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# Bolts Lake Redevelopment Project

June 4, 2025





# Bolts Lake Redevelopment Project

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## Project Summary

- 1,200 AF off-channel reservoir
- South of Minturn
- ERWSD and UERWA purchased the site in February 2022
- Essential in-basin water storage
  - Meet in-stream flow in late summer
  - Reduce reliance on out-of-basin storage
- Land use priorities like workforce housing
- Will benefit downstream communities
- Climate change impacts
- System resiliency
- Strategic reserve



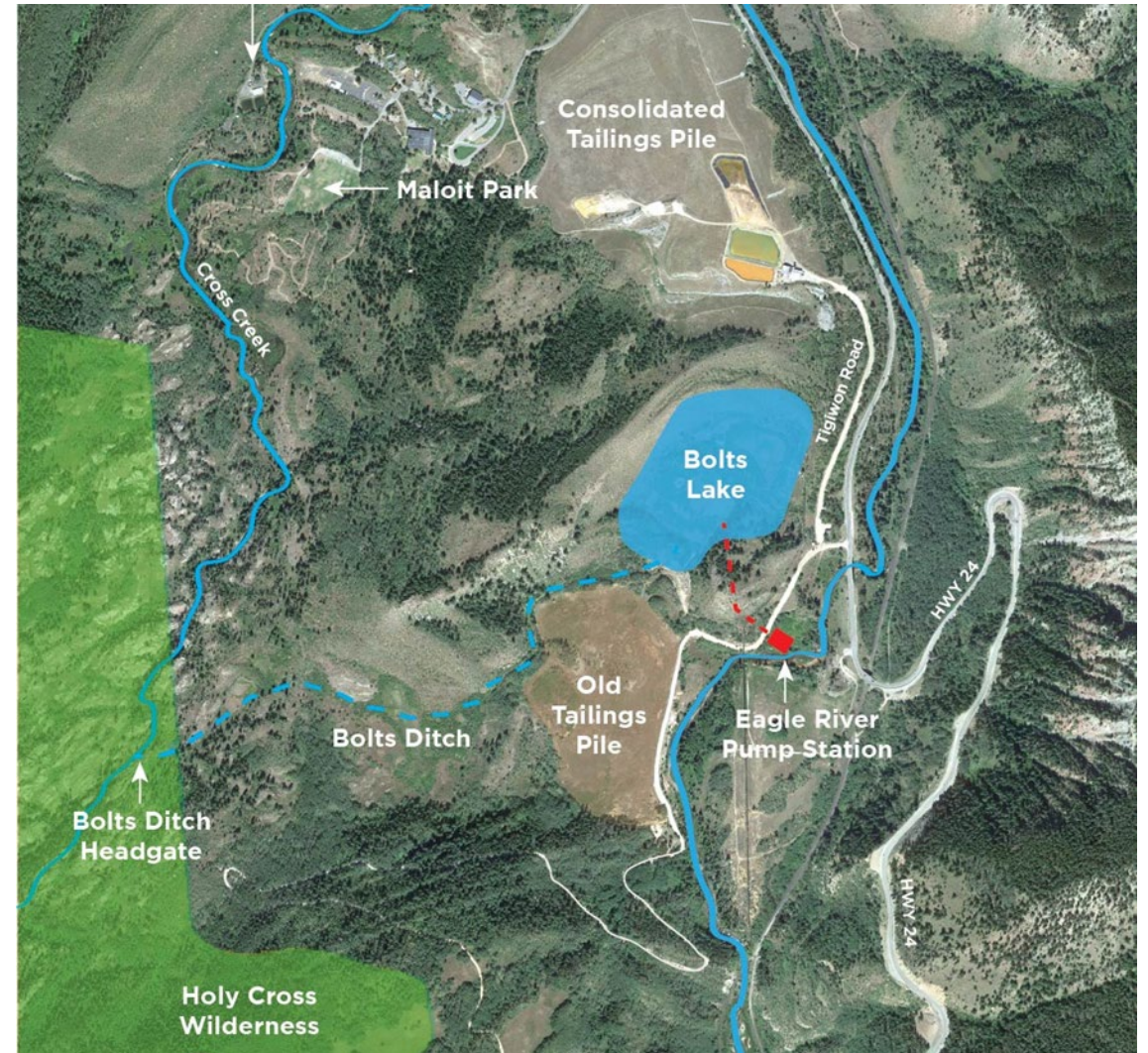


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## Project Status

- 2022 - Feasibility Study
- 2023 - Preliminary Design
- 2025 - 30% Design
- Met with stakeholders (Army Corps, CPW, USFS)
- Federal permit – Nationwide Army Corps permit

