San Juan Mine Remediation and Restoration Study

July 1, 2025

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a Geo-Logic Company

www.dbstephens.com

Specifics of the Act

- Section 74-4H-1 to 74-4H-4, NMSA 1978
- Perform studies to determine if there has been any environmental contamination of lands and waters on or adjacent to the generating facility (NMED) and mine (EMNRD)
- Reclamation and restoration planning
- Guide future regulatory actions

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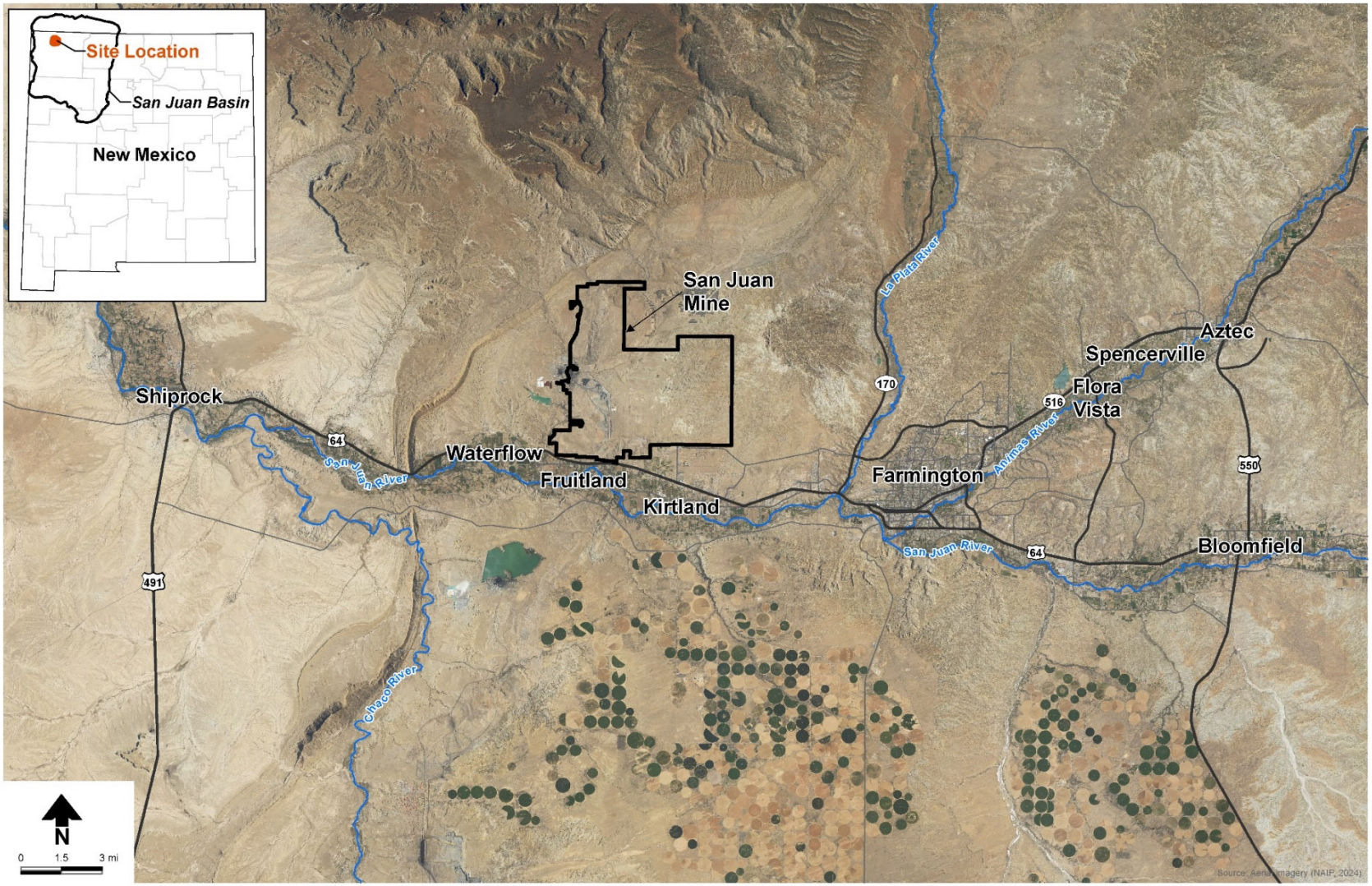
San Juan Mine Location and Geography



