Mayo WRF ENR Upgrade and Expansion Project Update

Annapolis Community Outreach Meeting
Blue Heron Center, Quiet Waters Park
January 12, 2017 / 6:30 PM – 8:30 PM
Agenda

1) Project Background
2) Construction Methods
3) Annapolis Community Impacts
5) Schedule
Project Background
Historical Recap & The Selected Alternative

Seven Preliminary Expansion Alternatives were suggested in the Mayo WRF ENR Upgrade and Expansion Alternatives Report (Jan. 2010).

With MDE’s approval, the three ‘best’ Alternatives were examined in GHD’s Preliminary Engineering Report (Nov. 2012).

The selected Alternative will require a sewage pipeline to be constructed from the Mayo WRF to the Annapolis WRF:

• The Mayo WRF will be decommissioned and converted into a regional pumping station.
• A force main will pump all septic tank effluent flow collected from the Mayo Service Area to the Annapolis WRF for treatment and disposal.
• The treated effluent would be discharged through the existing Annapolis WRF outfall into the mouth of the Severn River.
Overall Project

Legend:
- Contract 1: Force Main - Mayo WRF to South River
- Contract 2: Force Main - South River Crossing
- Contract 3: Force Main - Quiet Waters Park
- Contract 4A: Force Main - Hillsmere Drive to Edgewood Road
- Contract 4B: Force Main - Edgewood Road to Annapolis WRF
- Contract 5: Mayo WRF and Annapolis WRF Modifications
- Contract 6: Glebe Heights Pumping Station and Force Main
- Contract 7: Mayo WRF and Glebe Heights Decommissioning
History of Public Outreach Events

The Annapolis Community and the Annapolis Neck Federation
- April 4, 2013 - Annapolis Senior High School
- June 18, 2014 - Blue Heron Center, Quiet Waters Park
- October 22, 2014 - Blue Heron Center, Quiet Waters Park
- March 4, 2015 – Blue Heron Center, Quiet Waters Park
- April 16, 2015 – Eastport Library
- August 17, 2016 - Blue Heron Center, Quiet Waters Park

The Mayo Community and the Mayo Citizens Advisory Committee
- October 9, 2012 - The Mayo Water Reclamation Facility
- December 11, 2012 - The Mayo Water Reclamation Facility
- May 13, 2014 - The Mayo Water Reclamation Facility
- October 7, 2014 - The Mayo Water Reclamation Facility
- October 7, 2015 – The Mayo Water Reclamation Facility
- March 21, 2016 – Mayo Water Reclamation Facility
- May 17, 2016 – South River High School
- June 17, 2016 – Loch Haven Community Association
- June 23, 2016 – Beverly Beach Community Association
- June 20, 2016 – Glebe Heights Community Association

Newspaper Articles in the Capital Gazette
- March 26, 2013 - “County plans to pump Mayo sewage to Annapolis”
- October 21, 2014 - “Approval near to pump Mayo sewage to Annapolis”
- November 4, 2015 – “Big Dig from Mayo to Annapolis Begins”
- January 10, 2017 – “Mayo sewage system connection to Annapolis probably not ready until spring”

Past presentation materials and newspaper articles are available upon request.
Construction Methods
HDD Installation Method Details