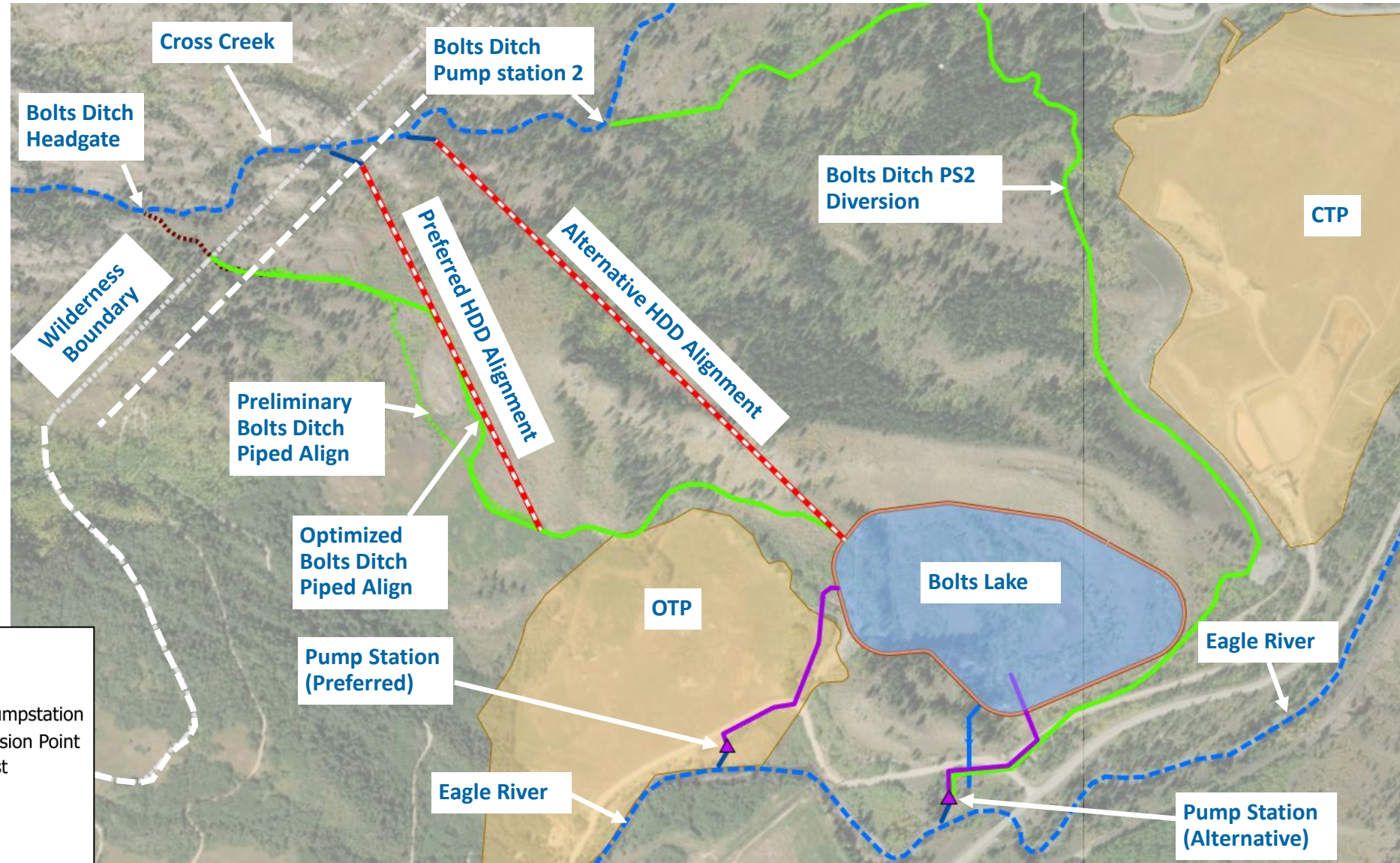




# Diversion Alternatives

## Diversion Alternatives

- Cross Creek
  - Bolts Ditch
  - East Ditch
- Horizontal Directional Drilling (HDD)
- Eagle River diversion locations

