Sewer Lateral Rehab Solves (SSO) Problems
A lesson in Public Relations
October 10, 2019

Thomas Nagle PE, Senior Project Manager
Steve Godfrey PE, Wisconsin Client Manager
Presentation Overview

Part 1 – Steve Godfrey

- A Brief History of the Clean Water Act
  - As it relates to Private Property Sources
- Migration of I/I to private property sources
- Changing attitudes towards private property I/I

Part 2 – Tom Nagle

- Example of a Successful Lateral Rehab Project
  - Need for project
  - Public attitudes and involvement
  - Getting public support – Community buy-in
- Implementation and results
<table>
<thead>
<tr>
<th>Public Sources</th>
<th>Private Property Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Manholes and sewers</td>
<td>• Connected roof drains</td>
</tr>
<tr>
<td>• Sewer lines</td>
<td>• Illegal sump connections</td>
</tr>
<tr>
<td>• Storm sewer connections</td>
<td>• Connected foundation drains</td>
</tr>
<tr>
<td>• Drain tiles/area drainage</td>
<td>• Service laterals</td>
</tr>
</tbody>
</table>

- **Public Sources:** 50% - 75% of total I/I
- **Private Property Sources:** 25% - 50% of total I/I
The Clean Water Act

The driving force for the I/I removal industry

A lesson in history
Post WWII – Polluting America’s Waters
Fast forward 20 years – 1960’s
Pollution is still a major problem!

- Continued environmental degradation
  - Polluted lakes and streams – fish kills
  - Endangered plants and animals
  - Beach closings

- Growing health concerns
  - Gastro-intestinal illnesses
  - Reproductive problems
  - Neurological disorders
Pollution Found To Cause Mutations
The Social Change Movements

• Civil Rights marches and riots
• Anti-war protests
• Women’s rights movements
• The environmental movement

What was the “smoking gun” that lead to action?
Cleveland Ohio – 1968
Fire Breaks Out

On The Cuyahoga River!
Cuyahoga River Fire Receives National Attention

- Headline News
- Time Magazine Articles
- Environmental protests
- Pressure on government to take action

Anarchy In The Streets!
The Federal Government Takes Action

- October 18, 1972 – Congress passes “The Water Pollution Control Act Amendments of 1972” – by vote of 247 to 43
- Goal of the WPCA Amendments:
  - **Restore America’s rivers, lakes and streams as fishable, swimmable waters.**
How Does Congress Achieve the Goal?

- Establish water quality standards
- Require all dischargers to have permits
- Require WWTPs to meet effluent limits
- Set strict deadlines
- EPA will enforce permit requirements:
  - Fines – up to $20,000 per day
  - Imprisonment – up to 6 years
- Taxpayer Cost of WPCA > $1 trillion!
Who Pays for I/I Removal programs?

- **The good news:**
  Public sector cost for I/I is 75% grant eligible

- **The bad news:**
  Private sector cost is **not** grant eligible!

How did that play out?
How Did Communities Address Private property sources?

• **Sewer rehab projects focused on public sources**
  - Manhole repairs and grouting; cover replacements
  - Sewer repairs, grouting, slip lining, replacements, etc.
  - Paid by the utility through rates

• **Sump pumps and roof drains were often addressed**
  - Easy to prove
  - Illegal by ordinance or state law
  - Relatively low cost to homeowner

• **Private lateral and foundation defects ignored**
  - Inspections require homeowner consent
  - Costly repairs ($2,500 to $10,000+)
  - Unhappy and uncooperative citizens (voters)
How Effective Were Sewer Rehab Projects?

- SSES/Rehab found many problems and repaired many I/I sources
- Peak flow were “shaved” but I/I problems often persisted
- Continue with more SSES/Rehab of sewers and manholes

We were just chasing I/I around!
Stop lower leaks > Groundwater rises > Water migrates to other defects
We know we have an I/I problem from private laterals .... but let’s not talk about it!
Beginning in the 2000’s More Emphasis on Fixing Laterals

What Changed?

- Technology?
  - Advances in televising – launch camera from mainline
  - Cured in place lining from mainline – trenchless
  - More efficient and cost-effective repairs

 Definitely!
Beginning in the 2000’s More Emphasis on Fixing Laterals

What Changed?

- Utility and City official attitudes?
  - High I/I after sewer and manhole rehabs
  - Private source reduction needed to prevent SSOs
  - Increasing pressure from regulatory agencies

Reluctantly decide to proceed with projects
Beginning in the 2000’s More Emphasis on Fixing Laterals

What Changed?

Homeowners attitudes?

• My civic duty?

• Anything to help the City?

• Willing to pay to ”help the cause”?

