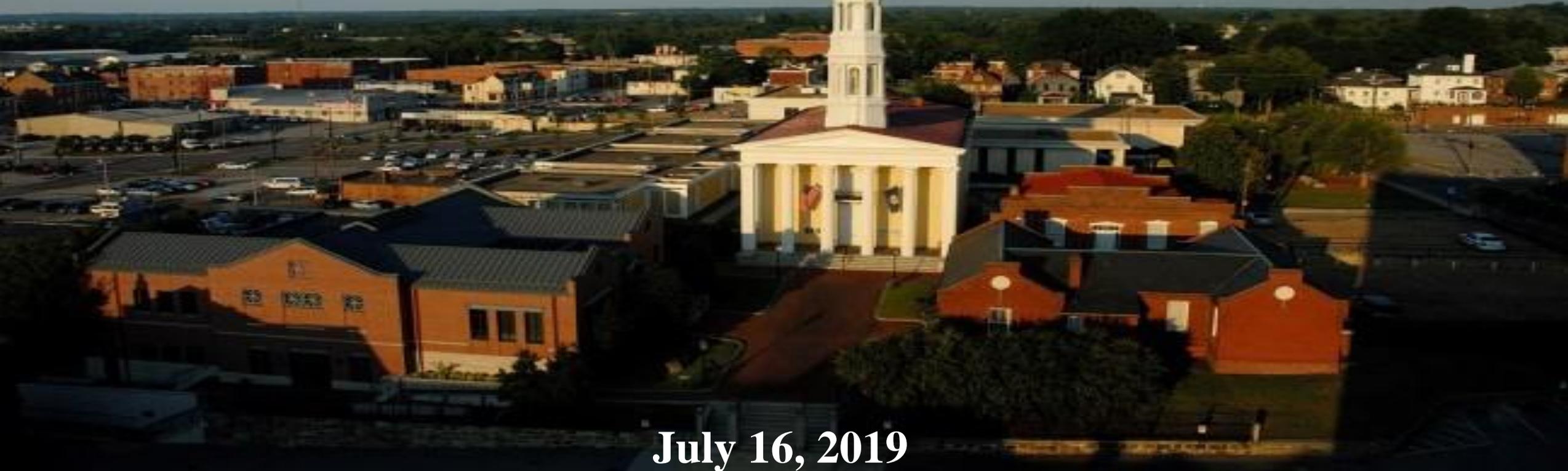


**Department of Public Works and Utilities**

*City of* *Petersburg*  
VIRGINIA



**July 16, 2019**



# Wilcox Lake Dam: Dam Study & Recommendations

Presented by

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Andrew Barnes – General Manager of Public Utilities

Darryl Walker – Stormwater Program Manager



# 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/Recommendations



## 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: 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/Recommendations



## 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- DFA needs to be submitted to DCR (before this update becomes outdated)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: Alternatives Analysis