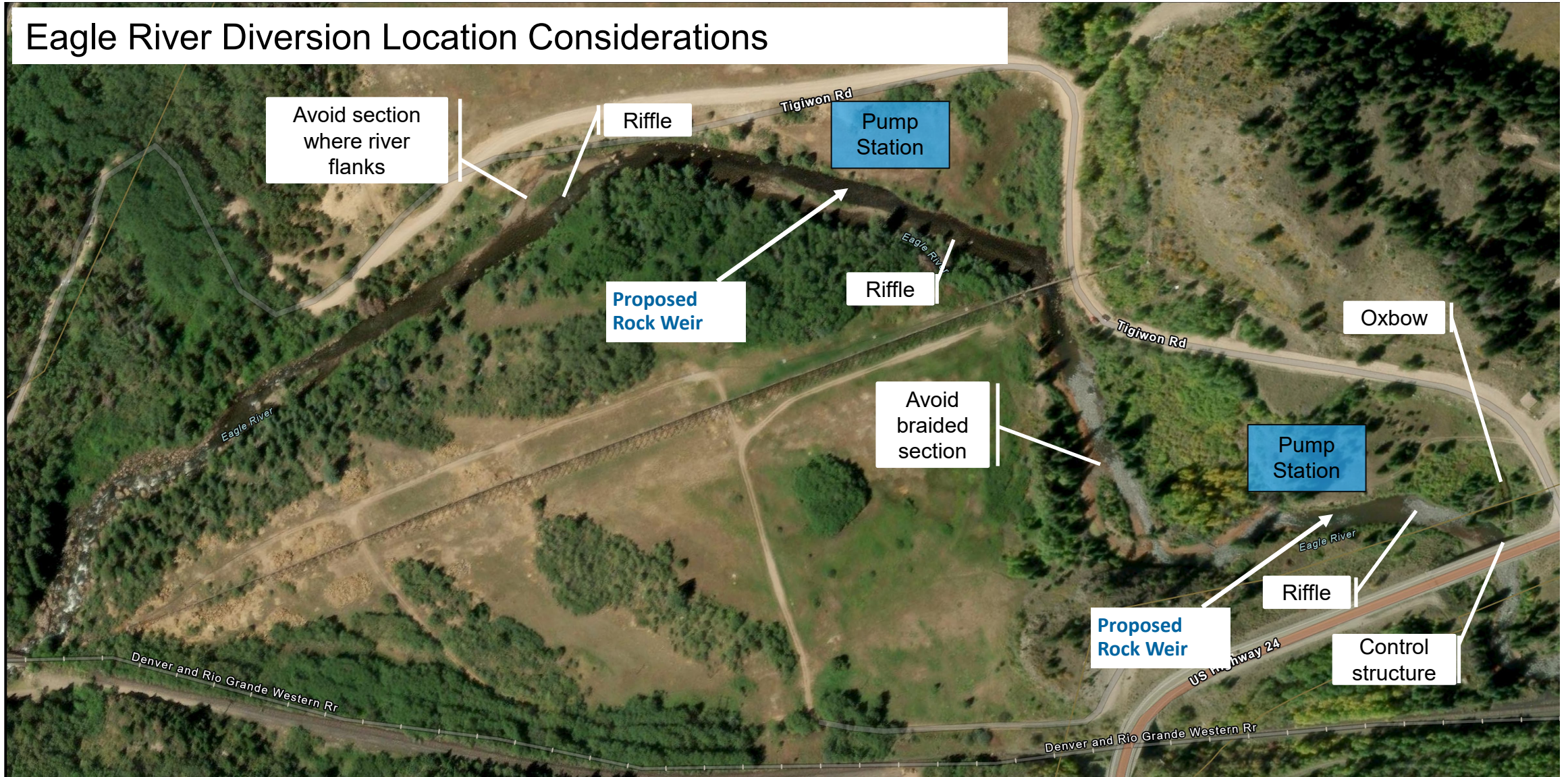




# Eagle River Diversion

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## Eagle River Diversion Location Considerations