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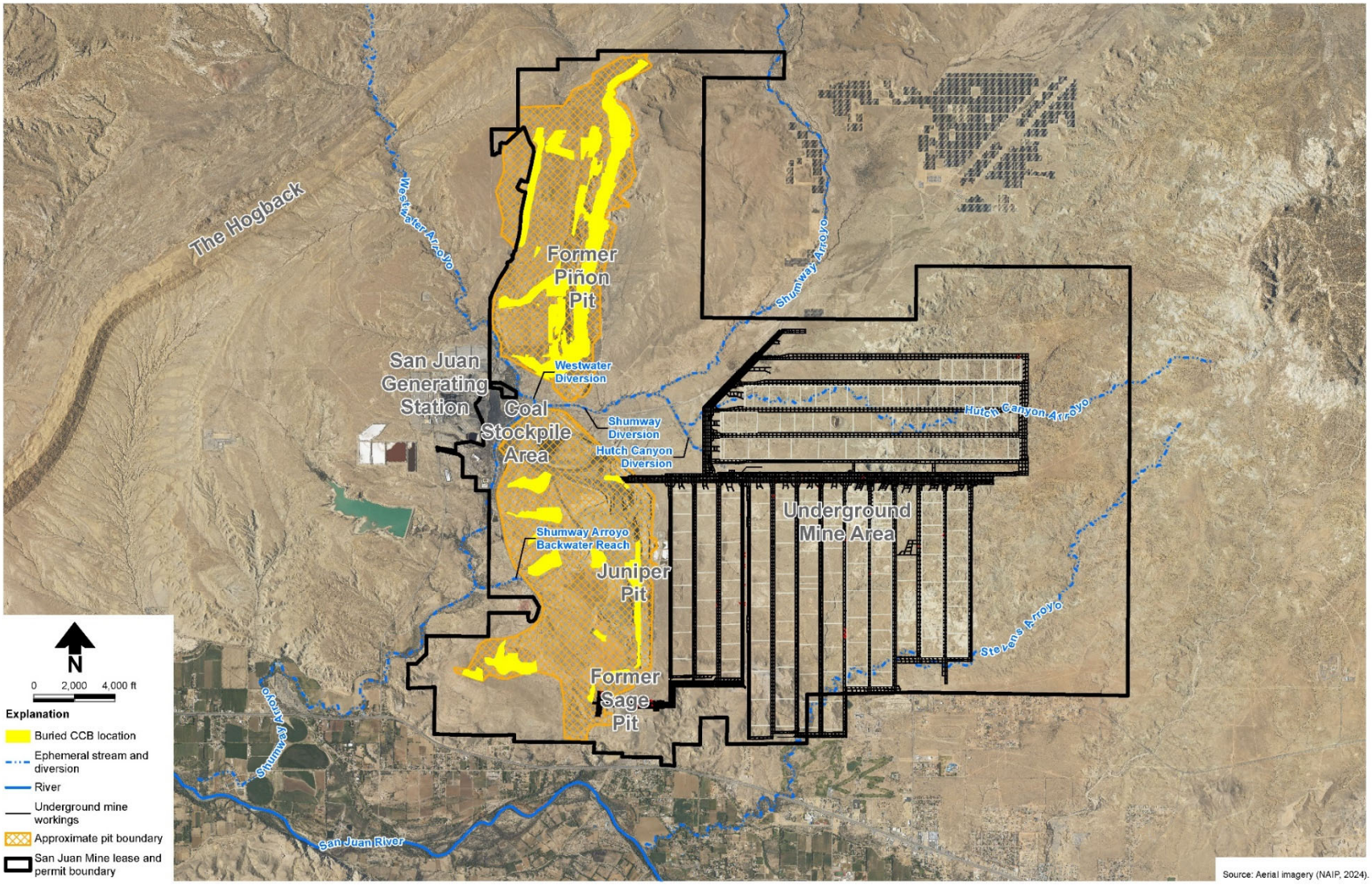
History of the San Juan Mine

- Surface strip mining began in the early 1970s
- Mining operations switched to underground mining in 2002
- An underground fire halted mining in 2011
  - Otherwise, continuous operation since 1970s
- Mining resumed in June 2012 and continued until end of September 2022

Existing Features at the San Juan Mine



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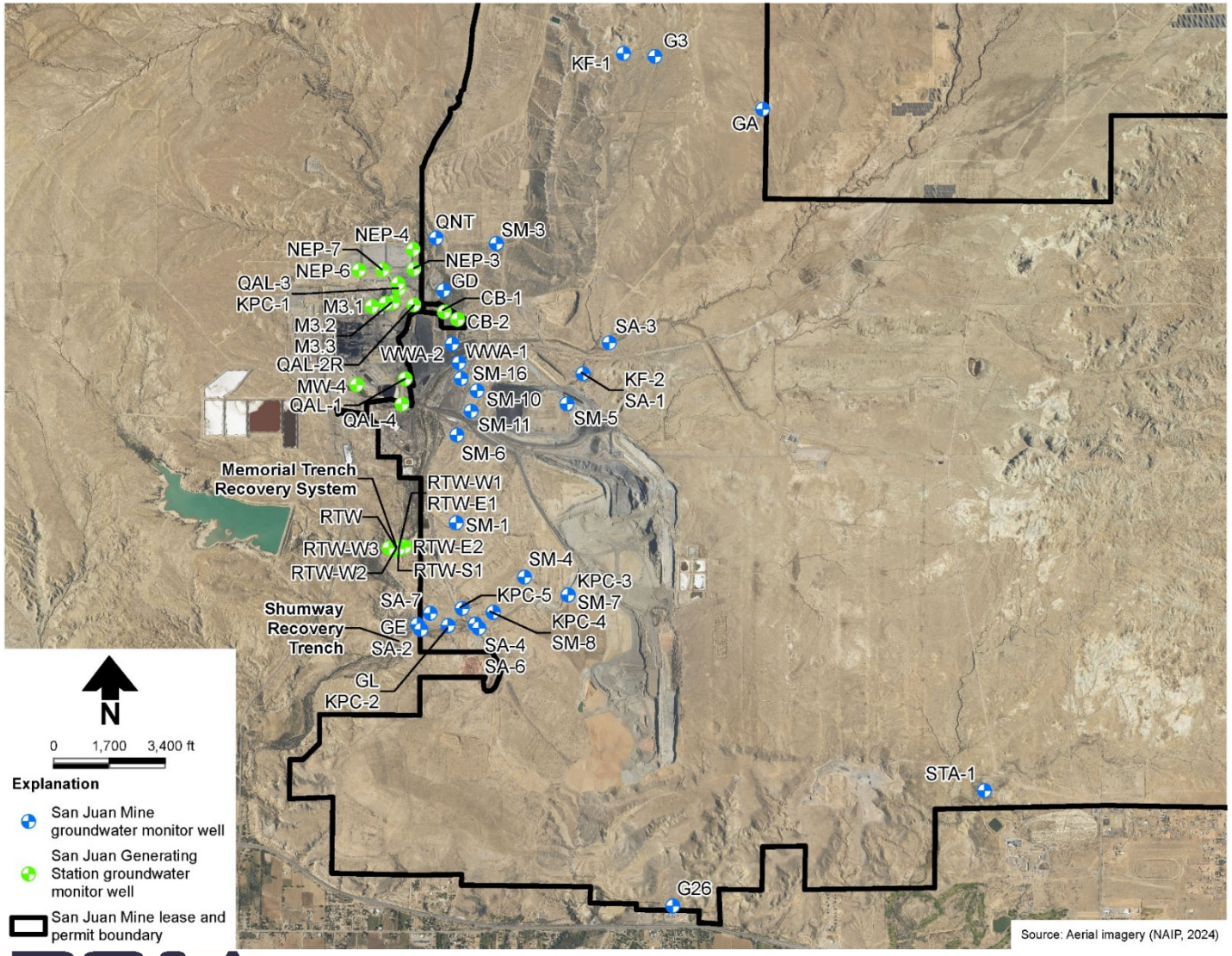
Current Mine Status

