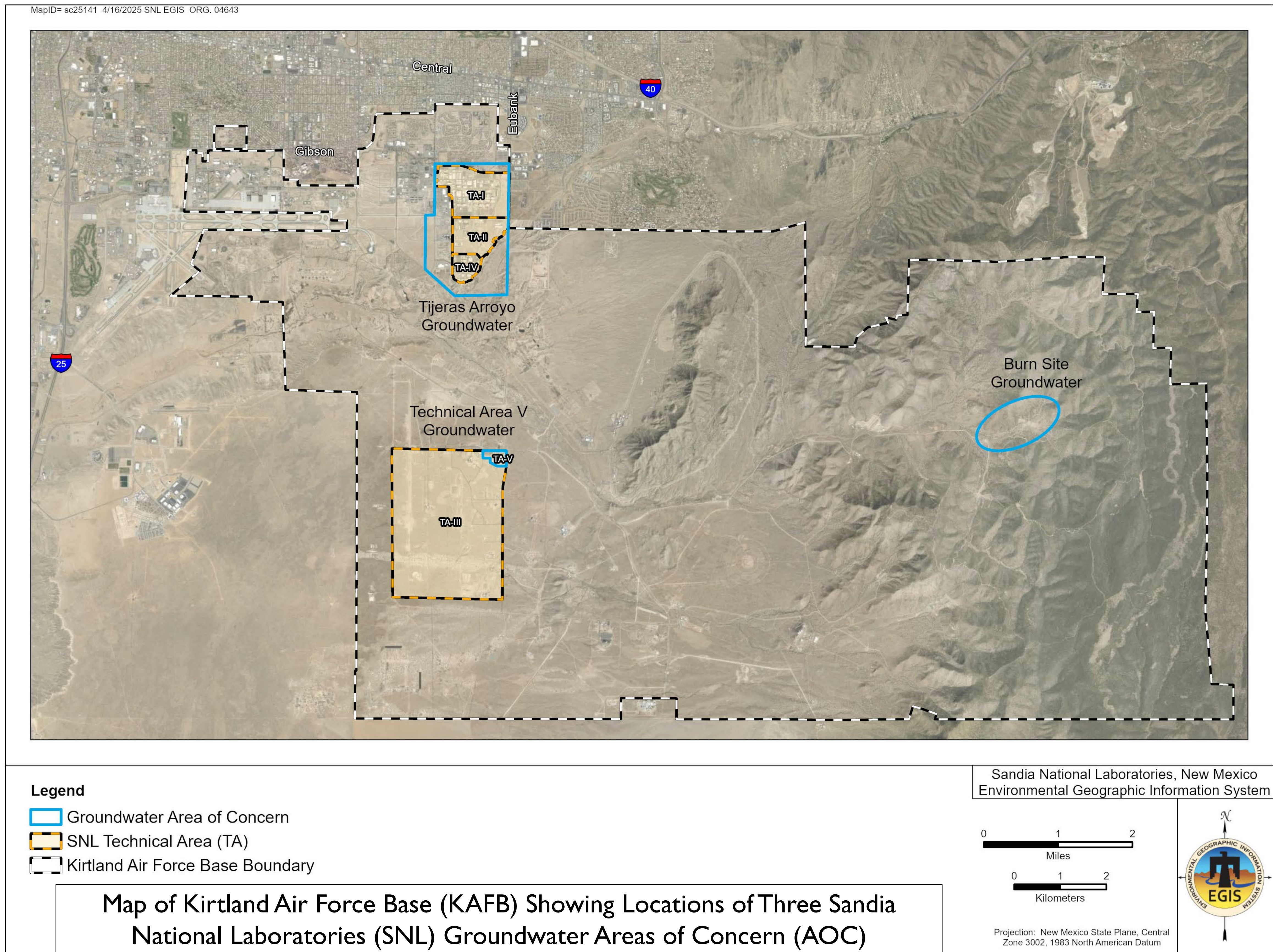




# Sandia National Laboratories Groundwater Investigations



- The Tijeras Arroyo Groundwater (TAG) AOC spans SNL Technical Areas (TAs) I, II, and IV and covers 1,165 acres.

- The TA-V Groundwater (TAVG) AOC is in TAV, which covers 35 acres.

- The Burn Site Groundwater (BSG) AOC is located in Lurance Canyon in the Manzanita Mountains and covers 360 acres.