# Eagle River Diversion

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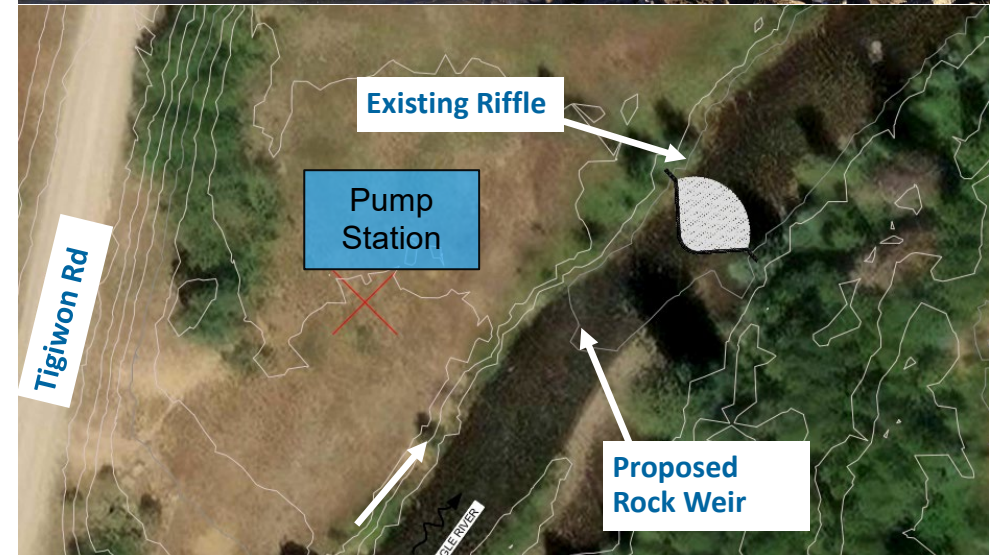
## Diversion Structure