- Westmoreland is the current owner/operator
- Active Permit #19-01
- September 29, 2022 was the last operating day as an active mine
- Currently backfilling Juniper Pit
- MMD conducts monthly mine inspections
- Mine conducts quarterly water sampling

Pre-Investigation Tasks

- Site reconnaissance on May 9, 2024
  - Joined by representatives from MMD and Westmoreland
  - To familiarize DBS&A with site conditions, operations, and existing features of the mine's environmental monitoring program
- Conducted public notice and outreach
  - Newspaper and radio ads, website postings, public meeting
  - Received public comments to consider as part of the study
- Data compilation and review
  - Considered information from several existing studies
  - Developed Access database and GIS with existing data
  - Assessed and documented data quality and usefulness

Existing Groundwater Monitoring Locations



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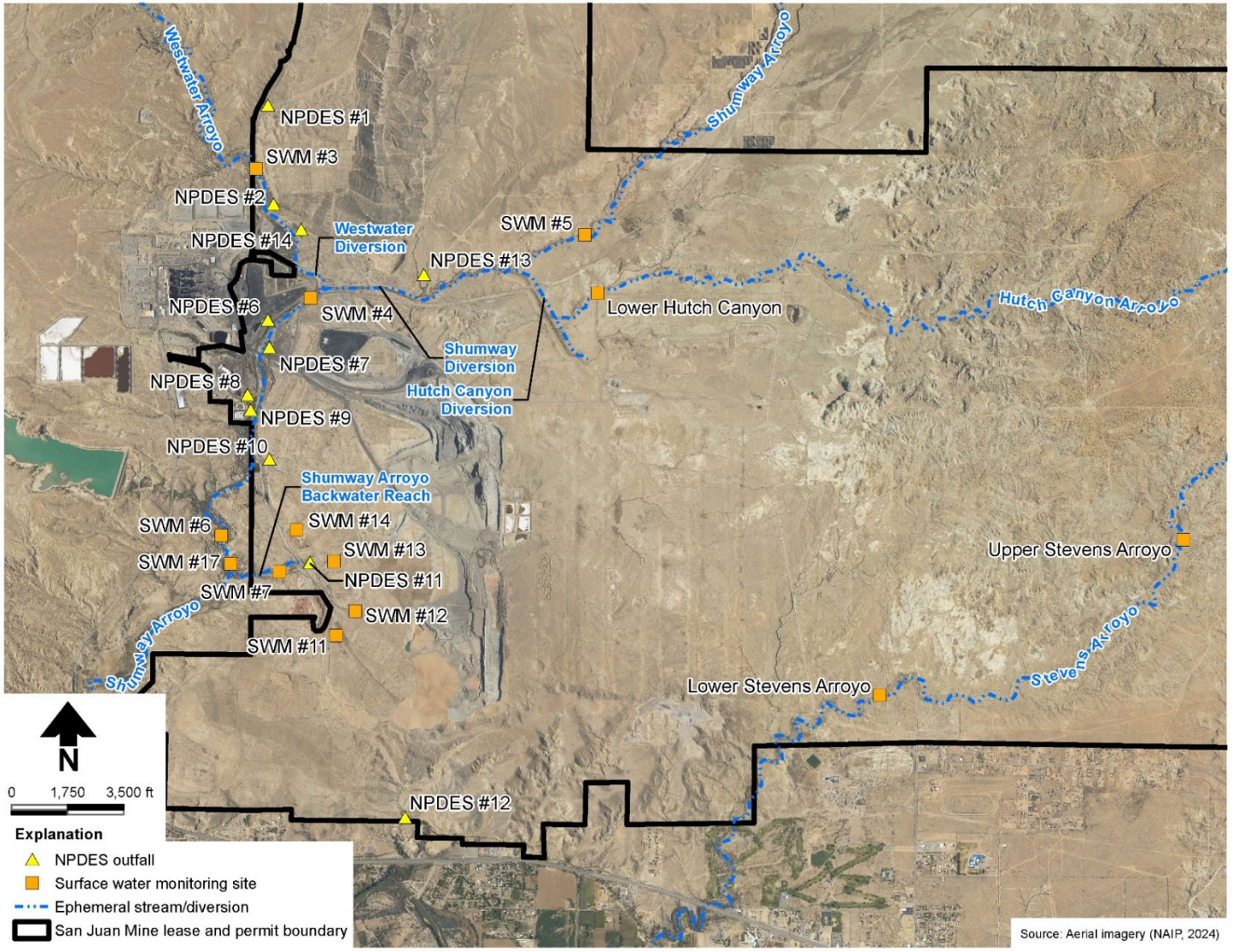
Existing Surface Water Monitoring Locations



