Department of Public Works and Utilities

City of Petersburg, Virginia

July 16, 2019
Wilcox Lake Dam: Dam Study & Recommendations

Presented by

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Darryl Walker – Stormwater Program Manager
Wilcox Lake Dam: Study/Recommendations

Wilcox Lake Dam:
Dam Study

By
Darryl Walker,
Stormwater Program Manager
Wilcox Lake Dam: Study/Recommendations

Wilcox Lake Dam Study

- Dam Failure Analysis (DFA) performed by Consultant
- Originally completed in 2015
- Updated in late 2018
Wilcox Lake Dam Study

• Inundation Study performed to comply with the Virginia Impounding Structure Regulations (VISR)

• VISR compliance is required by the Virginia Department of Conservation and Recreation (DCR)
Wilcox Lake Dam: Study/Recommendations

Wilcox Lake Dam Study: DFA Results

- Wilcox Lake Dam: “High Hazard” dam classification (failure of impounding structure would cause probable loss of life or serious economic damage)

- Dam spillway significantly undersized to pass required storm event

- Out of compliance with the VISR
Wilcox Lake Dam Study: DFA Results

• DFA needs to be submitted to DCR (before this update becomes outdated)

• DCR will probably require the City to bring the Dam into compliance with VISR with a schedule TBD

• Non-compliance? DCR may require the Dam to be drained due to the “High Hazard” classification
Wilcox Lake Dam: Study/Recommendations

Wilcox Lake Dam: Alternatives Analysis
Alternatives Analysis

• Performed by Consultant to prepare for DFA submittal to DCR

• Three (3) design alternatives developed:
  1) New Spillway
  2) HydroTurf™ Overtopping Protection
  3) Lowering Impoundment Volume/Water Level (Additional Water Quality Features Installed – “BMP’s”)
Alternatives Analysis: Alternative #1 – New Spillway
Alternatives Analysis: Alternative #2 – HydroTurf™
Alternatives Analysis: Alternative #3 – Lower Volume/Level
### Alternatives Analysis: Estimated Costs

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Wilcox Lake Dam: Study/Recommendations

Alternatives Analysis: Estimated Costs

- Alternative 3 – $3.14M
  - Best grant opportunity (design and construction)
  - BMP’s – Water Quality Benefit
    - Pollutant reduction
    - Helps address City’s TMDL* Requirements for 2025
      (*TMDL = Total Maximum Daily Load)
Alternatives Analysis: Estimated Costs

• Alternative 3 – $3.14M
  ▪ Most Expensive
    - Match required (50%)…even with total grant funding, would still require $1.57M in City funds
    - Reimbursement grant – City will be required to encumber FULL MATCH before receiving reimbursement
  ▪ Would significantly change the appearance of Wilcox Lake
Alternatives Analysis: Estimated Costs

• Alternative 1 – $2.05M
  ▪ More expensive of the two remaining Alternatives
  ▪ Demolition of the “Old White Pump House”
  ▪ Would also require lowering the existing water level to accommodate the New Spillway (changing the appearance of the Lake)
Alternatives Analysis: Estimated Costs

• Alternative 2 (Most Feasible) – $1.00M
  ▪ Least expensive Alternative
  ▪ Would allow Wilcox Lake to maintain its current appearance
Wilcoxon Lake Dam: Study/Recommendations

Wilcoxon Lake Dam: City Staff Recommendations
City Staff Recommendations: Alternative 2

- If Council selects Alternative 2…
  - DFA certified/signed by City Staff and submitted to DCR
  - City Staff works with DCR to develop compliance schedule (timeframe for Alternative 2 is about 18-24 months)
  - Quarterly status updates provided to Council
    - Development of compliance schedule
    - Progress during design and construction phases
City Staff Recommendations: Other Considerations

• Full public access to Wilcox Lake Dam area recently approved (emphasizing the need to):
  ▪ Resolve compliance issues
  ▪ Improve safety

• Current conditions **DO NOT** indicate imminent dam failure
To authorize the City Manager to:

• Move forward with certifying the Wilcox Lake Dam Study for submittal to DCR

• Upon determination of compliance schedule with DCR, pursue Alternative 2 as recommended by City Staff to bring Wilcox Lake Dam back into regulatory compliance and improve safety
Wilcox Lake Dam: Study/Recommendations