



Triumph Mine Site

Design & Construction

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ASRS 2026 | Laramie, WY

wsb

Alta
Science & Engineering, Inc.

Overview

- Site History
- Recontamination
- Design
- Construction
- Lessons Learned



Site History

- Abandoned Mine Site in Central Idaho
- Attempts made to list as Superfund site as early as 1993
- Small community lives there year-round
- Lead and Arsenic residual contamination from mining activities





E Fork Big Wood River Rd

E Fork Rd

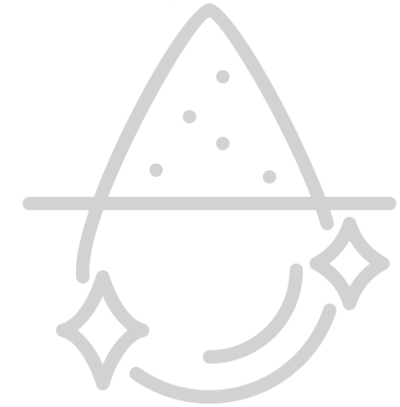
E Fork Ln

E Fork Rd

E Fork Big Wood River Rd

Previous Cleanup Efforts

- Initial Cleanup completed in 2004
- Mine drainage from portal plugged in 2003, another added in 2016
 - Reduced mine drainage to 7 gpm year round
- Surge pond provides some settling and oxidation treatment before discharging water diluted by existing pond water near river
- Consolidation and vegetated cap of mining waste in two tailings piles





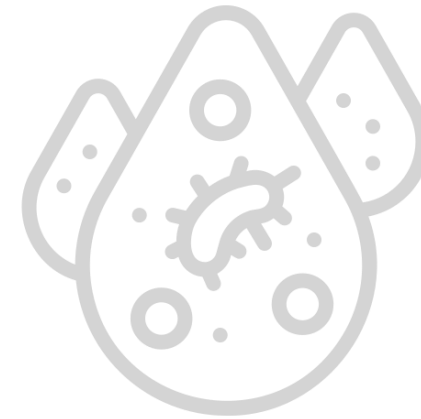
Before the environmental cleanup.



After environmental cleanup.

Recontamination

- Recreational use over the years degraded existing cover materials
- Roadside locations tested high for lead and arsenic
- Diluted mine drainage damaging to local wetlands
- Concern of impacts on local wildlife downstream
- Lawsuit from Idaho Conservation League in 2018 renewed cleanup efforts



Design

Three major goals:

1. Remove public interaction with contamination
2. Upgrade collection of mine drainage and provide infiltration
3. Increase site accessibility for maintenance activities



Challenges



Remote location limited available materials and increased shipping costs



Limited lodging for workers with high demands for it



Limited communication while on site



Limited funding and short timeline

Construction Overview



Completed 2025

- Contaminated Material Removal
- Infiltration Basin Installation
- Portal & LTP Access Improvements