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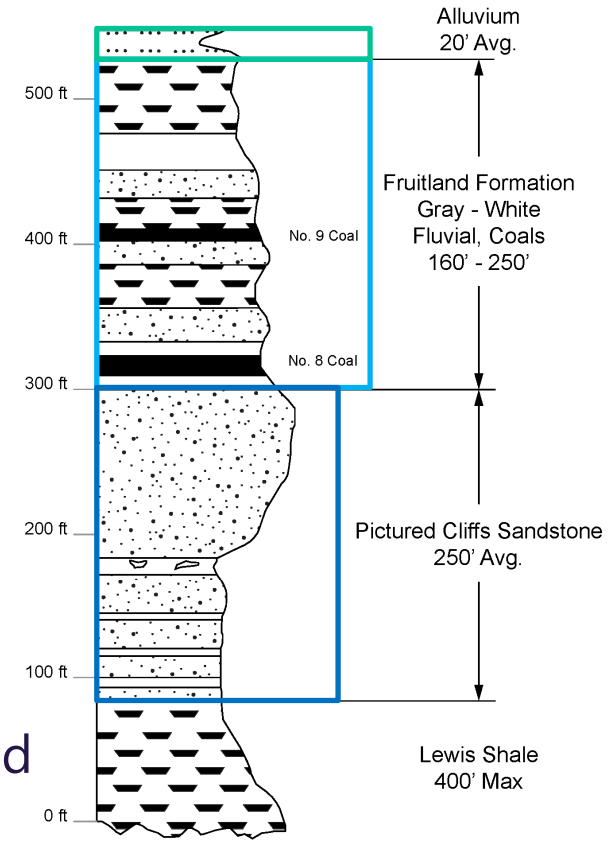
Study (Desktop Investigation)

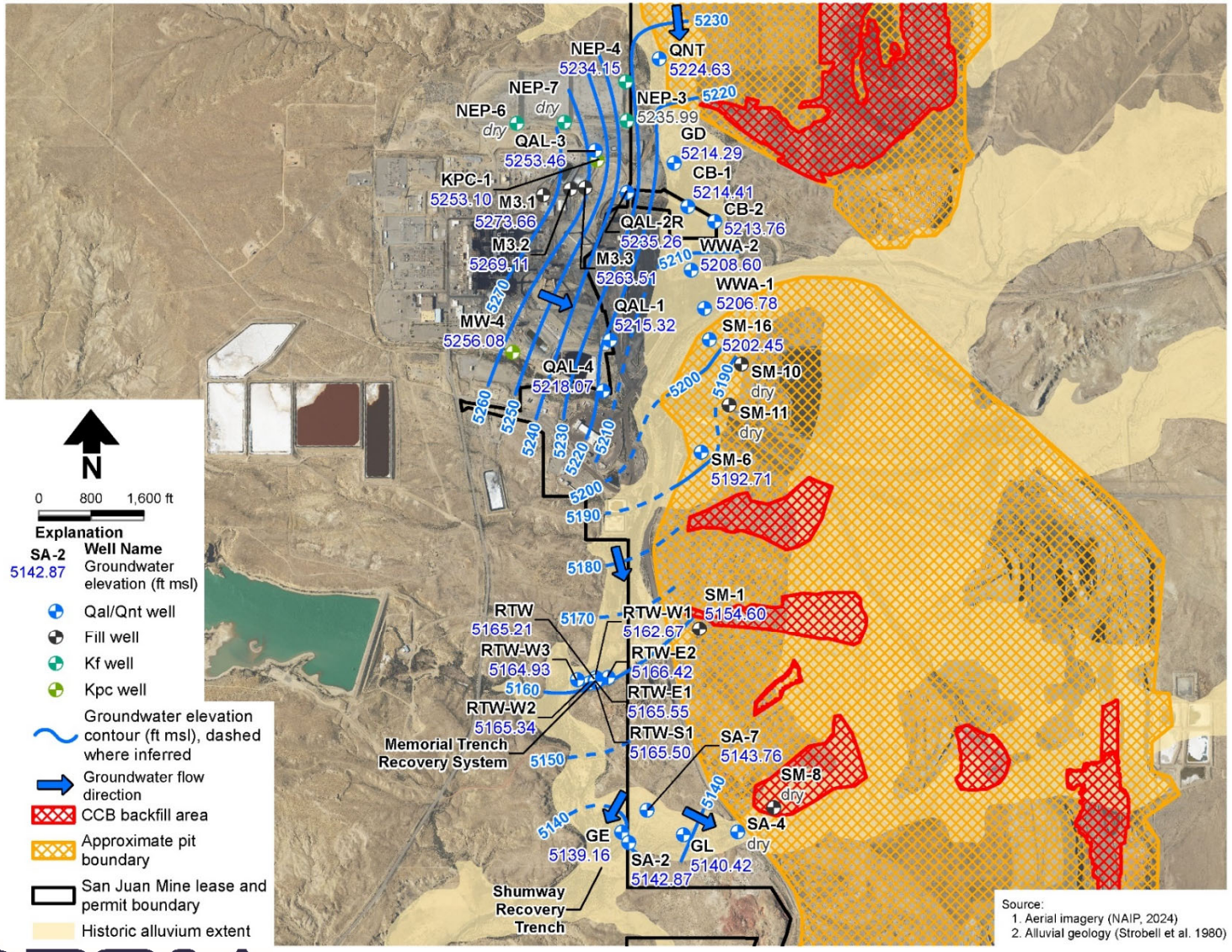
- Purpose: characterize site conditions and identify any mine impacts and threats to potential receptors
- Reviewed existing documents and reports
- Evaluated existing monitoring data
  - Site geology
  - Groundwater occurrence and flow directions
  - Chemical constituent distributions (i.e., maps)
  - Temporal water level and water quality trends
  - Statistical analyses
  - Importance of existing groundwater water abatement measures
- Assess potential threats to nearby receptors