Not so much!
Presentation Overview – Part 2

• Big Picture Discussion on the Problem
• Define the Basin
• Scale and Scope of the Problem
• Sanitary Sewer Lift Station Improvements
• Public Sewer Improvements
• Getting Public Buy-in to Perform Private Sewer Improvements
• Construction of Public and Private Lateral Lining
• End Results
Olympia Fields, Illinois

Olympia Fields, IL

- Suburb of Chicago
- Population of +/- 5,000
- Located within the MWRD Territory
Project Area – Graymoor Subdivision
Project Area – Graymoor Subdivision

- 141 Homes
- Built in the 60’s
- Considered Mansions
  - Very Large Lots
  - Very Large Setbacks
- 15,200’ – Public Owned Sewers
- 16,800’ – Private Owned Service Lines

Tributary to Butterfield Creek
Butterfield Creek
System was having chronic Sanitary Sewer Overflows (SSO’s)

Occasional Basement Backup (BB)
Graymoor Lift Station

Deficient Pumps & Controls

Aging Equipment and Structural Issues

Subjected to flooding from Butterfield Creek
Graymoor Lift Station

FEMA Floodplain Map

Previous Lift Station Location (located within the floodplain)
Graymoor Lift Station

Location Relocated Lift Station
Graymoor Lift Station
Graymoor Lift Station

Prefabricate Control Building
Graymoor Lift Station
Graymoor Lift Station
What could possibly go wrong?

MWRD mandated the lift station be downsized by 50% due to the population being served

- 1960’s Pre-upgrade Capacity = 800,000 gallons a day
- 2012 Post-upgrade Capacity Based Upon Population Equivalency = 380,000 gallons a day
Sewer Investigations and Sewer Rehabilitation Projects

- Investigations
  - Smoke testing
  - Manhole Inspections
  - House to House (sump pump disconnects)
Sewer Investigations and Sewer Rehabilitation Projects

- Manhole Repairs
- Point Repairs
- Sewer Lining
Problem still Occurring

Despite all the work done to rehabilitate the publicly owned sanitary sewer the SSO’s and BB’s were still occurring

Next logical step...
Investigate the privately owned sewer laterals in the area
Private Service Line
Lateral Service Lines

- Lateral Line Sewer Lengths (from main line to home) 16,888’
- Average Lateral length 115’
- Minimum Lateral Length 39’
- Maximum Lateral Length 224’

We needed residential buy-in for the project to be a success
We Needed Cooperation From the Majority of the 141 Individual Homeowners
Public Information

- Public Notification Letter
- Public Meetings
- Web Page
- Flyers / Door Hangers
- Press Releases
- Face-to-Face Communications with the Residence
- Home Owners Association Involvement
Mayor and Board Held Several Public Town Hall Meetings
Presentations at Village Board Meetings
Offer to the Residents

Offer to the resident

- The Village will rehabilitate their service line
- A value of $10K - $15 per home (dependent on length)
- We would add an additional 50 years of useful life to their service line
- Reduce the chances of basement backups due to root intrusion
- Make their home more valuable!

We were going to deliver this project to them on silver platter

What could possibly go wrong?
What could possibly go wrong?

Anarchy in the Streets!!!!

These are the reasons the residents gave us for not signing up

• “It’s a government plot to find other violations on my property”
• “It’s not needed, my service line is working fine now”
• “You can’t enter my property for any reason”
• “I’m against it just because the Mayor is for it”
Ultimately - 95% Community Involvement

Total Properties 141
Allowed Access 134 (95%)
Denied Access 7 (5%)
Public and Private Partnership

Main Line Sewers (green)

Private Property Laterals (red)

Right-of-Way Laterals (yellow)
Pre-Televise, Cleaning and GPS Locates for GIS Mapping
Lateral Locations
Lateral Locations
Lateral Line Defects

Pipe Collapse

Longitudinal Cracking
Lateral Line Defects

Hole in pipe near manhole connection

Void visible on a hinged section of a lateral
Lateral Line Defects

Tap Root in the Lateral Lines

Root ball Intrusion (½” opening)
Service Line Point Repairs
Preparing the Lateral Liner for Installation
Lateral Lining

Lateral Launcher
Village of Olympia Fields
Pre and Post Lateral Lining
RDII Flow Analysis

Reduction of 800,000 Gallons - Pre Rehab (Spring 2015) - Post Rehab (Summer/Fall 2016)

75% Reduction in RDII
“This successful project is further evidence of the Village’s strong commitment to the reduction of inflow and infiltration of the Village’s sanitary sewer.”
- President Debbie Meyers-Martin
Village of Olympia Fields

“Olympia Fields should be commended for being so proactive.”
- President Mariyana Spyropoulos
Metropolitan Water Reclamation District

“With our partner, the Village of Olympia Fields, we have been able to complete this project that will help protect the health and safety of area residents.”
- Colonel Christopher Drew
Commander, U.S. Army Corps of Engineers, Chicago District

Village of Olympia Fields
Sanitary Sewer Lateral Lining Project
Contact Information

**Thomas Nagle PE**, Senior Project Manager
Robinson Engineering, Ltd.
E-mail: Tnagle@reltd.com
Phone: 708-210-5690

**Steve Godfrey, PE**, Wisconsin Regional Client Manager
Robinson Engineering, Ltd.
222 Main Street
Racine, WI 53403
E-mail: sgodfrey@reltd.com
Phone: 262-812-7247