

Lake Whitney Dam and Spillway Improvements Project – Phase 1 (Design)



Presentation to the Regional Water Authority
June 9, 2022

Whitney Dam Background

- Completed: 1861
- Raised: 1864
- Spillway Lengthening and Dam raised: 1917
- Class C High Hazard Dam
- Iconic Site



Need for Proposed Action

- GZA Analyses:
 - Design storm (Probable Maximum Flood)
 - Spillway capacity
 - Stability
 - Seepage
- End of Useful Life Considerations
- Water Supply: LWWTP, Droughts
- Climate Change: Increasing Storm Frequency and Intensity
- Phase 1 (Alternative Analysis/Completing Design)
- Phase 2 (Construction)



Phase 1

- Alternatives Vetting
- Design/Contract Documents Completion
- Early Contractor Involvement RFQ/Award
- Grouting Trial Program to Existing Dam (if needed)
- Continuing Community Outreach



Early Contractor Involvement (ECI)

ECI Project Delivery Method:

- Involving qualified contractors during design development
- Advantages:
 - Design Optimization
 - Construction Risk Reduction
 - Cost Optimization
 - Risk Mitigation



Alternative Assessment

- No Action – not considered due to high risk
- Hydropower generation – not considered due to higher cost, low ROI and stringent regulatory ecosystem (FERC)
- Extend 45% design to evaluate alternatives and complete design (Considered)



Phase 1 - Costing

- Total Estimated Costs: \$5.52 M*
(included in application)
- *Estimated Cost Includes:
 - Expenditures till date
 - Analysis, Design Completion and Permitting
 - RWA & Consultant Fees
 - Early Contractor Involvement Stipend
 - Grout Trial Program Allowance

Anticipated Preliminary Schedule

- Phase 1: Aug 2022 – Sept 2023
- Phase 2 Application: November 2023
- Construction: 2024 to 2026



Potential Permitting Agencies

- US Army Core
- US Fish and Wildlife review
- US EPA
- CT SHPO
- CTDEEP (Fisheries, Dam safety, Water quality)
- CTDPH
- Tribal Historic Preservation Office



Statement of facts

- CTDEEP provides oversight of dam
- Failure of Dam will result in long term destruction of dam/probable loss of life
- Lacks sufficient capacity (hydraulic, stability, seepage, scour) for PMF
- Loss of dam will adversely impact adequacy of RWA's water supply
- Numerous alternatives were reviewed
- Recent costing shows significant increase necessitating further analysis of cost effective and prudent alternative
- Dam must be improved or replaced

Unusual circumstances

- Construction costs have escalated
- LWD has higher risk than other capital projects resulting in significant investigative effort
- Alternate Project Delivery has been considered
- Current spending close to \$2M



Design Alternatives

1. Upstream Mass Concrete
2. Upstream New Concrete Dam
3. Downstream Concrete Buttress



Conclusion

- 160-year-old dam has not had significant structural or stability improvements since construction
- An integral part of the RWA's water supply system and single source to LW Water Treatment Plant
- Does not meet evolving regulatory and recognized standards for dam stability during PMF design storm - must be improved or replaced
- The proposed funding for Phase 1 will provide:
 - Analyzing additional design/construction alternatives
 - Selection of final alternative – design and completion of contract documents
 - Engagement of contractors to optimize design, construction, cost, risk reduction
 - Potential trial grout program
 - Community Outreach

Questions?