Study Findings

- Three water-bearing rock units
- Groundwater quality is poor, meaning constituent concentrations are higher than water quality standards
- Some concentrations appear to be naturally elevated
- Concentrations are greatest in alluvial groundwater
  - Upgradient groundwater is also of poor water quality but needs to be better defined
  - Historical discharges from the generating station to Westwater Arroyo



Alluvial Potentiometric Surface, Second Quarter 2024



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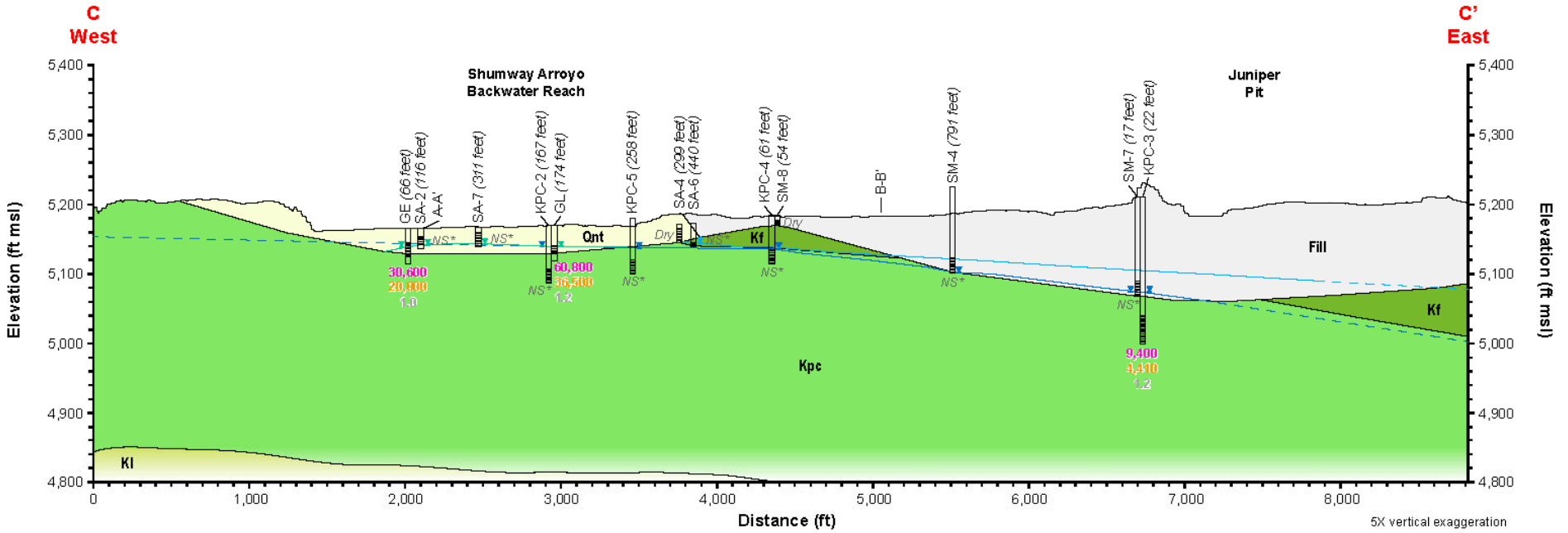
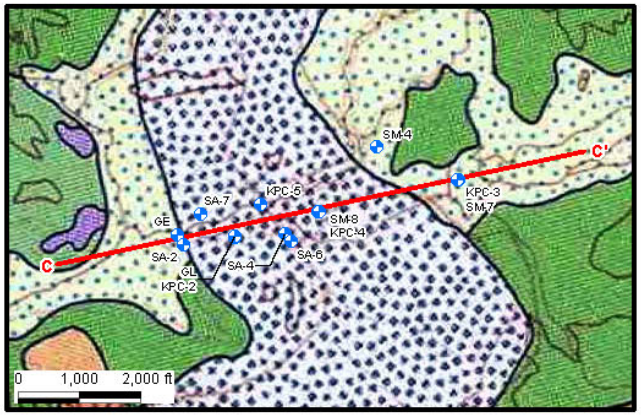
Hydrogeologic Cross Section





Explanation

- Monitor well with screened interval
- 9,400 Total dissolved solids concentration (mg/L)
- 4,410 Sulfate concentration (mg/L)
- 1.2 Boron (mg/L)
- Ground surface elevation
- Alluvium potentiometric surface
- Fruitland Formation potentiometric surface
- Pictured Cliffs Sandstone potentiometric surface, dashed where inferred

Lithology

- Fill Spoil backfill
- Qnt Quaternary Naha and Tsegi Alluviums
- Kf Cretaceous Fruitland Formation
- Kpc Cretaceous Pictured Cliffs Sandstone
- Kl Cretaceous Lewis Shale

Notes:
1. Water levels and chemistry values are from April 30 to June 26, 2024.
2. **Bold** indicates that chemistry value exceeds the Section 3103 standard.
3. Surface elevation data from July 2022.
4. * Insufficient water to sample.

