Maryland's Newest Dam Preserves a Community's Most Valuable Resource

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Agenda

1. Maryland American Water System
2. Options/Site Analysis
3. Sizing the Impoundment
4. Site Selection
5. Liner Analysis
6. Construction
7. Water Quality Features
The Town of Bel Air, MD is located in Harford County, MD.

The system serves approximately 5000 customers.

System Summary:
- 2 MGD Winters Run WTP
- 2 Wells (1 primary and 1 backup)
- 3 Elevated Water Tanks
- 2 Water Booster Station
- Interconnection with Harford County (0.5 MGD)
Historical Water Supply by Source

- During normal operations, the stream accounts for over 90% of supply. Groundwater supply accounts for approximately 8%, and the County 2%.
- During low stream flow there are restrictions on the withdrawal from the stream.
- Historically during a drought supply has been met by a combination of groundwater and purchased water from Harford County.
- Due to projected future shortfalls in the region, the County supply (in excess of the 0.5 MGD) is no longer available.
Options

• Several options were considered by American Water. They included:
  • Pipeline from the Susquehanna River
  • Purchasing and conveying water from a different municipality
  • Off-stream storage.
  • Quarry storage
  • Additional Wells
• Harford County Offered to sell American Water Land for the storage, adjacent to the Winters Run WTP
Sizing the Impoundment

- Reviewed the water supply history including the drought of record.
- Allowed approximately 10 million gallons of storage for siltation and to maintain aquatic life.
- Allowed approximately 80 million gallons of storage for water supply purposes for a total storage volume of 90 million gallons.
Reservoir Location

- Water would be pumped from Winters Run into a reservoir when stream flows are sufficient. In low flow conditions the water in the reservoir can be used.
- Both sites were evaluated for:
  - Topography/ potential cut fill quantities
  - Soil Composition
  - Cost for conveyance (pipeline)
  - Environmental Impacts
Renderings – Site B Chosen
Construction – Initial Site
Construction
Construction of the Riser and Outlet Chanel
Liner Analysis

• Liner comparison with PVC, HDPE, linear low-density polyethylene (LLDPE) and bituminous geomembrane (BGM)
• HDPE, and LLDPE are usually covered with soil to protect them from punctures, stress cracking, and thermal expansion.
• PVC liners in exposed systems require special egress features and are not as economical.
• BGM liner chosen as it is highly durable, resistant to punctures, and UV, and texture to provide traction.
Liner Construction
Liner Requirements

• No rocks over 3” in the soil and no exposed rocks with sharp edges
• Keep the top and bottom key trench secure so no air or water could get trapped
• Subgrade acceptance was required prior to any work that day. The area that was completed got signed off by the inspector at the end of each day
• Testing:
  – Ultrasonic
  – Destructive
• The liner could be cut and patched easily if a defect was identified
Installation
In Service January 2019
Water Quality Equipment

• Floating Wetlands for Natural removal of nitrogen and phosphorous in the water
• Solarbee mixer
• Ultrasonic algae removal system to eliminate algae growth in the impoundment
• All equipment to be installed this spring
Construction Video

- https://app.truelook.com/?m=15045104118553862109728
THANK YOU

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