PILOT HOLE

PRE-REAMING

PULL-BACK

Schematics are courtesy of the Directional Crossing Contractors Association

(figures courtesy of www.dipra.org)
<table>
<thead>
<tr>
<th>Pipeline Description</th>
<th>Date Installed (year)</th>
<th>Pipe Diameter (inches)</th>
<th>Pipe Length (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marley Creek Crossing</td>
<td>1990</td>
<td>24&quot;</td>
<td>1,200</td>
</tr>
<tr>
<td>Woodland Beach FM</td>
<td>2005</td>
<td>24&quot;</td>
<td>8,400</td>
</tr>
<tr>
<td>Annapolis Junction FM</td>
<td>2004</td>
<td>15&quot; &amp; 16&quot;</td>
<td>13,800</td>
</tr>
<tr>
<td>Riva Road FM</td>
<td>2012</td>
<td>14&quot;-18&quot;</td>
<td>6,000</td>
</tr>
<tr>
<td>Mayo Influent FM</td>
<td>1998</td>
<td>16&quot;</td>
<td>8,100</td>
</tr>
<tr>
<td>Arundel Gateway FM</td>
<td>2015</td>
<td>16&quot;</td>
<td>19,500</td>
</tr>
<tr>
<td>Cayuga Farms FM</td>
<td>2004</td>
<td>16&quot;</td>
<td>15,200</td>
</tr>
</tbody>
</table>
Pipe Stockpiling
Staging Area
Visual and Sound Buffers
Visual and Sound Buffers
Entry Pit
Exit Pit
Pipe Fusion
Pipe Laydown
Valve Vault and Odor Control
Annapolis Community Impacts
Current Progress
Contract 4A Hillsmere – HDD Overview
HDD 8 Pipe Laydown Area - QWP
HDD 9 Pipe Laydown & Staging Area – Hillsmere Library

- Library to remain open
- Min 50% of parking available at all times
- Cul-de-sac closed, one lane of road to remain open.
HDD 9 Pipe Laydown & Staging Area – Hillsmere Library
Staging Area 11 – Plaza and McDonald’s’s

Business entrances to remain open

Bus stop temporarily relocated out of construction
HDD 10 Pipe Laydown Area – Edgewood Rd

All entrances to remain open
Contract 4B Edgewood – HDD Overview
HDD 10 Exit & HDD 11 Entry – GIANT Shopping Center
HDD 10 Exit & HDD 11 Entry – GIANT Shopping Center
HDD 11&12 Pipe Laydown Area – Edgewood Rd

PIPE LAYDOWN AREA

STAGING AREA 14
HDD 12 ENTRY PIT

STAGING AREA 13
HDD 11 EXIT PIT
HDD 12 EXIT PIT

PIPE LAYDOWN AREA
HDD 11 Pipe Laydown – Edgewood Rd.
HDD 11 & 12 Exit – Edgewood Rd.

Temporary Lane Closure

Exit Pits
HDD 11 & 12 Exit – Edgewood Rd.
HDD 11 Pipe Laydown – Edgewood Rd.
## Overall Project Schedule

<table>
<thead>
<tr>
<th>Task</th>
<th>Duration</th>
<th>Start Date</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notice to Proceed</td>
<td>-</td>
<td>March 14, 2014</td>
<td>-</td>
</tr>
<tr>
<td>Schematic Design Phase</td>
<td>125 days</td>
<td>March 14, 2014</td>
<td>September 5, 2014</td>
</tr>
<tr>
<td>Design Development Phase</td>
<td>142 days</td>
<td>May 14, 2014</td>
<td>November 27, 2014</td>
</tr>
<tr>
<td>Construction Document Phase</td>
<td>154 days</td>
<td>September 12, 2014</td>
<td>April 15, 2015</td>
</tr>
<tr>
<td>Bidding/Award Phase*</td>
<td>130 days</td>
<td>April 15, 2015</td>
<td>August 12, 2016</td>
</tr>
<tr>
<td>Construction*</td>
<td>555 days</td>
<td>October 9, 2015</td>
<td>April 16, 2017</td>
</tr>
</tbody>
</table>

* Bidding/Award Phase and Construction time frames overlap for the six separate contracts

- Design and construction schedule for the Mayo and Glebe Heights decommissioning has yet to be determined.
# Force Main Construction Schedule Summary

<table>
<thead>
<tr>
<th>Contract</th>
<th>Duration</th>
<th>Start Date</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Loch Haven</td>
<td>180 days</td>
<td>February 12, 2016</td>
<td>August 10, 2016</td>
</tr>
<tr>
<td>2. South River</td>
<td>280 days</td>
<td>October 9, 2015</td>
<td>July 12, 2016</td>
</tr>
<tr>
<td>3. Quiet Waters Park</td>
<td>190 days</td>
<td>January 4, 2016</td>
<td>July 12, 2016</td>
</tr>
<tr>
<td>4A. Hillsmere</td>
<td>180 days</td>
<td>October 18, 2016</td>
<td>April 16, 2017</td>
</tr>
<tr>
<td>4B. Edgewood</td>
<td>180 days</td>
<td>October 13, 2016</td>
<td>April 11, 2017</td>
</tr>
</tbody>
</table>
Keep in Touch & Up to Date

