant problems for cities !



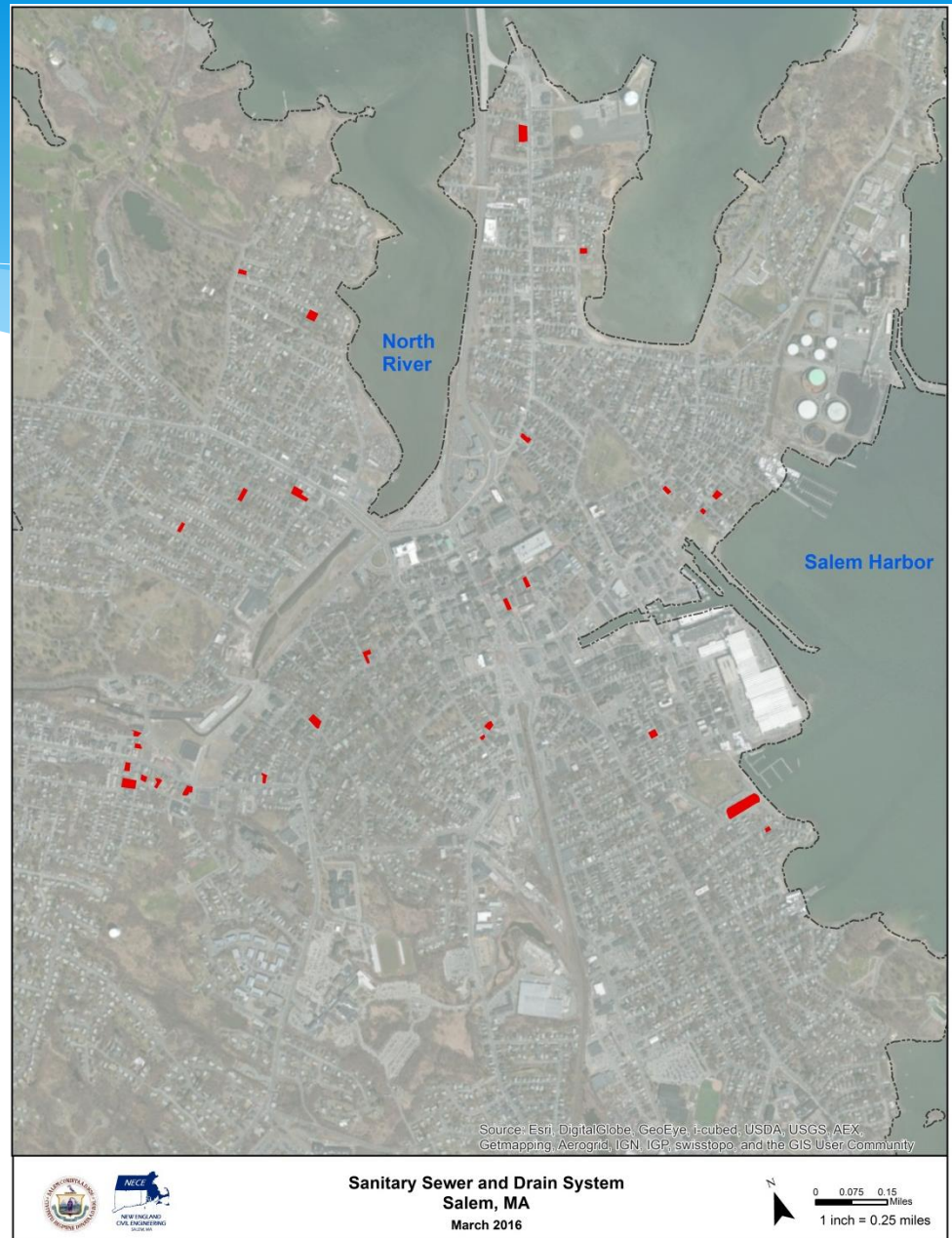
Challenges to the Investigations

- * Tides may affect access and sample results
- * Pipe locations/access to outfall
- * Pipe crossings prevent CCTV inspection
- * Pipe material/shape or debris