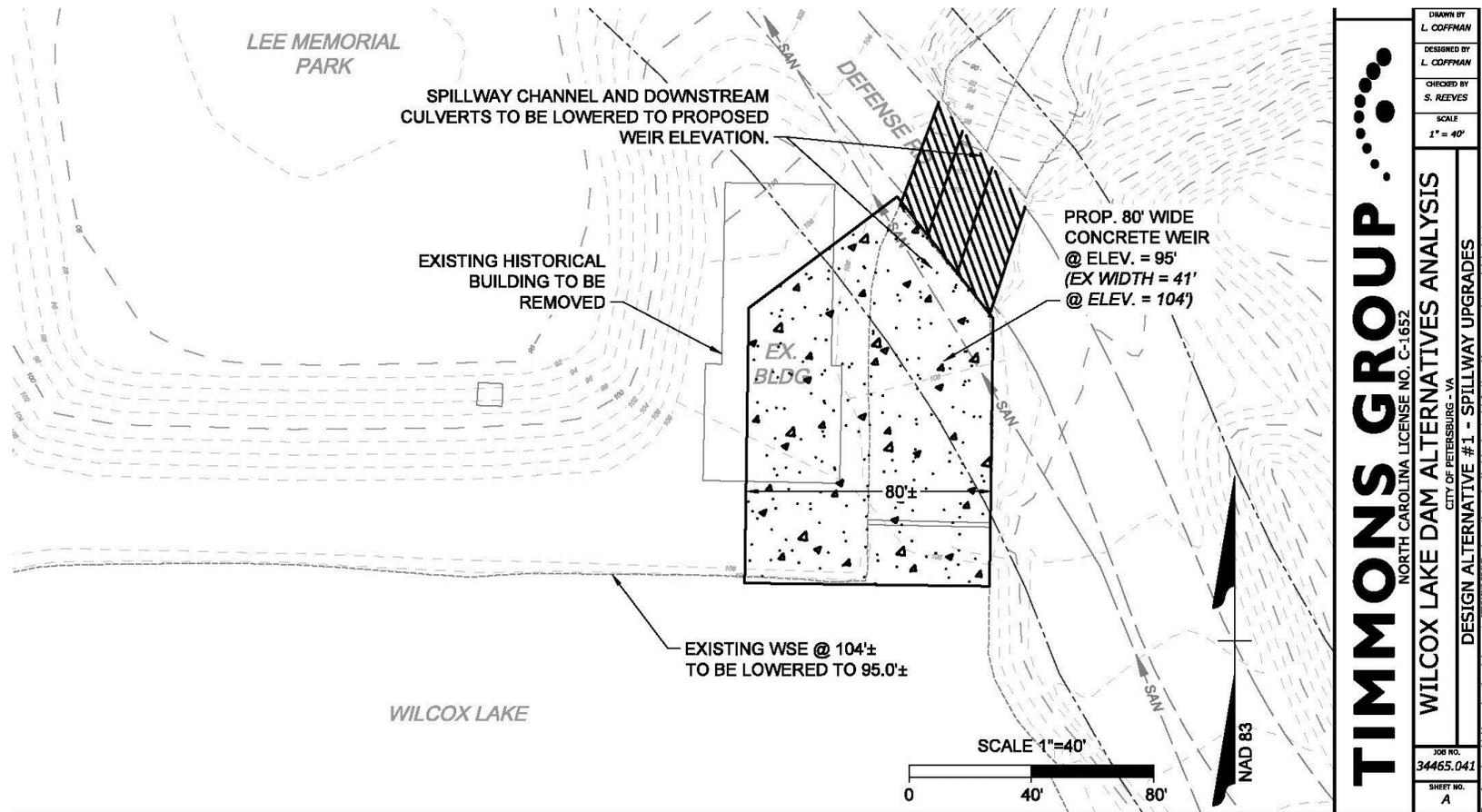
## Alternatives Analysis

- 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”)