The groundwater contamination is indicated by concentrations of nitrate and trichloroethene (TCE) above the U.S. Environmental Protection Agency maximum contaminant levels (MCLs) for drinking water.

- Nitrate MCL: 10 milligrams per liter
- TCE MCL: 5 microgram per liter

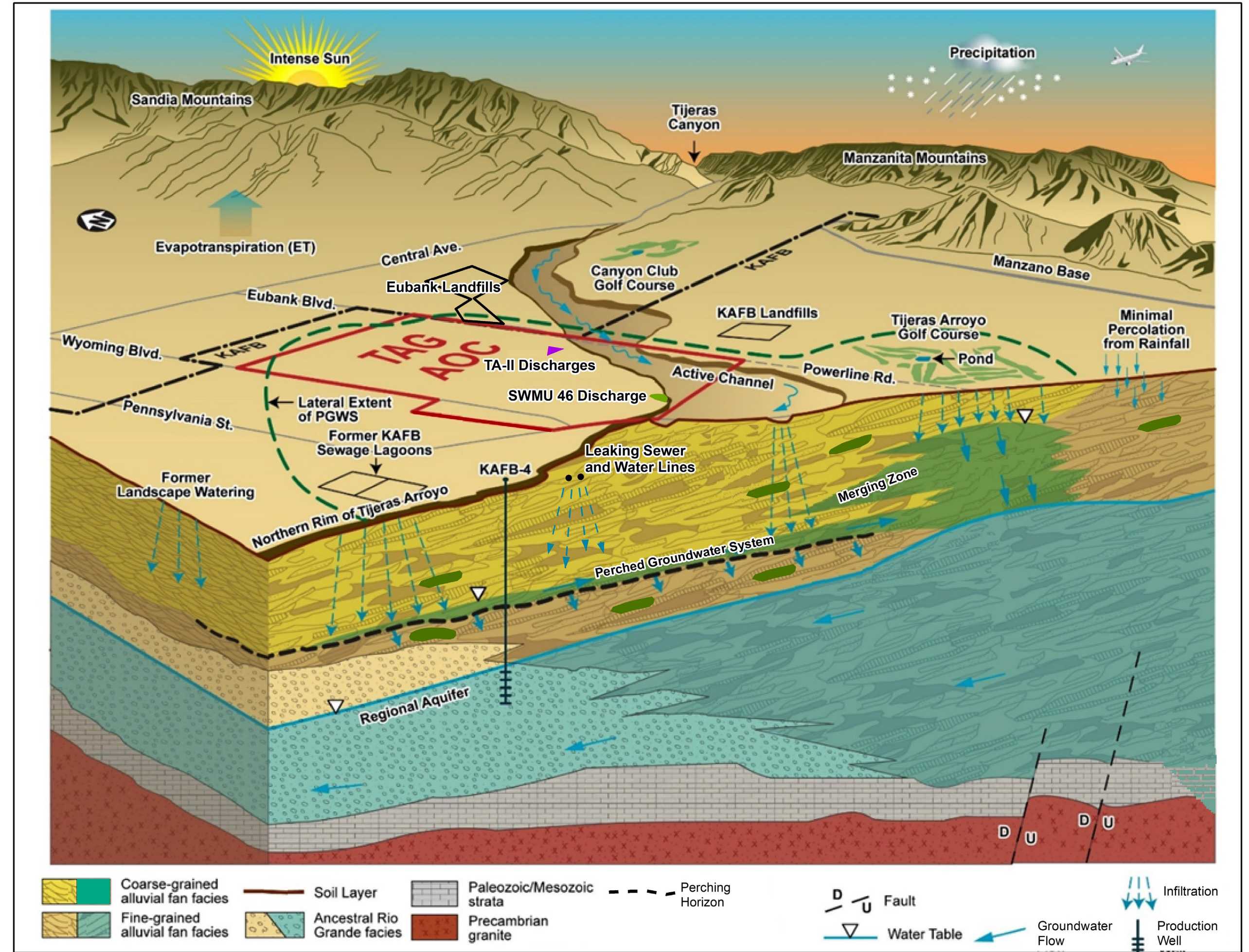
AOC	Constituents of Concern
TAG	Nitrate
BSG	Nitrate
TAVG	Nitrate, TCE