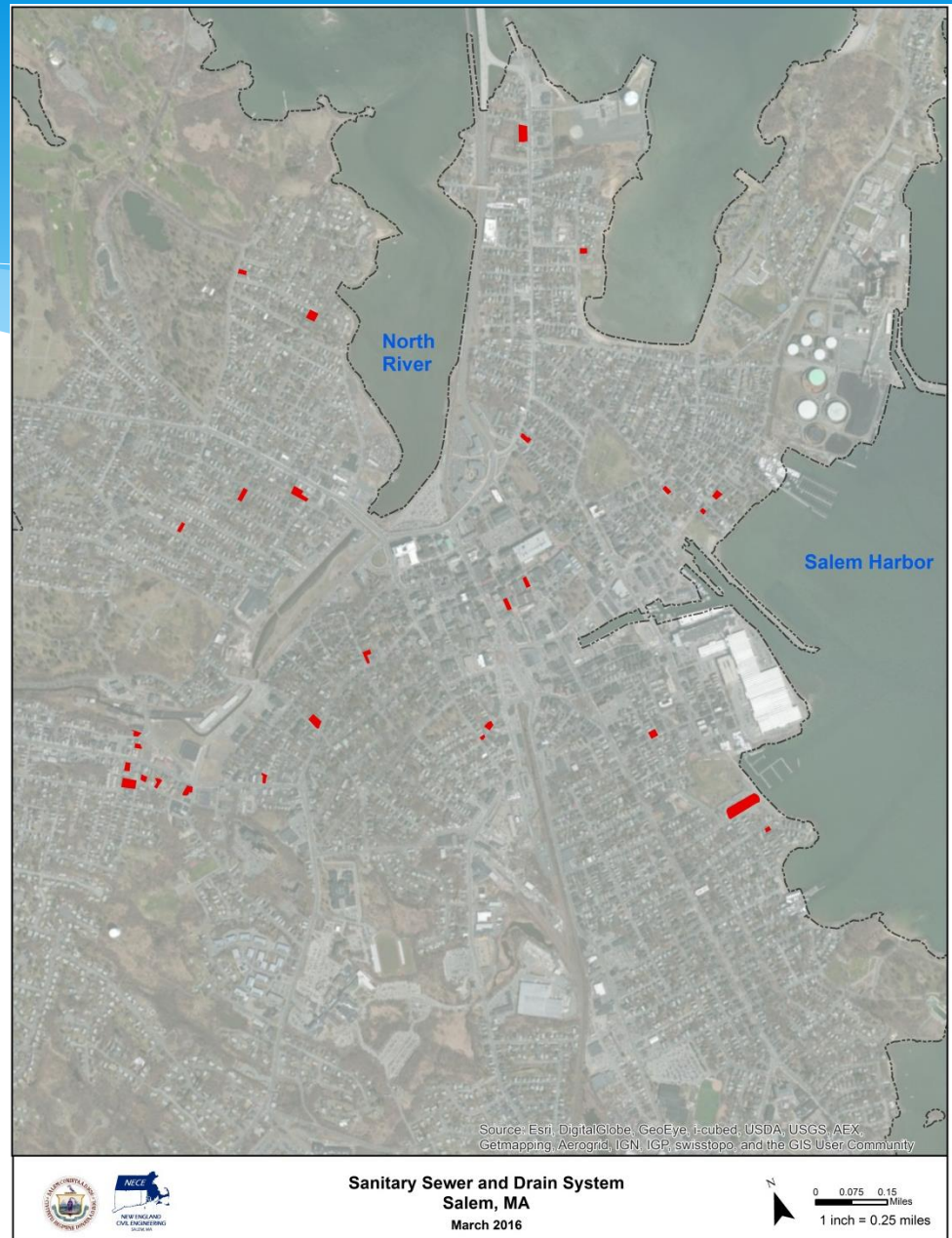
Success!

Over the past 4 years the City of Salem has repaired/replaced over **37** broken services, leaking services, direct connections, leaking sewer mains...



Moving Forward...

Continuing maintenance, monitoring and education is needed to identify and address aging infrastructure, avoid sewer backups and to prevent new illicit connections to the drain system.



Questions?

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