

LEWISVILLE DAM SAFETY MODIFICATION

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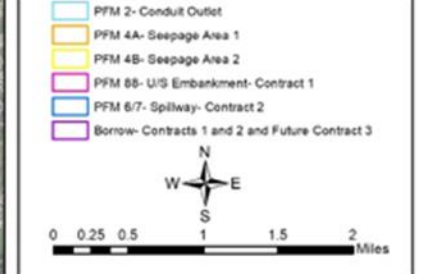


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LEWISVILLE DAM SAFETY MODIFICATION



- Overview
- Significant Events
- Issues/Challenges
- Expected Outcomes
- Questions



TRINITY RIVER
**LAKE LEWISVILLE
 DAM SAFETY MODIFICATION STUDY**
 U.S. ARMY ENGINEER DISTRICT,
 FORT WORTH, TEXAS
 SOUTHWESTERN DIVISION



**US Army Corps
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 Fort Worth District



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WHAT IS DAM SAFETY RISK?

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- Why are we doing this? To reduce risk.
- What does that mean? We are improving the expected performance of the dam in the face of events that could possibly harm the dam.





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PROJECT OVERVIEW



- Project: Lewisville Dam Safety PED & Construction
- Location: Lewisville, Texas
- Program: Dam Safety
- Phase: Construction
- Authorized Total Federal Project Cost: \$149,999,000
- Current Estimated Completion Cost: \$159,577,305 including contributed funds
- Purpose: Reduce Risk Associated with Flood Risk Management Activities at the Dam as Low as Reasonably Practicable
- Dam Safety Issues Addressed by the Modification: uplift and sliding, stability being addressed with spillway contract to be complete in 2026; seepage and embankment stability addressed with the embankment contract completed in 2021
- Population at Risk: 431,000
- Potential Economic Consequences: \$24.2 billion
- Estimated Flood Damages Prevented: \$56.9 billion (average annual \$837 million) as of 2023
- Average Annual Recreation Visitation: 3.4 million visits



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SIGNIFICANT EVENTS



- New seepage collection systems and earthen berms completed in 2021
 - 2nd largest contributor to risk reduction for the project.
 - Reduces risk associated with seepage.
 - Important to understand seepage will continue and is a normal function of an earthen embankment dam. The new features allow us to appropriately capture and discharge seepage while monitoring the flow to make sure it is within normal range for the dam.

- Weir anchor installation completed Sept 2023
 - Largest single contributor to risk reduction for the project.
 - These anchors ensure the weir stays locked in place during the largest storm event possible given the current reservoir and climate conditions.





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ISSUES/CHALLENGES

- Availability and wages for craft labor for 3.5 years
 - Reviewing resumes with the contractor to search for staff that could be trained by more experienced personnel in the short term to grow into the position over a period of months

- Supply and consistent quality of aggregate and rip rap that meet USACE specifications
 - Allowing use of TX DoT spec which has reduced the issue but not eliminated it
 - Visits to quarries and supplier headquarters offices to discuss inconsistencies in quality

- Unique behavior of the soil
 - Behaves as shale until exposed, then behaves like clay
 - Weathers quickly upon exposure to water
 - Very sticky when wet, clogs drills/lines, contaminates filter materials
 - Absorbs water from grout mix
 - Overcoming by:
 - Require use of sacrificial casing for key points in the borings
 - Drilling without water
 - Under-reaming such that the weight of the shale provides the bearing capacity for the anchors
 - Regular equipment inspections for cleanliness and tracking, particularly those working with/near filter materials



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EXPECTED OUTCOMES



- Address and reduce to the extent possible the probability driven risk to the structure
 - Will be confirmed with a Post Implementation Evaluation of risk upon conclusion of spillway construction
 - Continue routine surveillance and inspections as required by USACE dam safety policies and recommended by national and international dam safety professionals

- Communicate there will still be consequences driven risk associated with the population downstream
 - Continue coordination with area Emergency Management professionals
 - Mandatory drills and exercises of the Emergency Action Plan associated with the dam and annual updates of the plan



QUESTIONS/DISCUSSION



**Lewisville Dam Safety Modification
Thank You**