# Wilcox Lake Dam: Study/Recommendations



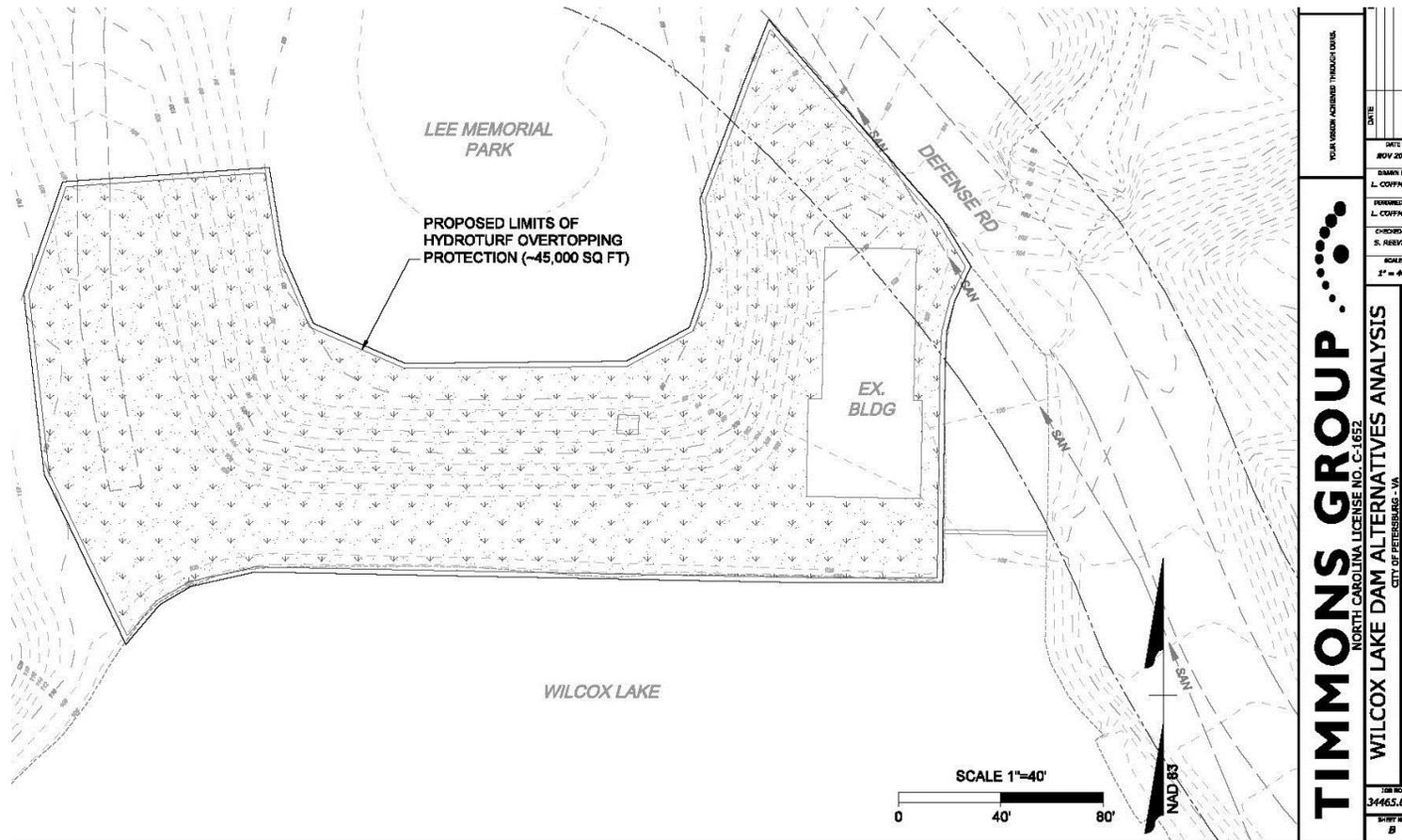
## Alternatives Analysis: Alternative #1 – New Spillway