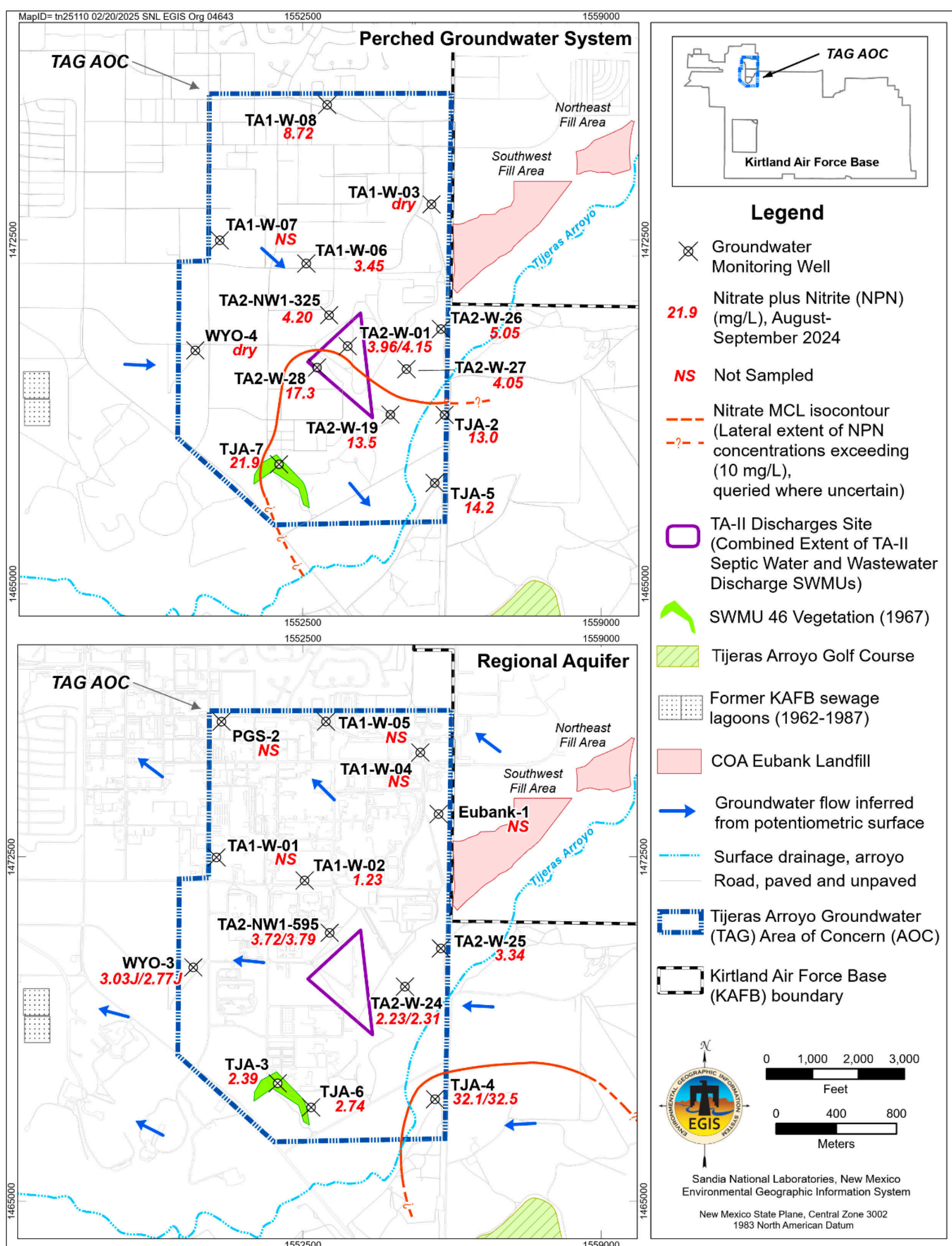


# Tijeras Arroyo Groundwater Investigation

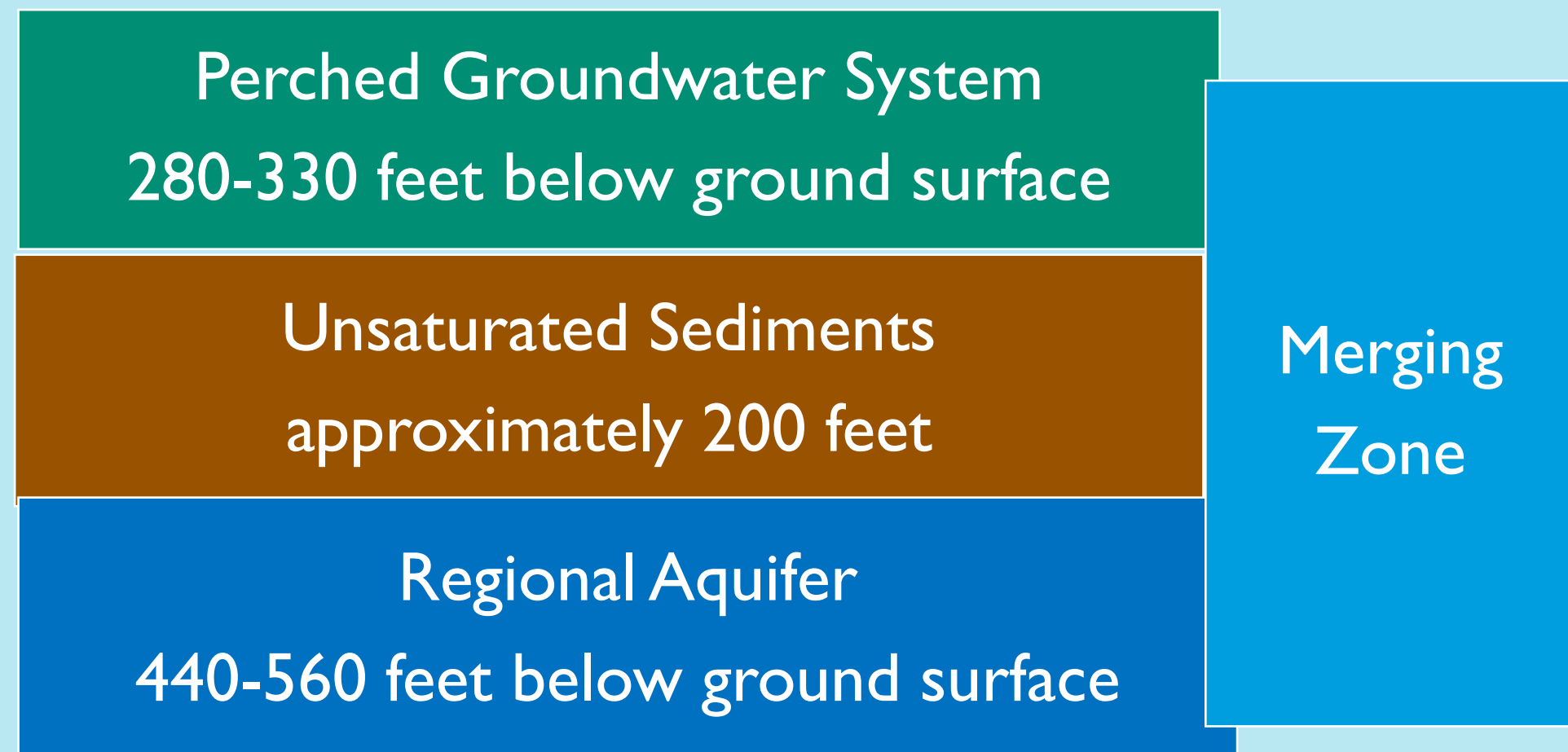
- Early SNL activities in TA II and vicinity resulted in contamination of the Perched Groundwater System (PGWS) of the TAG AOC.
- **TAG AOC is in the corrective action process.**
- Perched groundwater contamination resulted from industrial and septic wastewater discharges from 1948 to 1992.
  - Nitrate is derived from septic wastewater discharges.
  - Nitrate could also be naturally occurring.



Conceptual Site Model for the TAG AOC and Vicinity



- The sediment underlying the TAG AOC contains two water-bearing zones:



- The PGWS was created by manmade recharge sources, including sewage lagoons, septic leach fields, and wastewater outfalls. These sources have been eliminated, and the PGWS is naturally dewatering.
- Perched groundwater flows southeast toward the merging zone.
- Regional groundwater flows northwest toward the production wells near KAFB's northern boundary.
- All productions wells in the vicinity are screened in the Regional Aquifer, which is not contaminated.
  - The nearest potable production well (KAFB-20) is approximately one mile northwest of the TA-II Discharges Site.