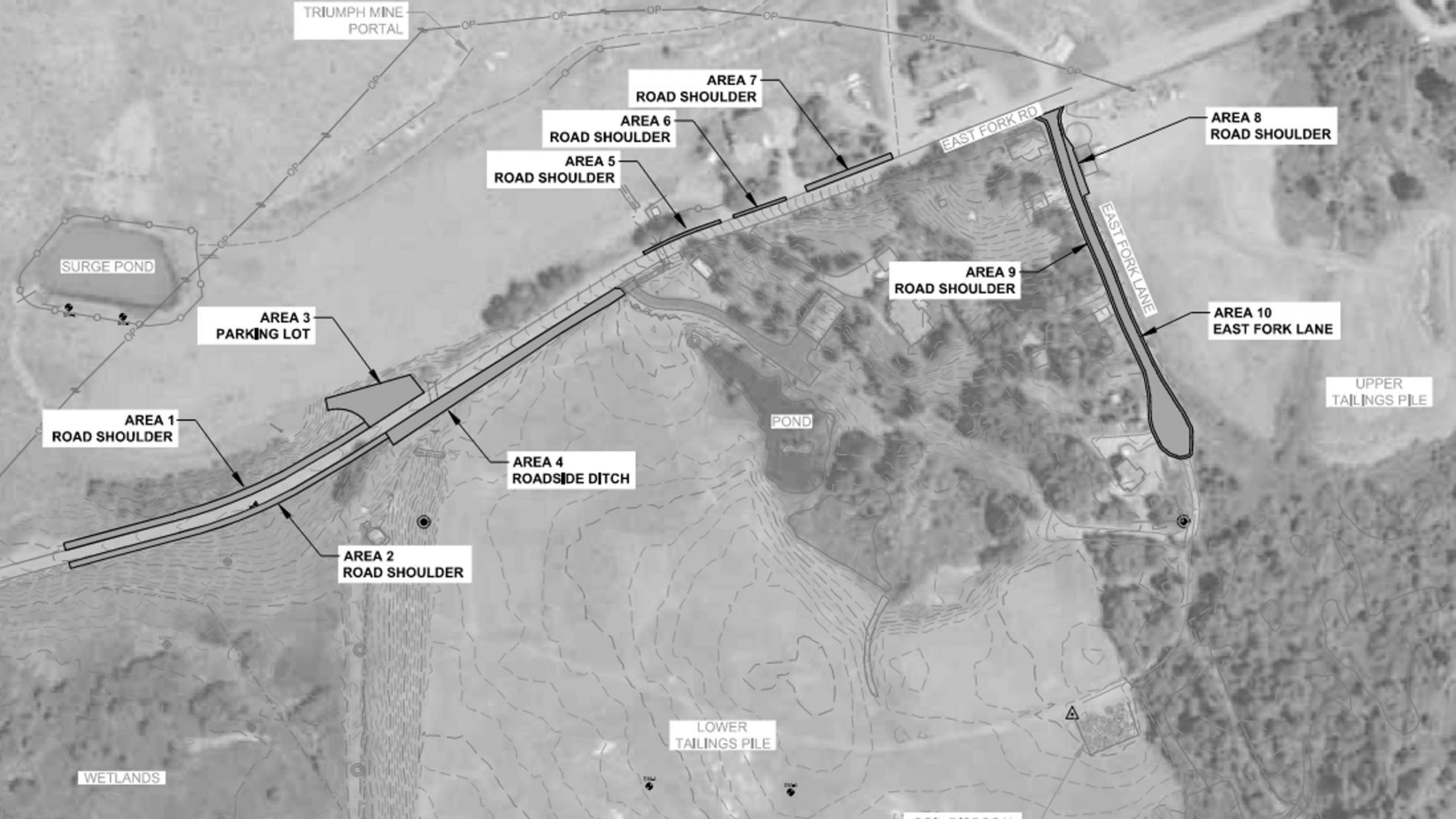
Schedule 2026

- Contaminated Material Placement, Cover and Revegetate
- Surge Pond Access Road

Contamination Removal

- Removed roadside material from 6" to 12" and replaced with clean
- Place removed material on existing tailings pile
- Cover with clean topsoil and revegetate









PLACE
DEGRADED
RING
(NOTE 6)

ACCESS ROAD

WASTE
PLACEMENT
AREA

2
D4

PRESERVE AND
PROTECT EXISTING
LTP ACCESS ROAD

RECLAIM
COMMUNITY
STOCKPILE
(NOTE 5)