View a copy of this presentation at:
http://www.aacounty.org/DPW/

Project Updates:

Follow-up Comments or Questions?
Contact pwcust00@aacounty.org
Sharon Cole, pwcole01@aacounty.org
Force Main Specifications

Pipe & Alignment Design Criteria

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Length</td>
<td>25,500 ft</td>
</tr>
<tr>
<td>Individual HDD Bores</td>
<td>12</td>
</tr>
<tr>
<td>Pipe Material</td>
<td>HDPE DR-11 (land based HDD)</td>
</tr>
<tr>
<td></td>
<td>HDPE DR-7.3 (South River crossing)</td>
</tr>
<tr>
<td>Pipe Size</td>
<td>20 in DIPS, 24 in IPS</td>
</tr>
<tr>
<td>HDD Min Depth</td>
<td>25 ft BGS</td>
</tr>
<tr>
<td>HDD Ave Depth</td>
<td>45 ft BGS (100 ft below South River)</td>
</tr>
<tr>
<td>HDD Max Depth</td>
<td>75 ft BGS (125 ft below South River)</td>
</tr>
</tbody>
</table>

Operation Details

<table>
<thead>
<tr>
<th>Description</th>
<th>Average</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Pressure</td>
<td>30 psi</td>
<td>100 psi</td>
</tr>
<tr>
<td>Surge Pressure</td>
<td>200 psi</td>
<td>400 psi</td>
</tr>
<tr>
<td>Velocity/ Flowrate</td>
<td>1.1 ft/sec @ 800 gpm</td>
<td>4.1 ft/sec @ 3040 gpm</td>
</tr>
</tbody>
</table>
Site Investigations

- Topographic and Hydrographic Survey
- Quality Level A and B Subsurface Utility Location
- Traffic Studies
- Wetlands Delineation
- Forest Stand Delineation
- Geotechnical Investigation

Soil Boring Summary

<table>
<thead>
<tr>
<th>Boring Type</th>
<th>No. of Borings</th>
<th>Approx Spacing</th>
<th>Depth below surface (ft)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Boring</td>
<td>55</td>
<td>400’</td>
<td>25 – 50</td>
<td>Water monitoring wells installed at 10 sites</td>
</tr>
<tr>
<td>Water Boring</td>
<td>3</td>
<td>1000’</td>
<td>61 – 136 (below water surface)</td>
<td>Additional borings added due to depth of mud observed</td>
</tr>
</tbody>
</table>
Initial Expansion Alternatives

- MDE Criteria - ENR treatment must be implemented at the plant and will require new treatment processes
- Seven Preliminary Expansion Alternatives were suggested in the Mayo WRF ENR Upgrade and Expansion Alternatives Report (Jan. 2010).
  1. ENR Upgrade at Mayo – Existing Outfall
  2. ENR Upgrade at Mayo – New Deep Water Outfall
  3. Pump Mayo Wastewater to Annapolis WRF (ENR treatment)
  4. ENR Upgrade at Mayo – Pump treated effluent to Annapolis WRF Outfall
  5. Pump Expanded flow (.525 mgd) to Annapolis WRF via Woodland Beach; Retain Mayo treatment for existing flow (.615 mgd)
  6. ENR Upgrade at Mayo – Re-circulate effluent thru existing treatment process – Existing Outfall
  7. Expand Mayo using existing treatment process – Existing Outfall
Well testing along Hillsmere Drive

- Domestic wells located with 100 ft of HDD pasth will be tested for flow, pressure, and water quality pre- and post-construction

- Mailings will go out prior to testing commencing

- Laboratory water quality testing include the following constituents:
  - Turbidity
  - Cadmium
  - Chlorides
  - Nitrates
  - Gross alpha
  - Fecal coliform
  - E. coli

- Testing results will be provided to the homeowners