Standards and GCAP Requirements

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MOAB UMTRA PROJECT CRESCENT JUNCTION

Overview

- What are the groundwater contaminants of concern and what is the regulatory driver?
- What are the surface/groundwater clean-up standards?
- What are the potential implications?
- How will the final compliance action plan be determined?

Regulatory Drivers

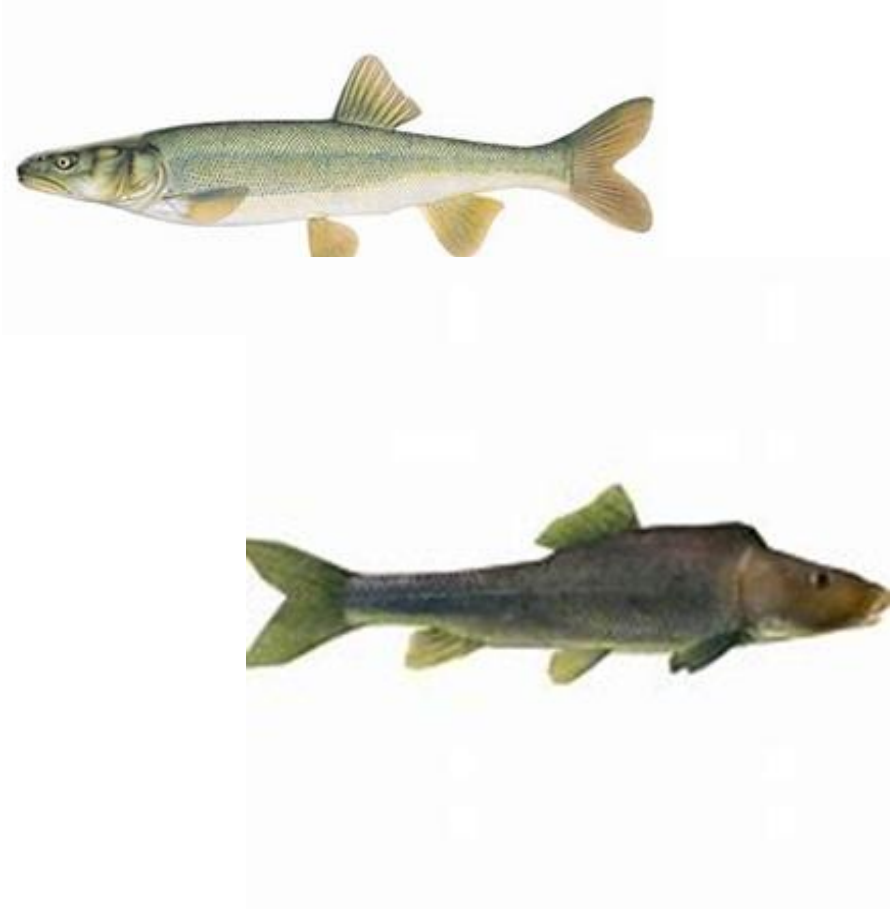
- 40 CFR 192 - Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings
- DOE Order 458.1 Radiation Protection of the Public and the Environment
- Endangered Species Act Critical Habitat
- FEIS - relocation of tailings pile from the Colorado River

Contaminants of Concern and Standards

PCOC	Standard (mg/L)	Source
Ammonia	3	Proposed in EIS
Arsenic	0.01	40 CFR 192 Sub A, Table 1
Copper	1.3	EPA Action Level
Manganese	0.05	EPA Secondary Drinking Water Regulation
Selenium	0.05	40 CFR 192 Sub A, Table 1
Sulfate	250	EPA Secondary Drinking Water Regulation
Uranium	0.044	40 CFR 192 Sub A, Table 1 (assumes U-234 and U-238 are in equilibrium, converted to mg/L)

Ammonia

- No regulatory groundwater standard
- A target goal of 3 mg/L in groundwater was proposed in the FEIS based on a 10-fold dilution
- High toxicity to aquatic life
- EPA Acute and chronic criteria



Uranium

- Exceeds the EPA standard in the groundwater (0.044 mg/L)
- Highest concentrations associated with the millsite plume
- No surface water regulations

Copper, Manganese, Selenium, Sulfate

- Copper and manganese have EPA acute and chronic criteria for aquatic life. Background manganese is also high at Matheson Wetlands.
- Selenium was identified with potential impacts to piscivore mammals and birds and EPA acute and chronic criteria for aquatic life. Background selenium is also elevated.
- Sulfate is elevated but there are no established wildlife benchmarks. Background sulfate is also high due to dissolution of the Paradox Formation.
- Elevated arsenic associated with the former millsite area.