REPLACE
DEGRADED
ARMORING

3

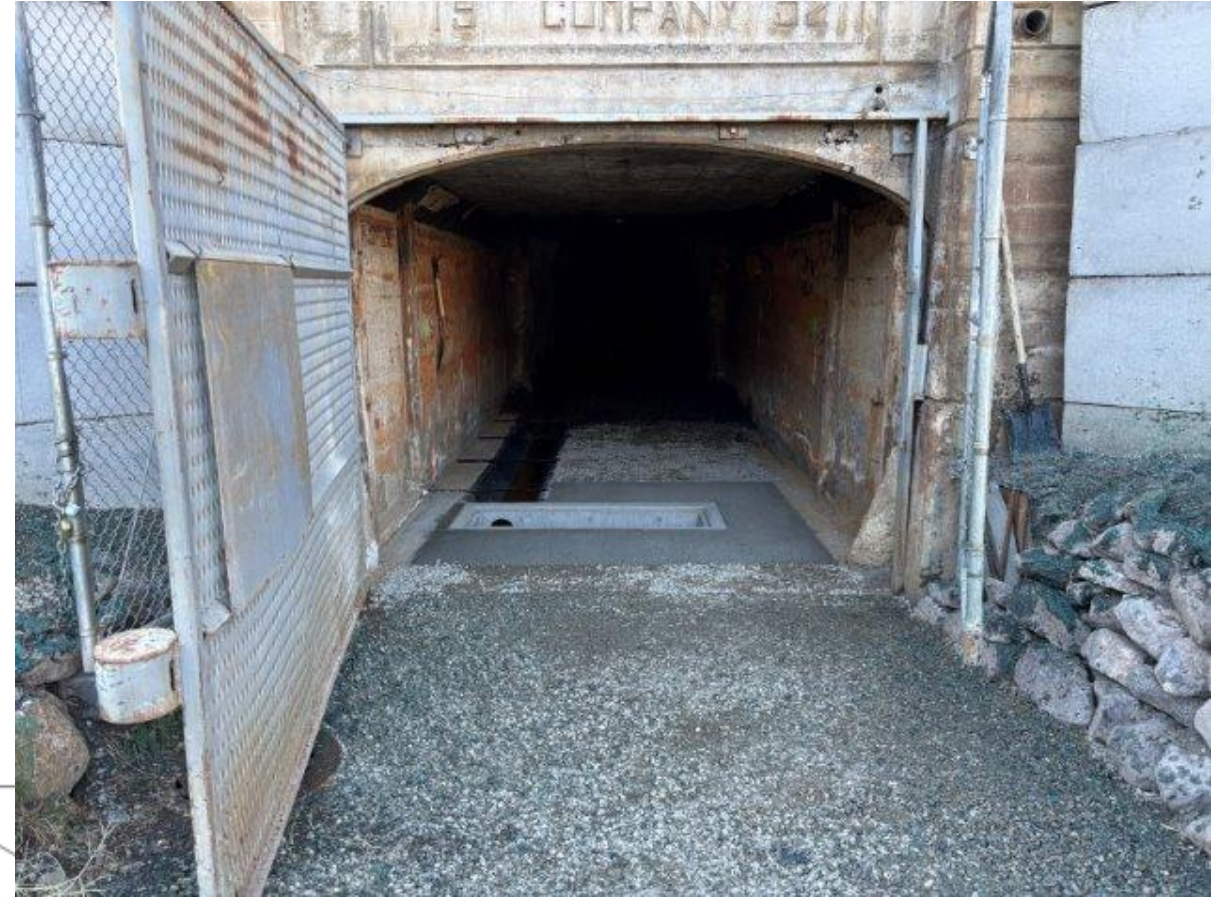