# Wilcox Lake Dam: Study/Recommendations



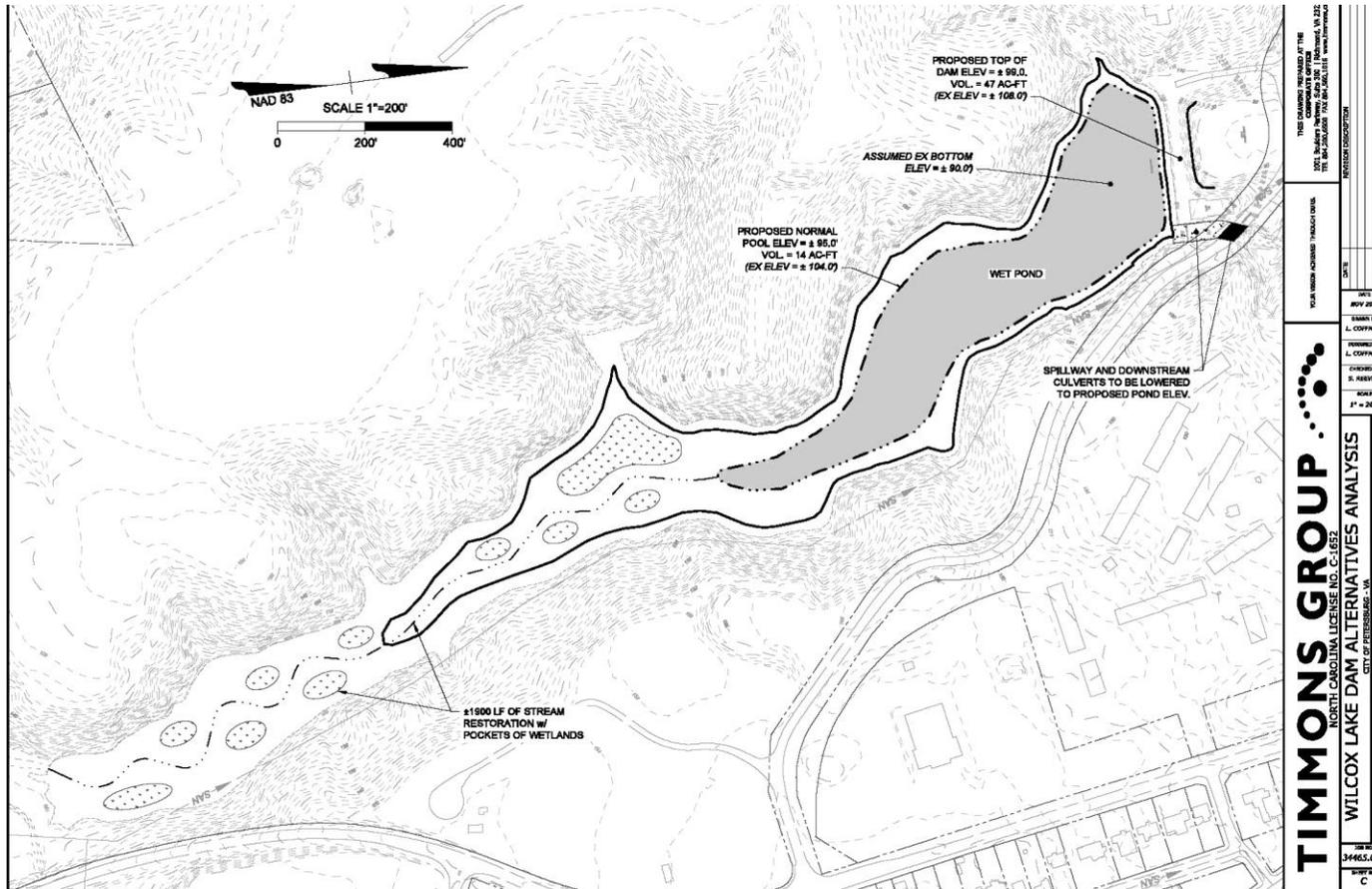
## Alternatives Analysis: Alternative #2 – HydroTurf™



# Wilcox Lake Dam: Study/Recommendations



## Alternatives Analysis: Alternative #3 – Lower Volume/Level



# Wilcox Lake Dam: Study/Recommendations



## Alternatives Analysis: Estimated Costs

ALTERNATIVE	1) New Spillway	2) HydroTurf™	3) Lowering Volume/BMP's
Design Cost	\$262,062.50	\$89,750.00	\$281,500.00
Construction Cost	\$1,733,750.00	\$897,500.00	\$2,815,000.00
Mat'ls. Testing/Insp.	\$52,012.50	\$13,462.50	\$42,225.00
<b>TOTAL COST</b>	<b>\$2,045,825.00</b>	<b>\$1,000,712.50</b>	<b>\$3,138,725.00</b>



## 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



## Wilcox 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

# Wilcox Lake Dam: Study/Recommendations



## City Staff Recommendations: Request to City Council

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

