Moab UMTRA Project
Groundwater Interim Action

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Groundwater System Conceptual Model
Colorado River Flows, 2000 - 2023
Groundwater/Surface Water Interaction

[Graph showing river flow over a date range]
Groundwater/Surface Water Interaction
Groundwater/Surface Water Interaction

![Graph showing the interaction between groundwater elevation and river flow over time.](image)
Groundwater Flow Direction

- Dec 2021 data
- During river base flow (river gaining) groundwater flow direction is towards SE
- Flow direction reverses within ~150 ft of riverbank during spring runoff flows (losing conditions)
Shallow Zone Ammonia Plume

- Dec 2021 data
- Contaminant concentrations highest above brine interface
- Above 2,000 mg/L in some locations
Shallow Zone Uranium Plume

- Dec 2021 data
- U plume more widespread compared to NH3 plume
- Northeast portion of plume due to former processing facility/waste disposal activities
- Maximum concentration of 12 mg/L
Groundwater Program Interim Action Systems

• Groundwater Contaminant Mass Removal
  • Groundwater Extraction System – pumps groundwater from the aquifer near the base of the tailings pile, used for CA dust control. Especially beneficial during drought conditions

• Critical Habitat Protection
  • Freshwater Injection System – injects filtered Colorado River water upgradient of habitat 15 to 35 ft below ground surface (bgs)
  • Surface Water Diversion System – delivers fresh water into habitat areas
Groundwater Extraction System

- As of Nov 2023
  - 279 mil. gal. groundwater extracted
  - 984,500 lbs NH3 removed
  - 5,650 lbs of U removed
Groundwater Extraction System Impacts
Freshwater Injection System

- After freshwater lens develops in response to runoff, system operated to supplement the lens
- Operating consistently since 2010
  - 111 mil. gal. injected through Nov 2023
Freshwater Injection System
Suitable Habitat Potential

- Closed upstream, open downstream
- After spring runoff peak through Sept 30

Base Flow Conditions (~3,250 cfs)
Side Channel Changes

April 10, 2012
River Flow: 3,490 cfs

April 7, 2014
River Flow: 3,590 cfs
Surface Water Diversion System

- Operation depends upon Colorado River flows and side channel configuration (dynamic system)
- System can apply water to areas where most effective at reducing ammonia concentrations based on sampling results
- Manifolds reduce erosion
Suitable Habitat Potential

![Graph showing the relationship between river flow and number of days suitable habitat present.](image-url)
Groundwater Program Activities - Summary

- Contaminant Mass Removal
  - Groundwater extraction near base of tailings
- Suitable Habitat Protection
  - Freshwater injection along riverbank
  - Surface water diversion directly into side channel
QUESTIONS?