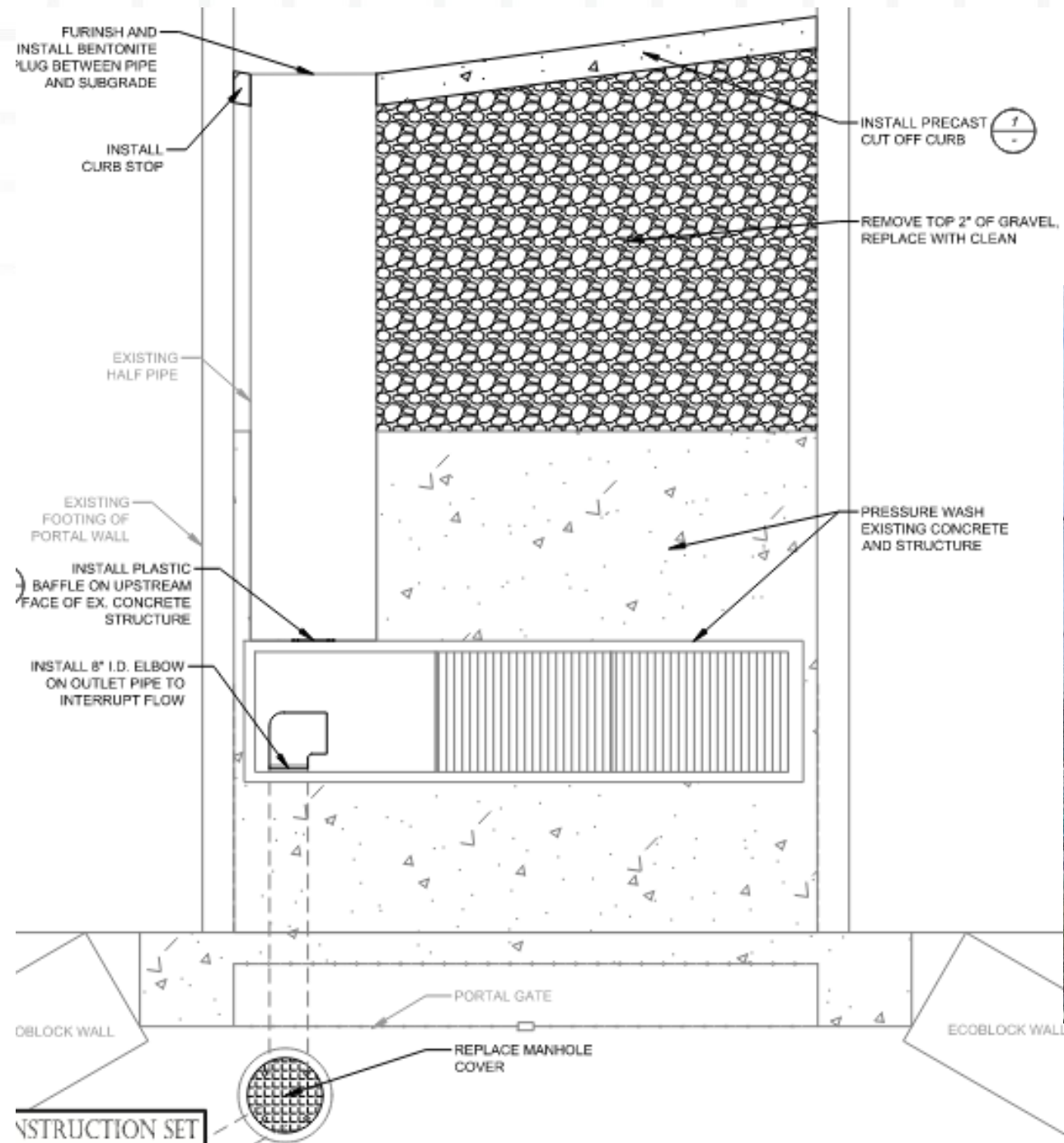
PROFESSIONAL ENGINEER