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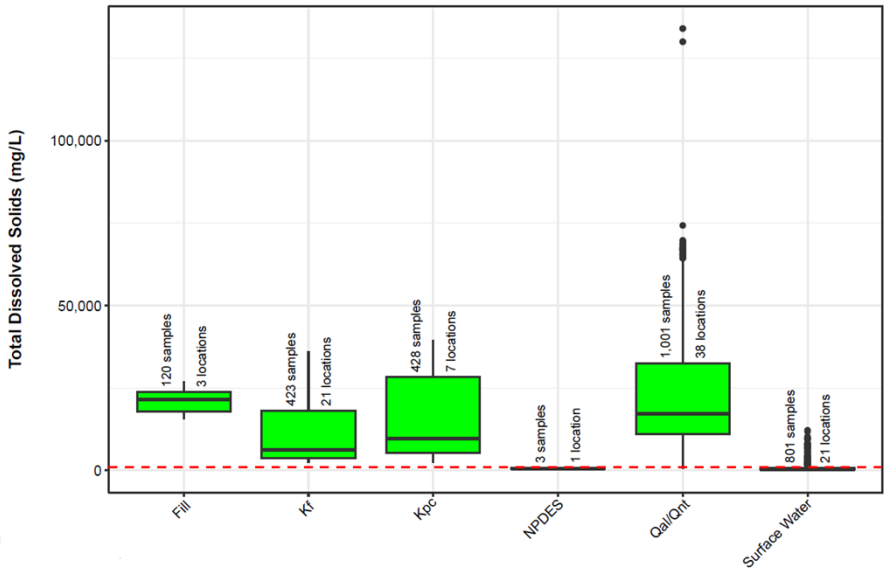
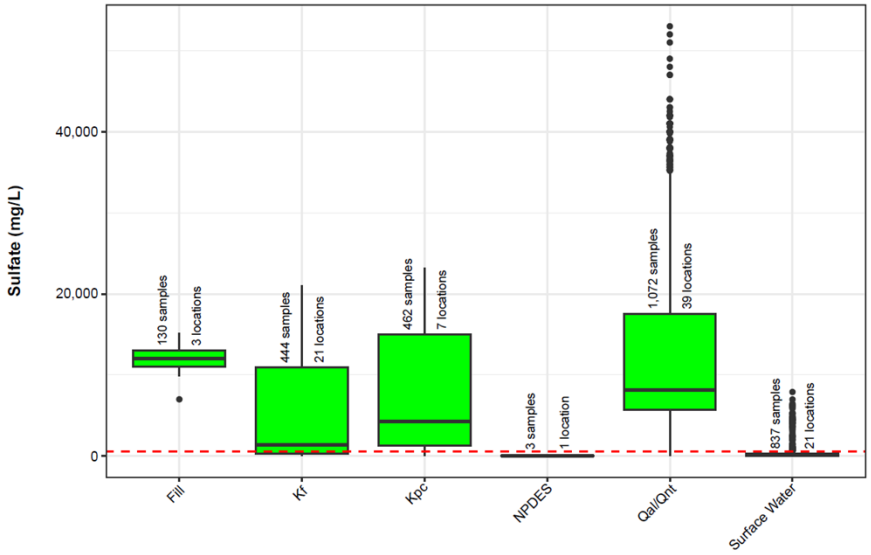
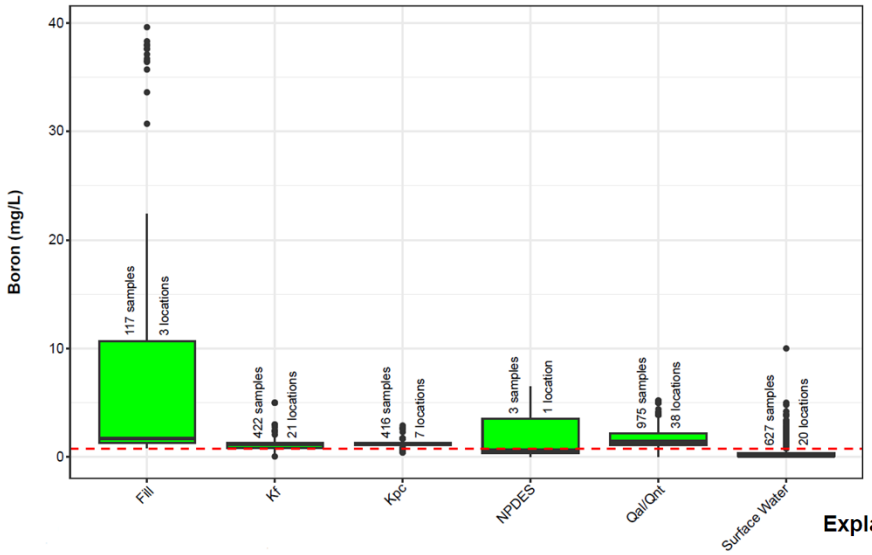
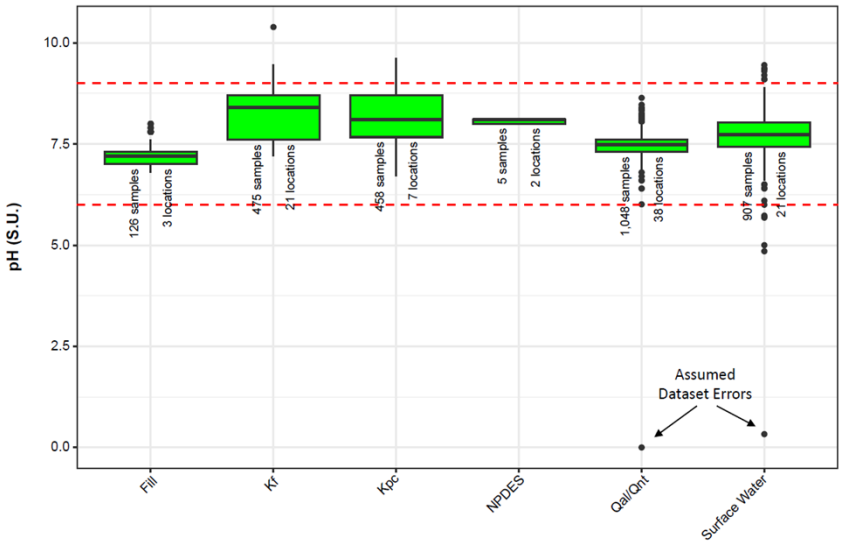
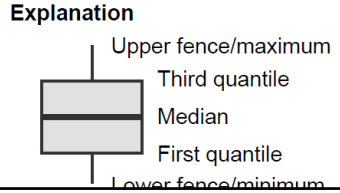
Box and Whisker Plots





