Rehabilitate or Replace – 10 Years of the Trenton Water Works Experience

Michael L. Altland, PE
Outline

• TWW System & Service Area
• Previous Cleaning and Lining Programs
• Replace Versus Rehabilitate
• Construction Issues
Background

• TWW Distribution System
  – 28 MGD Average Demand
  – Surface Water (Delaware River)
  – 4 Pressure Zones
  – 5 Municipalities
Background

- 683 Miles of Main
- 4”-36”
- Majority CI or DI
- Very limited other materials
Lining Status
(683 Total Miles of Main)

Scheduled Clean & Line
(21 Miles)

Cleaned & Lined
(129 Miles)

Not Lined
(171 Miles)

Foundry Lined
(362 Miles)
Historic Program

• TWW System
  – Chart of Lined and year
  – Map of area
Decades of Rehab
Annual Footage
FT/yr

37+ Miles Total
Rehab $/Year
Total new plus rehab

> $30 Million
Identifying Priority Areas

• Hydraulic Model
  – Updated regularly to include latest projects
  – Fire Flow analysis
    • Increase 4” to 8”
    • Looping mains
Model “C” Values

Indicator of Internal Roughness
Identify Priority Areas

- Customer Complaints
  - Pressure
  - “Red Water”
Priority Areas

- Main Breaks
• Water Quality Results
  – DBP Samples
  – UDF Results
Priority Areas

• Road Reconstruction

Drainage Projects
Priority Areas

- Road moratoria
Rehabilitate/ Replace

- 4” Main Question
  - C&L
  - Abandon in Place and Install New
Rehabilitate

• C&L Pros
  – Limited excavation
  – If low demand area, not increasing residence time
  – $70/lf vrs $125/lf new
Lined Pipe

Limited exterior corrosion
Rehabilitate/ Replace

• Replacement Pros
  – Improved Fire Flow

– Service Replacement (especially galvanized)
  • Driven Services
  • Eel Traps
C&L 4” Vrs. 8” Relay
Field Issues
Replacement Only

Service Transfers
Fire Hydrants/ Runouts
6” Valves

Valve Replacements

Rehabilitation
Valve Replacements

New Functioning Valves

Pennsylvania Section AWWA Annual Conference
May 8, 2014
Bethlehem, Pennsylvania
Field Leak

Replace Defective Main
8” Relay/ Replacement

Note Temporary Bypass in Place
Summary

• Rehabilitation Required
  - 171 Miles Unlined
  - Major Capital Investment
  - Most Cost Effective Method Still Rehab
Thank You and Questions?

Mike Altland, PE
Michael.altland@hatchmott.com
(973) 912 - 2523