Thompson Riffle

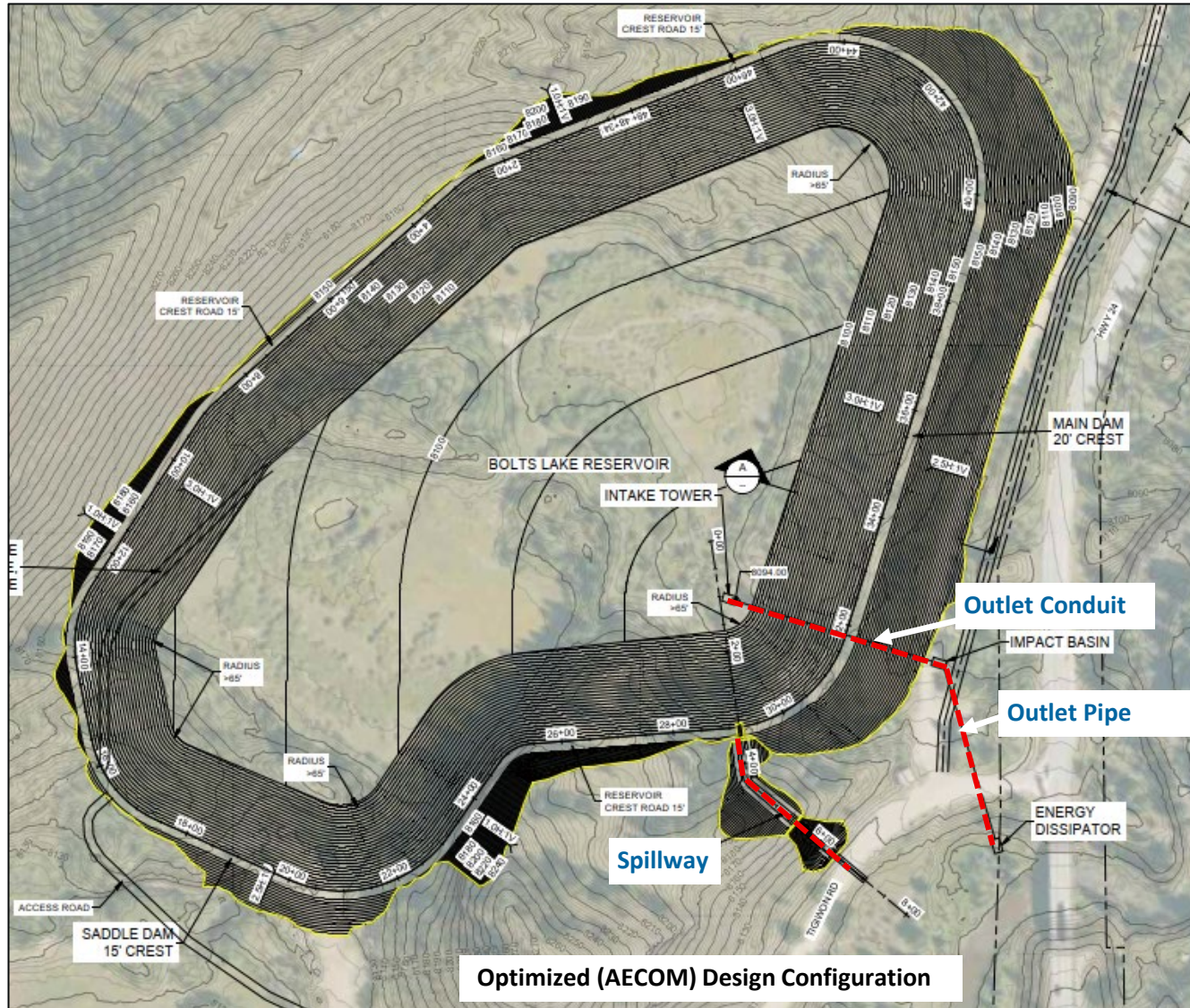


Thompson Riffle Construction, Upper Colorado River





# Reservoir Configuration



## Optimized Reservoir Configuration

- Simplified Alignment
- Improve bend radius (liner)
  - Increased storage capacity
  - Improved constructability
- Additional storage
  - Raise reservoir floor
  - Reduce groundwater risks, active dewatering

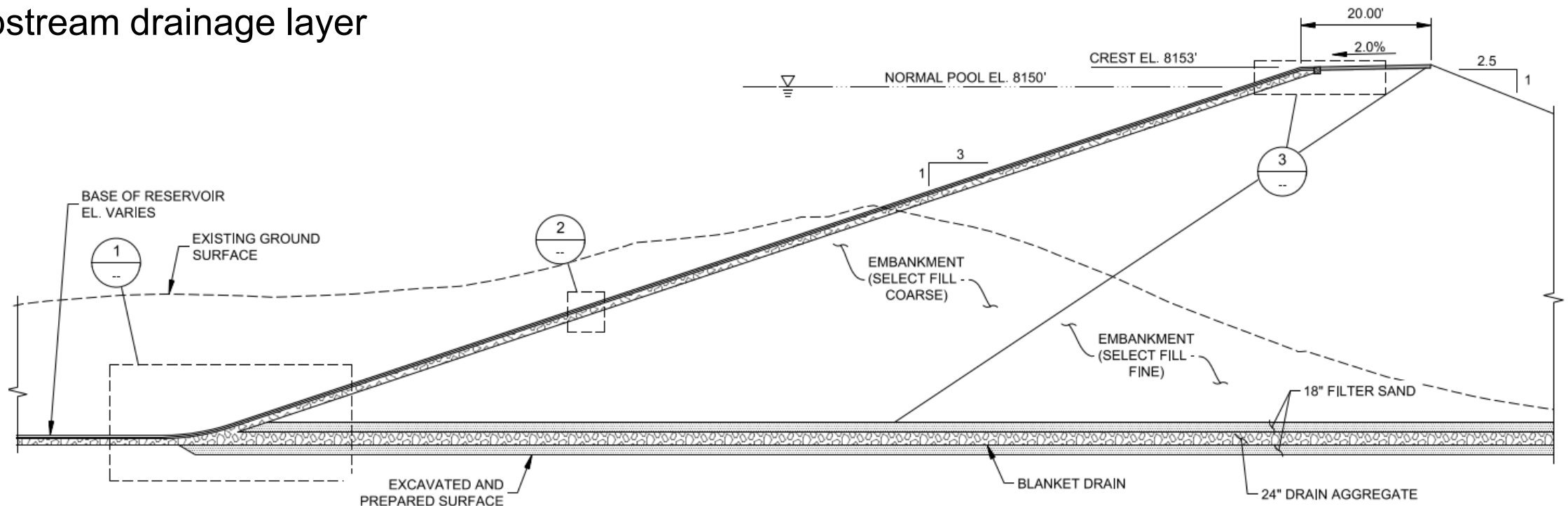
## Liner Alternatives

- Detailed evaluation of 3 liner types (CCL, Geomembrane & HAC)
- Criteria (effectiveness, constructability, and cost)
  - Cost (Capital and Operational)
  - Durability
  - Operation, Performance, and Maintenance
  - Constructability
- Workshop
  - Evaluation Matrix
  - HAC & Geomembrane are the two preferred & most common liners
  - **“Hydraulic Asphalt Concrete”** recommended as it was the best combination of the evaluation criteria
  - Reduced construction impacts, 70% fewer truck loads