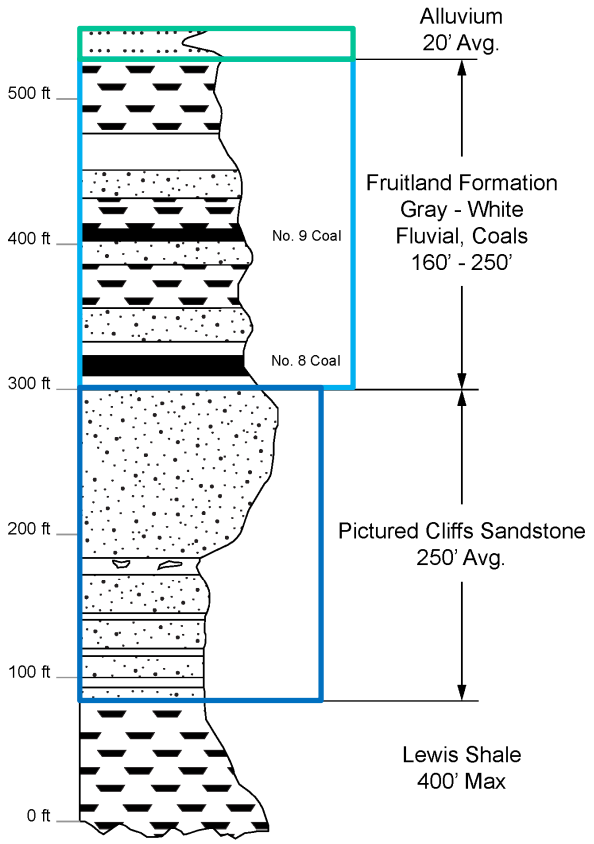






Study Findings

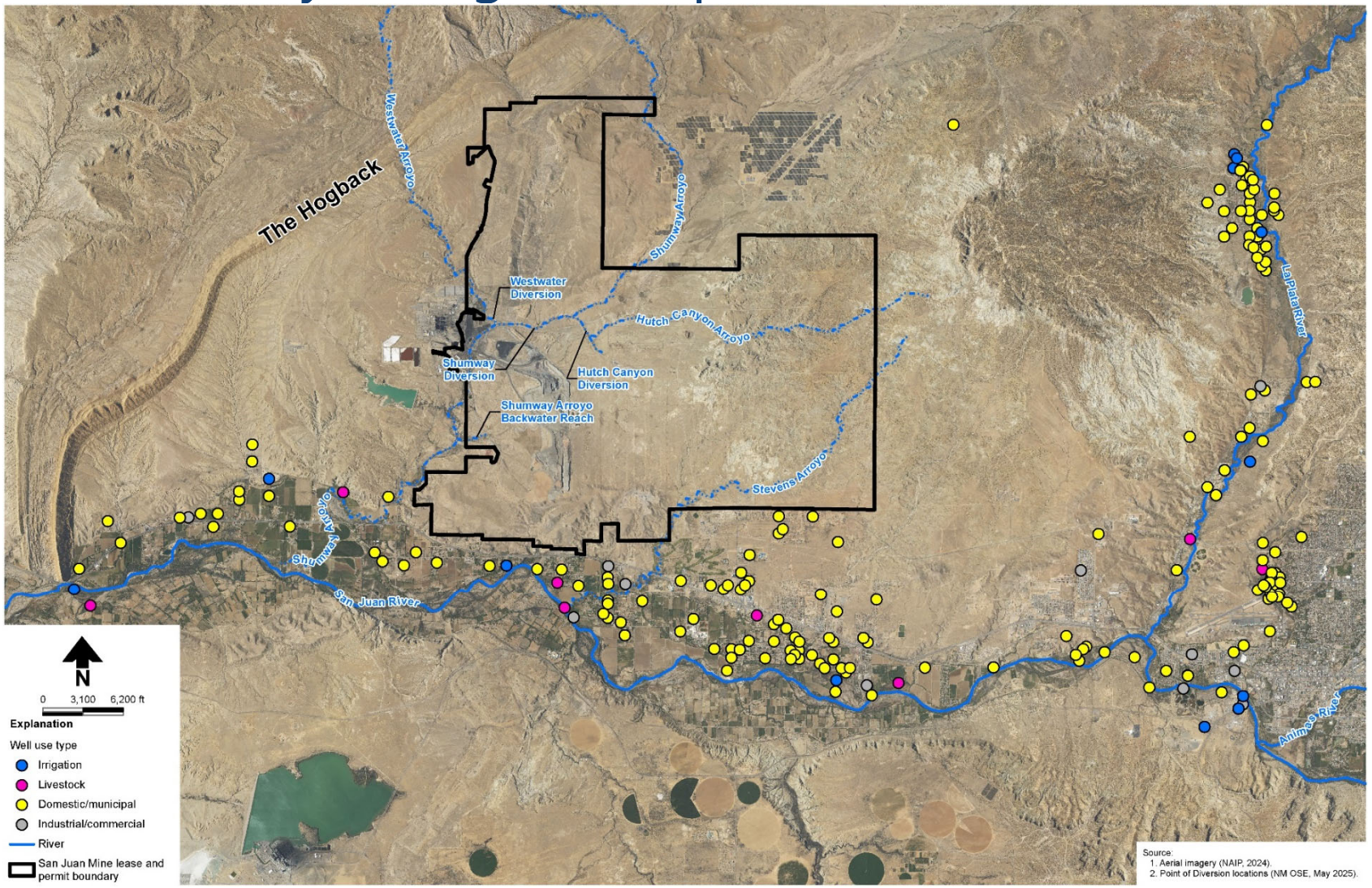
- Water-bearing Fruitland Formation and Pictured Cliffs Sandstone
  - Low permeability rocks with low well yields
  - Water levels expected to recover due to the cessation of mine dewatering
- Buried CCBs present a low risk to groundwater quality
  - Topic of UNM and USGS studies
  - Most constituent concentrations in CCB leachate are comparable to those of native groundwater
  - Long travel times (1000s of years) to San Juan River



