Hidden Capacity
How Proper Maintenance and Cleaning of Sewer Systems Can Have Huge Benefits!

Presentation by the Jersey Water Works CSO Committee
For the NJ CSO Permittee Network Meeting
April 17, 2019 Hoboken, NJ
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• A Report on How Proper Maintenance and Cleaning of Sewer Systems Can Have Huge Benefits!

• Developed by the Jersey Water Works CSO Committee 2018

• Jersey Water Works Website - www.jerseywaterworks.org
  – Tools and Resources Tab
NJ AIMS Fact Sheet, “Impact of Proper Maintenance of Combined Sewer Overflow System on Flooding in the City of Camden”

- Modeled Camden’s CSS to predict changes in the volume of stormwater conveyed to:
  1) WPCF, 2) CSOs, 3) Flooding

- Three levels of obstruction were simulated:
  25 %, 50 %, and 75 % of the pipe opening
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Modeling of Camden’s Combined Sewer System

Changes in Volume of Stormwater Discharged to Flooding (MGY)

Baseline (clean pipe)  | 25%  | 50%  | 75%
--- | --- | --- | ---
37 | 55 | 96 | 235

Source: Jersey Water Works – NJ AIMS Fact Sheet, “Impact of Proper Maintenance of Combined Sewer Overflow System on Flooding in the City of Camden”, p3
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Cost-effective “Gray” BMP Controls

1. Collection System Inspection Program
2. Sewer Line Cleaning
3. Sewer Repair
4. Tide Gate Maintenance and Repair
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Cost-effective “Gray” BMP Controls

5. Maintenance/Repair/Rehabilitation of Regulators

6. Adjustment of Regulator Settings

7. Upgrade/Adjustment of Pump Operations

8. Maintenance of CSO Outfalls and Controls

9. Control of Excessive Inflow and Infiltration
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Cost-effective “Gray” BMP controls Align with NMCs

• Proper operation and regular maintenance programs of the sewer system and CSOs
• Maximum use of the collection system for storage
• Maximization of flow to the publicly owned treatment works for treatment
• Elimination of CSOs during dry weather
• Control of solid and floatcheable materials in CSOs
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NYCDEP Interceptor Cleaning Program

- Two-year project utilizing floating sonar device
- Surveyed 136 miles of sewers
- 19% or 26 miles needed cleaning
- Removed 29 million pounds of debris using vactor trucks and jetting
  - Provided **1.9 million MGD** of extra capacity
  - Large decrease in CSO discharges, estimated at **100 million MGY**
- Additional cost-effective gray projects
Table 2-1: Summary of Sewers Inspected & Cleaned by DEP BWSO & DDC in CY 2017

<table>
<thead>
<tr>
<th>METHOD</th>
<th>INSPECTED (miles)</th>
<th>CLEANED (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-House (Reactive)</td>
<td>182.90</td>
<td>182.90</td>
</tr>
<tr>
<td>In-House (Proactive)</td>
<td>340.79</td>
<td>340.79</td>
</tr>
<tr>
<td>CMOM Unit*</td>
<td>90.18</td>
<td>64.66</td>
</tr>
<tr>
<td>Lining</td>
<td>15.91</td>
<td>15.91</td>
</tr>
<tr>
<td>Guniting</td>
<td>1.91</td>
<td>1.91</td>
</tr>
<tr>
<td>Inspections &amp; Cleaning (DDC)</td>
<td>17.78</td>
<td>17.78</td>
</tr>
<tr>
<td><strong>TOTALS:</strong></td>
<td><strong>649.47</strong></td>
<td><strong>623.95</strong></td>
</tr>
</tbody>
</table>
A dirty sewer, with significant grease and oil build up, hinders wastewater flow.

A clean sewer, without grease or oil build up, allows appropriate flow downstream.

Source: NYC Department of Environmental Protection, State of the Sewers 2012, p.10
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Excessive Infiltration and Inflow

- Contribute to Sanitary and Combined Sewer Overflows
- Can exceed capacity of regional treatment plant and sewers
- Can result in increased CSOs downstream
- Permit requires reduction strategies for excessive I/I
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Excessive Inflow and Infiltration

Contributes to Sanitary and Combined Sewer Overflows

Source: City of Ft. Lauderdale: https://www.fortlauderdale.gov/departments/public-works/engineering/water-sewer-design

Source: Raleigh, NC: https://www.raleighnc.gov/services/content/PubUtilAdmin/Articles/SanitarySewerOverflows.html
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Benefits of a Comprehensive I/I Reduction Program

• Massachusetts Water Resources Authority
• Implemented comprehensive voluntary I/I program
• I/I contributes 55 - 65% (approx. 185 to 275 mgd) of MWRA’s annual wastewater flow
• Average daily sanitary flow approx. 150 mgd
• Completed local I/I reduction projects that have received MWRA financial assistance have been estimated to reduce flows by 90 mgd
1. Summary Reporting by CSO permittees
   – Sewer System and CSO cleaning/inspection activities
   – Evaluation/implementation of basic cost-effective gray BMP controls

2. Continued/enhanced inspections by NJDEP and USEPA
   – Standardized inspection reports
   – Enhanced field inspection of critical infrastructure
   – Share inspection results with wider audience
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**Recommendations (cont)**

3. Update NJPDES CSO permit requirements
   - List critical CSO infrastructure in permit
   - Real-time monitoring of key portions of the collection system
   - Annual Sewer System and CSO BMP Report

4. Increase awareness of funding opportunities for sewer system and CSO infrastructure improvements

5. Encourage sharing of technical and managerial/administrative resources
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• Links

How Proper Maintenance and Cleaning of Sewer Systems Can Have Huge Benefits!:  

Impact of Proper Maintenance of Combined Sewer Overflow System on Flooding in the City of Camden:  

NYCDEP Combined Sewer Overflows Annual BMP Report 2017:  

Massachusetts Water Resources Authority Annual Infiltration and Inflow Reduction Report for Fiscal Year 2018:  
http://www.mwra.state.ma.us/harbor/pdf/infinf.pdf