Sewer Rehabilitation in Environmentally - Sensitive Areas

February 2019

WSSC SR3 Program

- Sewer repair, replacement, and rehabilitation
- EPA mandated consent decree
- 24 sewersheds proposed for rehabilitation
- Infiltration/Inflow reduction
ESA Site Conditions

- Locating assets
- Access along easements
- Confirming repairs
- Power utility easements
ESA Challenges

- Manhole access
- Overgrown easements
- How to get equipment in to do the repairs

Focus Project
WSSC ESA Rehabilitation Project

The Western Branch
• 70,485-acres area
• 760 miles of sewer lines
• 21,300 manholes
• 947 manholes identified for rehabilitation
• 300+ pipe segments identified for rehabilitation
• Broken into 15 study areas (geographically)
• Land use is diverse: built-out to very rural

Types of Repairs Planned for Western Basin
• Pipe lining
• External point repairs
• Internal spot repairs
• Grouting/joint sealing
• Manhole and sewer main replacement
• Lateral lining or replacement
• Mainline lateral sealing
• Stream restoration and pipe protection
• Manhole protection
• Manhole lining
• Replacing manhole frames and covers
• Replacing and raising manhole adjustments
Design Approach

ESA Design

Permitting
a. Non Environmental
b. Environmental

Engineering design
a. Concept finalization report
b. Permit ready
c. Final design
d. Construction ready design

Community outreach
a. Public notices
b. Right of entry
Desktop Review

Design Considerations
Access and layout of bypass of sewer lines
Design Considerations
Bypass sewer line: flow-through plug

http://www.lansas.com/multiflow.htm
Design Considerations

Walk behind equipment

Access Path Field Selection

Required repair
Path type
• Length of access path
• Pump size required
• Lining type
Access road
• Close proximity repairs
• Extent of impacts

The path of least resistance
Feasible/practical avoidance
• Steep slopes
• Tree impacts
• Wetlands
• Stream crossings
• RTE species
• Private Property
Repair Path Types

Foot Path
Super light duty:
- Limited to five passes in/out
- 5 psi
- Path <800’

Access road types:
- Drive-in
- Wetland protection matting
- Light-duty access
- Modified light-duty access
- High-use access
- Heavy-duty access
Access Roads Through the Woods

Close Proximity Repairs
Property Owner Access
Right-of-Entry Map

Letter Notices
Environmental Challenges

Protecting Environmentally-Sensitive Areas

Regulatory and other agencies

• U.S. Army Corps of Engineers
• Maryland Department of the Environment
• Maryland Department of Natural Resources
• Maryland National Capital Park and Planning Commission
• Maryland Historical Trust
Environmental Permitting Aspects and Requirements

- Historical resources
- Forests/trees (FSD, FCP, specimen trees)
- Wetlands/streams (JPA-tidal & non-tidal)
- Rare, threatened, and/or endangered species

Visualization

Inundated manholes
Forestry

**Forest stand delineation**

What currently exists?
- Species composition, size, age class, condition, etc...

Define the study area for a linear project.
- 100’ from the proposed access route CL or edge of LOD
- Private property
- Public property
  - Trees >6” identified and located within access route
  - Trees >12” identified and located within 25’ of access route CL
- All trees tagged and labeled
- All specimen trees within 100’ of access road must be located

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Wetlands

- Protected by the State and Federal governments
- Tidal and non-tidal have different protection measures
- Must meet three criterion:
  1. Hydrology
  2. Vegetation
  3. Soils
- State-regulated buffer
  - 25’
  - 100’ expanded buffer for wetlands of special State concern
- All impacts must be reported and mitigation measures provided
Species Protection

- Where do they exist?
- Minimize potential impacts
- BMPs
- RTE surveys
- RTE avoidance:
  1. Perform work during dormant periods
  2. Time of year closures
  3. Avoid species populations
     - Find a new route
     - Remove and replant species

Rare, threatened, and/or endangered (RTE) species

Streams

- Protect the asset(s)
- Soft measures
- Stream enhancement
- Self-mitigating
- Stream restorations
Pipe Relay and Stream Restoration

Deliverable

Environmental Surveys
Minimal Impacts: What We’re Trying to Protect

ESA Repairs: Access Roads
ESA Repairs: Manholes

ESA Repairs: Equipment
Conclusions

- Trenchless solutions are impacted by what's going on at the surface
- Understand permitting requirements before design
- Upfront planning can reduce environmental impacts
- Standardizing details and technology increased efficiency
- Engaging contractor in design provide a constructible solution minimizing changes to permitting
Thank you.

Questions?