Study Findings

- Surface water quality is better than groundwater quality
  - Poorest quality along Westwater and Lower Shumway Arroyos
- Stormwater impoundments at the mine effective at preventing discharges to the arroyos
- Two areas of primary concern:
  - Alluvial groundwater beneath Westwater Arroyo and the Shumway Arroyo Backwater Reach
  - Sediment of Westwater Arroyo that appears to be impacting surface water quality
- Investigation report identifies a few data gaps
  - Additional monitor wells

Potential Hydrologic Receptors



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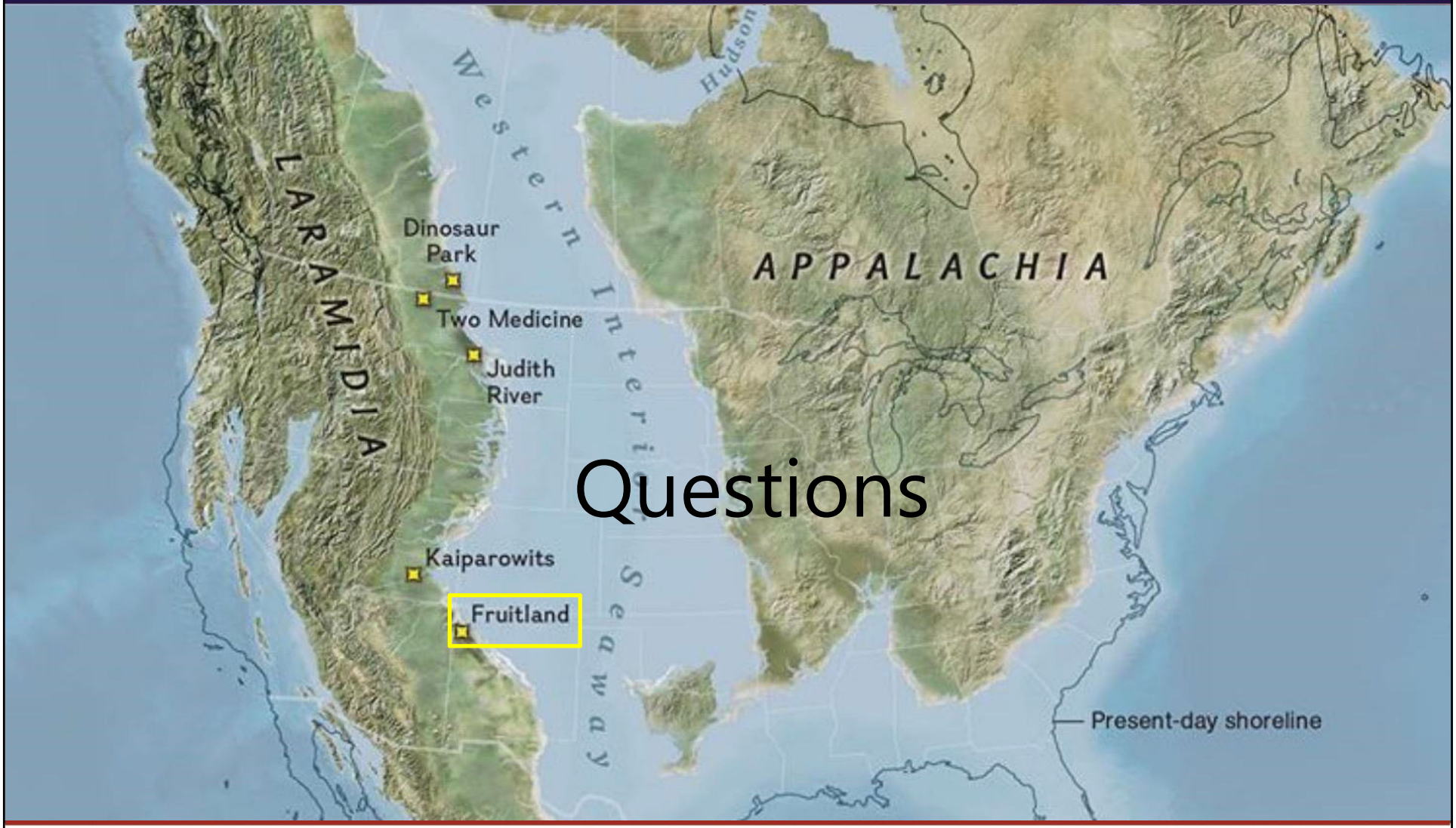
Reclamation and Restoration

- Existing mine closure plan is adequate
  - Primary reclamation method is to backfill, regrade, cover, and revegetate
- Expected to limit infiltration but groundwater levels are expected to recover
- Continued operation of Shumway Arroyo Recovery Trench important to containment
- Otherwise, long travel times (thousands of years) to San Juan River
- Clean cover should remove the need for the stormwater impoundments



Questions

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