## Main Dam – Typical Cross-section

- Upstream faced dam design
- Simplified the internal zoning
- Simplified embankment construction
- Upstream drainage layer

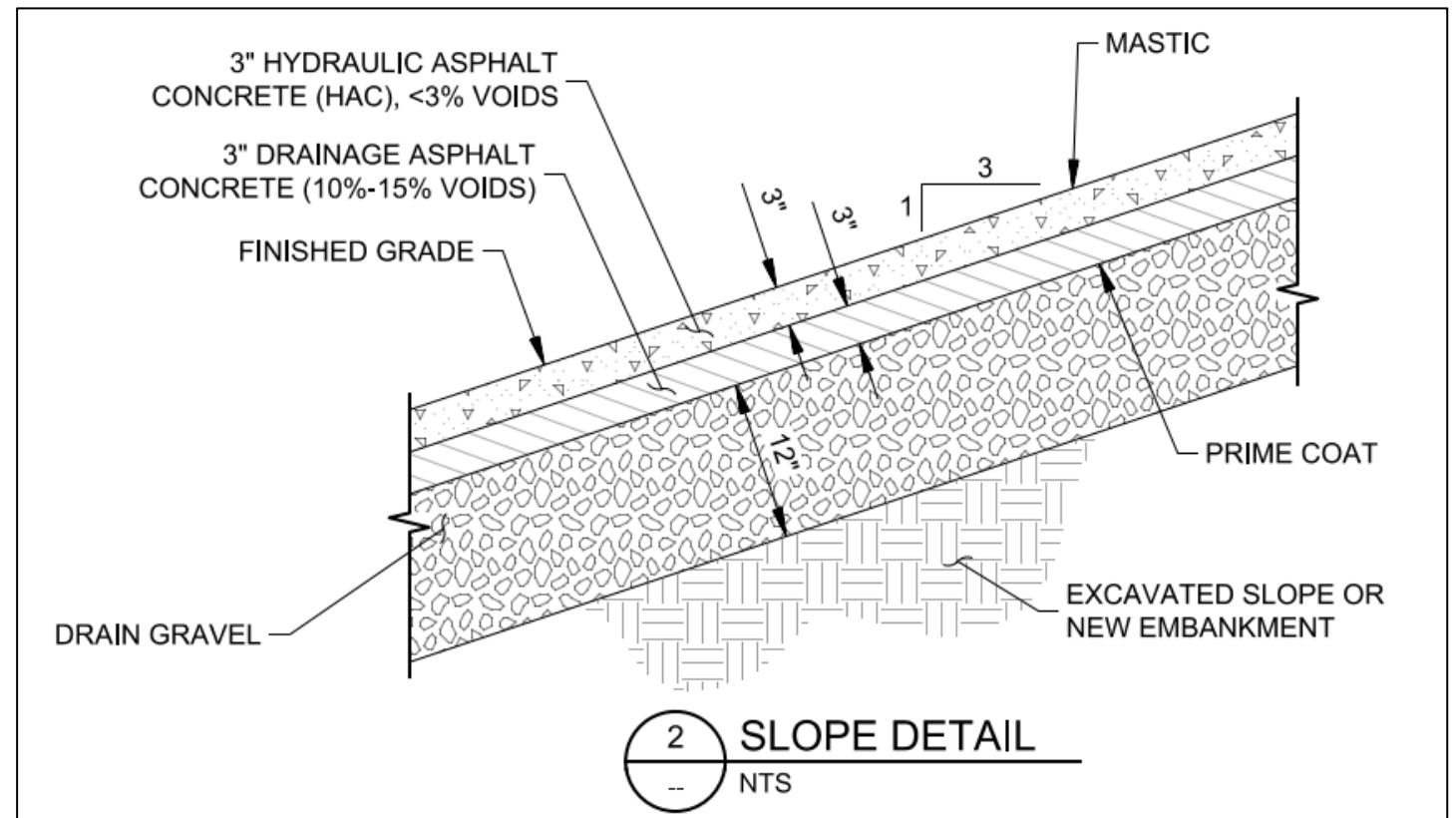


TYPICAL SECTION - DAM EMBANKMENT  
HYDRAULIC ASPHALT LINER  
A  
1 NTS



## Reservoir Liner Alternative - Hydraulic Asphalt Concrete (HAC)

- Common in Europe, recently in USA
- Two x 3" thick layers (impermeable & drainage)
- Specialized construction equipment
- Proven technology
- High durability
- Flexible
- Easy inspection
- No cover protection