Mine Drainage

- Rerouted surge pond and permanent pond flow into newly constructed infiltration basins
- Installed new mine drainage collection system

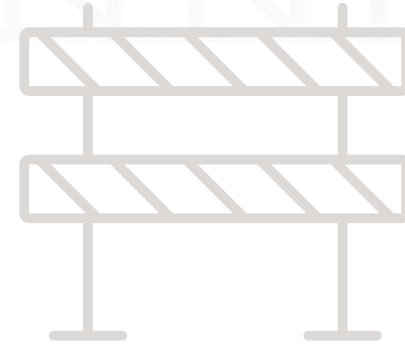






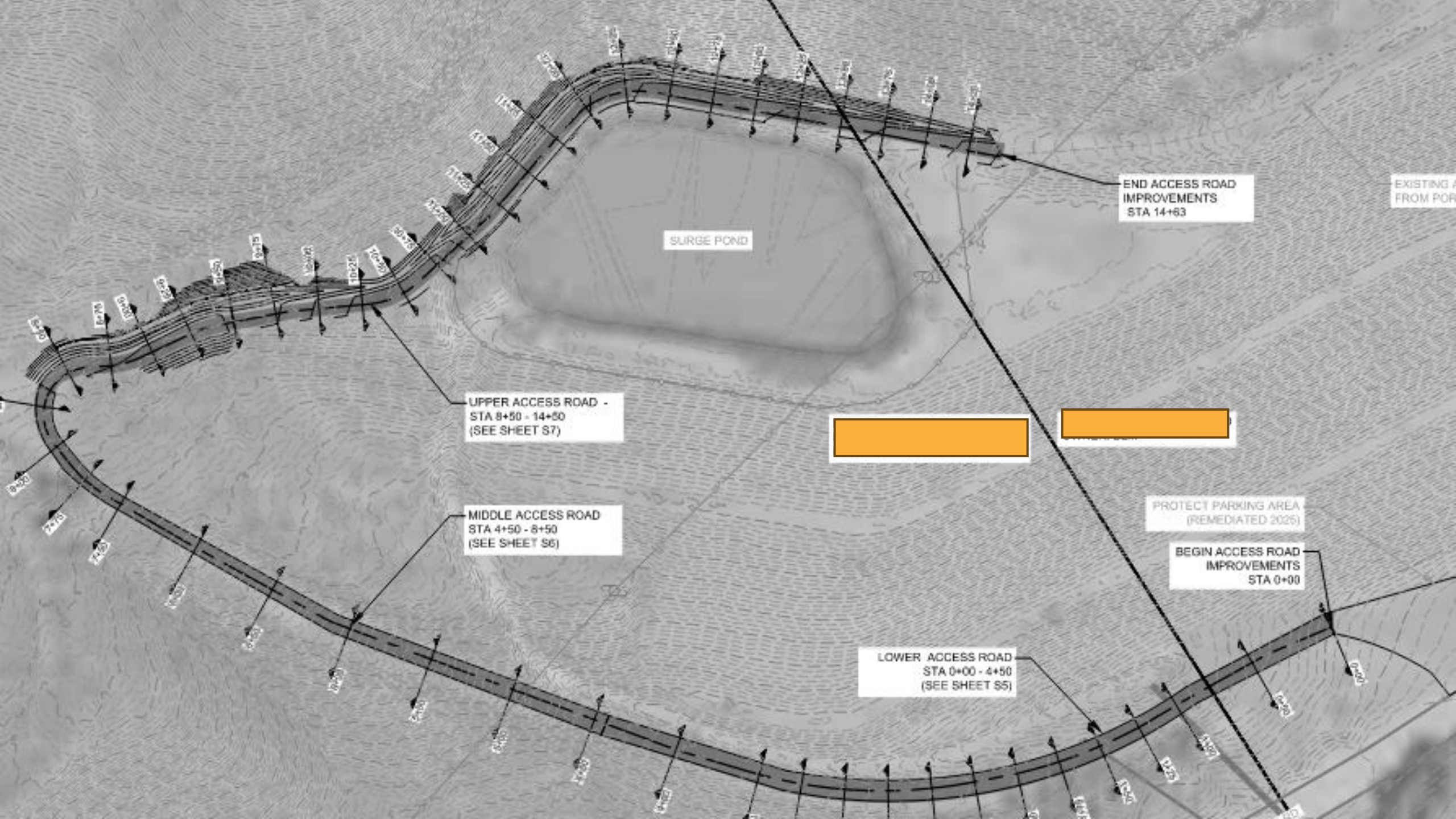
Maintenance Improvements

- Improved access to portal tunnel
- Repaired access road to tailings pile and community repository
- General repairs & clean up
- Install access road for surge pond and portal
 - Reduce crossing on private ground











Deviations from Design

- Emergency spillway in infiltration basin was raised 0.5 feet to allow for more storage before overtopping
- East Fork Lane was changed to a shallower crowned design for constructability
- One larger precast cleanout drain was installed in the portal instead of three smaller ones for cost saving and constructability
- The final location of the ecoblock retaining walls was field fit to limit interference with existing gates

Lessons Learned



Consider location travel
time during design



Leverage local contractors for
their knowledge of the area



The most effective solutions
are often the simplest



THANK YOU.
QUESTIONS?