Challenges

- Complex Site:
  - Freshwater/Brine Interface
  - Surface water/groundwater interactions
  - Two separate contaminant plumes
  - Adjacent critical habitat

Approaching Site Closure…

Groundwater Compliance Action Plan (GCAP)

- Prioritizes
  - Containing the spread of contaminants
  - Mitigating the threat to public health
- Contains:
  - Site Characterization
  - Groundwater Protection Standards
  - Hazard Assessment
  - Groundwater Corrective Action and Compliance Monitoring
  - Long-term Surveillance Plan
- Nuclear Regulatory Commission approval
- NUREG 1724/GCAP PEIS

Acceptable Strategies

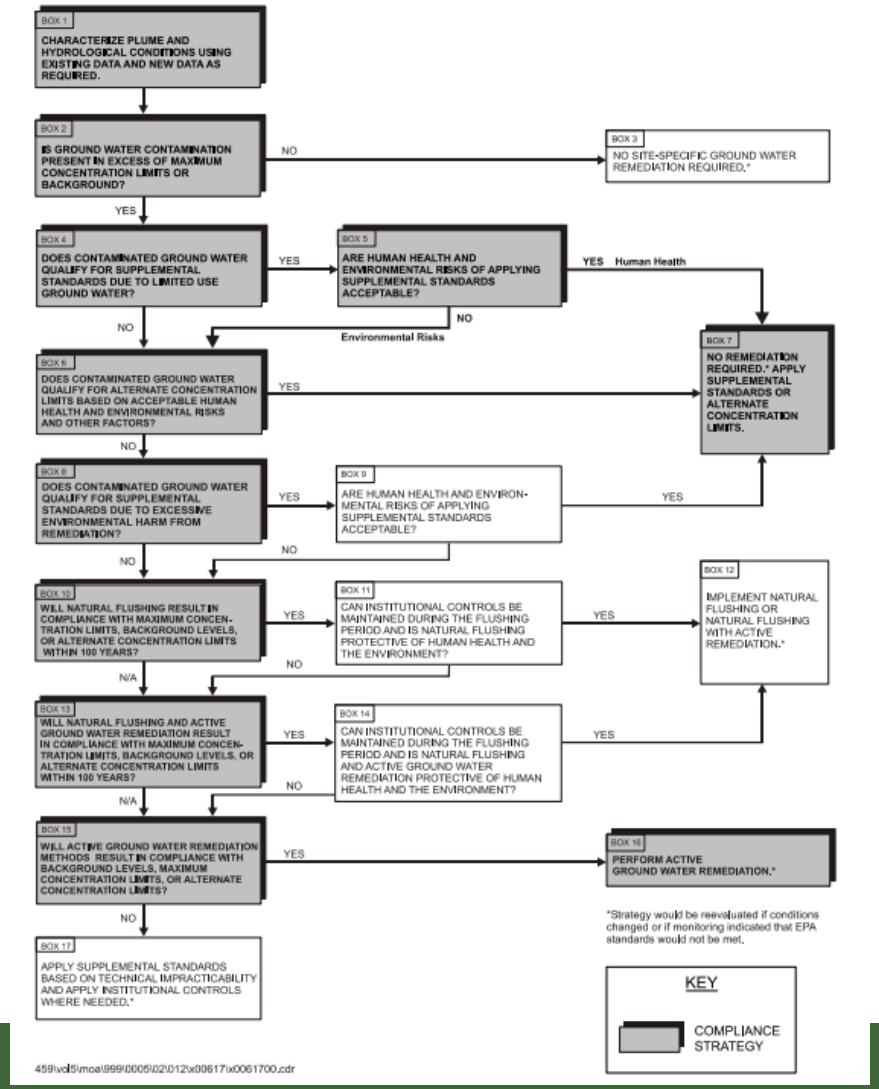
Strategy	Alternative			
	Proposed action	No action	Active remediation to background levels	Passive remediation
Active ground water remediation methods	X		X	
Natural flushing	X			X
No ground water remediation - Sites that qualify for supplemental standards or alternate concentration limits .	X			X
- Sites that meet maximum concentration limits or background levels (no impacts).	X			X

- No Remediation
- Natural Flushing (within 100 years)
- Active Remediation
- Active Remediation/Natural Flushing

Other Potential Strategies

- Supplemental Standards/Alternate Concentration Limits
  - Concentration of total dissolved solids >10,000 mg/L
  - Limited use aquifer
  - Must ensure projected of uses of groundwater are preserved
- Institutional Controls
  - Protect public health and environmental
- Alternate Concentration Limits
  - No excessive health or environmental risks

Compliance Strategy Selection Process



Closing

- The Groundwater Compliance Action Plan will:
  - Account for the constituents of concern and the impact on ecology and human health.
  - Determine the best remedial strategy, which may vary between the two contaminant plumes.
  - Involve stakeholder engagement.
  - Follow the requirements in 40 CFR 192 and NUREG 1724.

QUESTIONS?