# Hydraulic Asphalt Liner

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## Homestake Reservoir

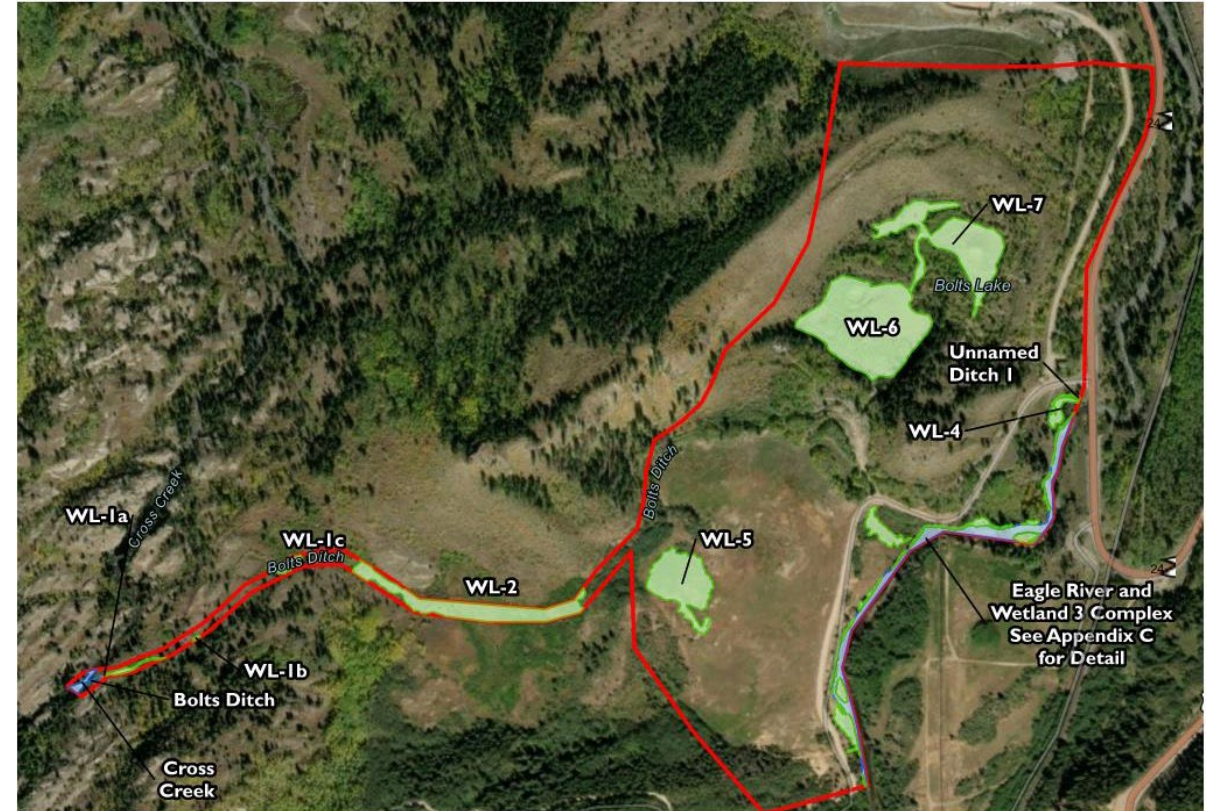


Photo -Milling of the transition step with a milling machine oriented horizontally.



## Field Survey Results

- Wetland Resources
  - Federal wetlands at Eagle River
  - State wetlands – new regulations TBD
- Cultural Resources
  - Document historical components
- Biological Resources
  - No threatened or endangered species





# Design Development (60% Design)



## 2026 - Design Development (60%)

- Geotechnical Studies
- Bathymetric survey of Eagle River
- Engage State Engineer's Office

Nationwide permit for Eagle River diversion and pump station

Procure Construction Manager

- Cost model
- Constructability & logistics



## 2027 - Construction Documents

- Minturn 1041

## 2028 – Shovel Ready

- Construction contingent on financing

## Bolts Ditch contingent on US Congress