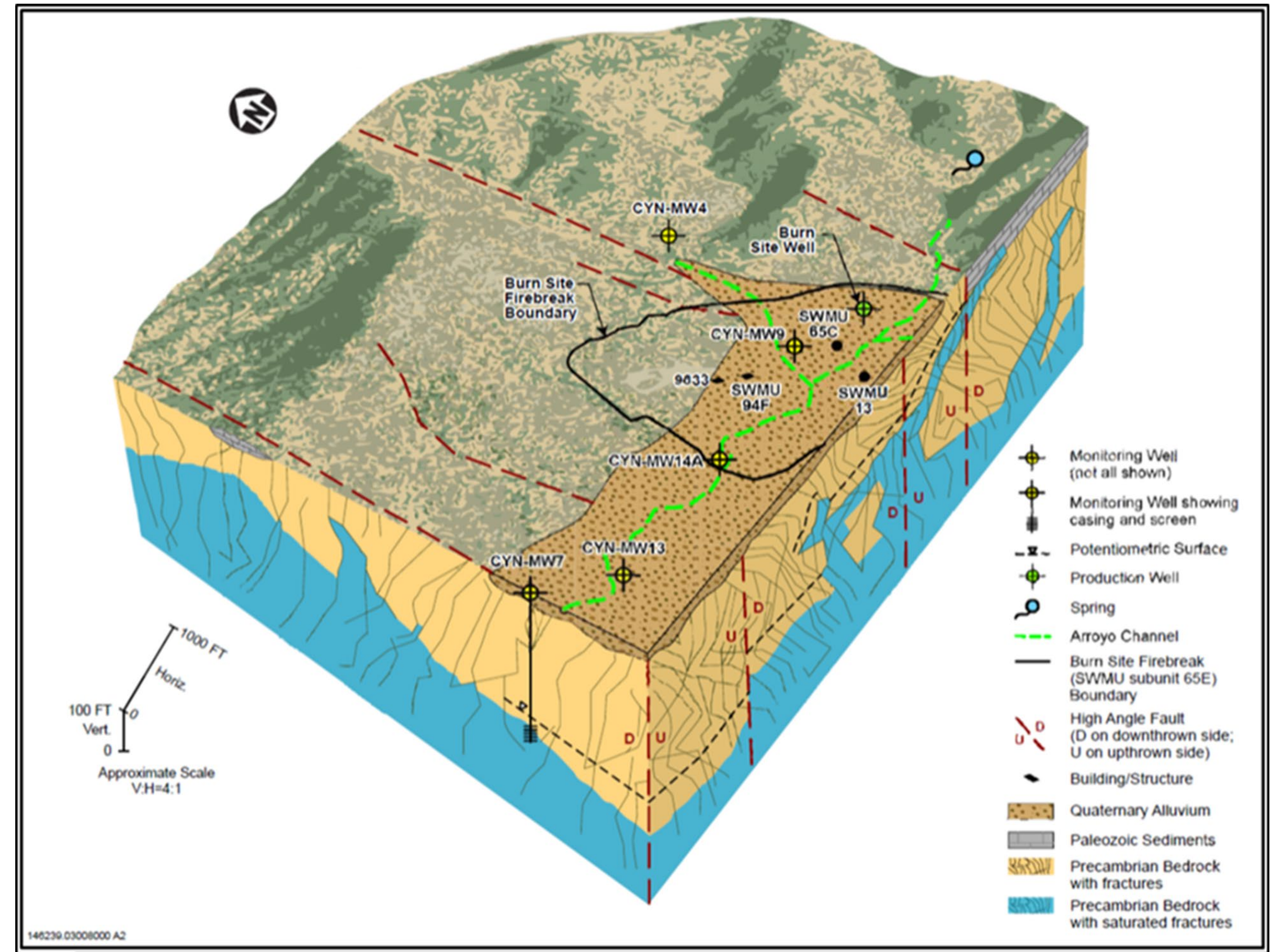
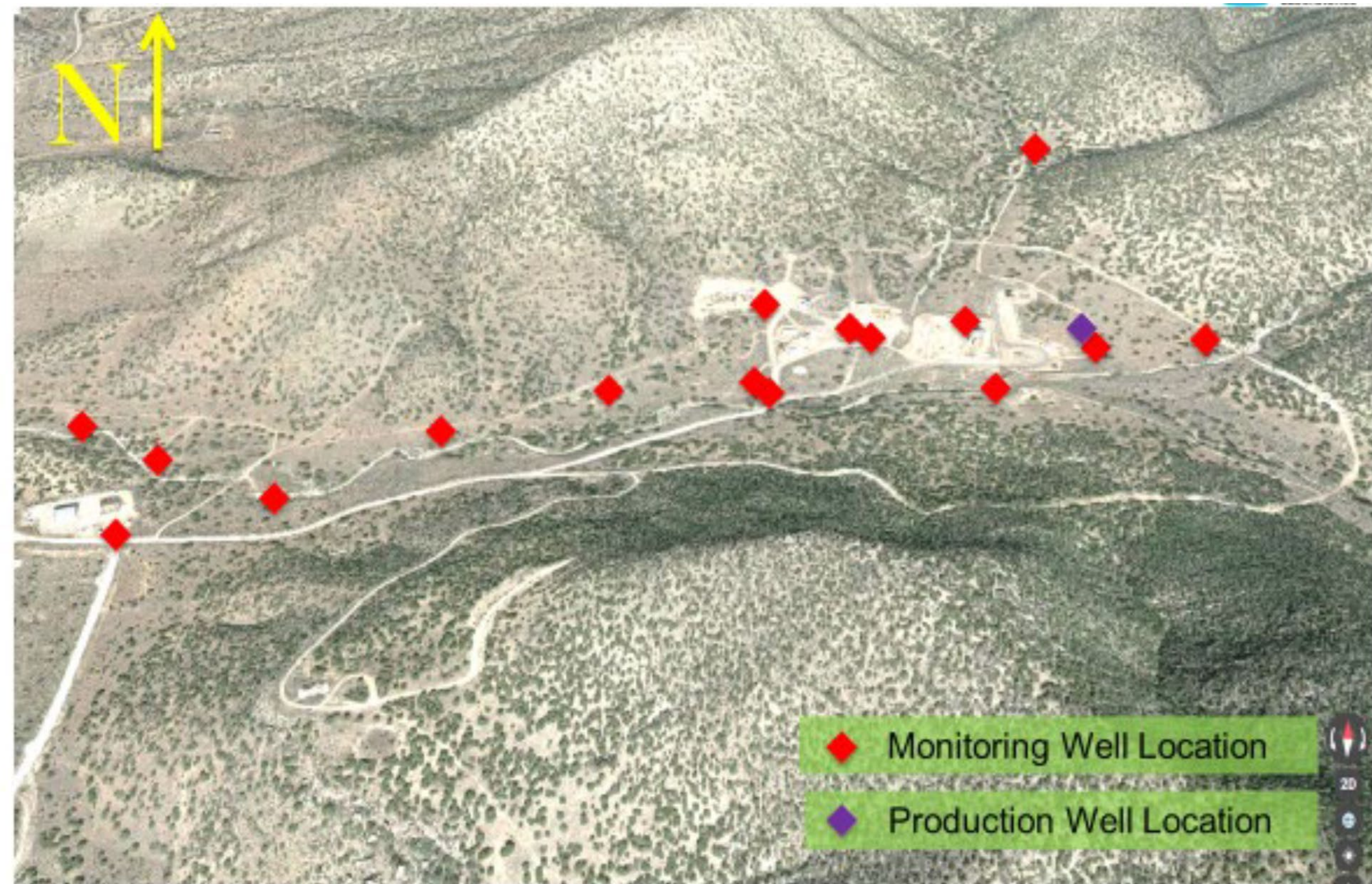
- Groundwater monitoring in the TAG AOC began in 1992.
- The current monitoring well network consists of 26 monitoring wells: 13 in PGWS, 12 in Regional Aquifer, and 1 in merging zone.
- SNL is implementing Monitored Natural Attenuation remedy in the TAG AOC.
  - Measure groundwater levels quarterly.
  - Evaluate the dewatering of the PGWS.
  - Sample 11 perched groundwater monitoring wells semiannually and 8 Regional Aquifer monitoring wells annually for nitrate.
  - Sample all 19 wells annually for water quality parameters.

By Year	2024 Prediction of Perched Groundwater Monitoring Wells
Present	TAI-W-03 and WYO-4 are dry
2039	4 wells will be dry
2049	5 wells will be dry
2059	8 wells will be dry
2069	10 wells will be dry



# Burn Site Groundwater Investigation

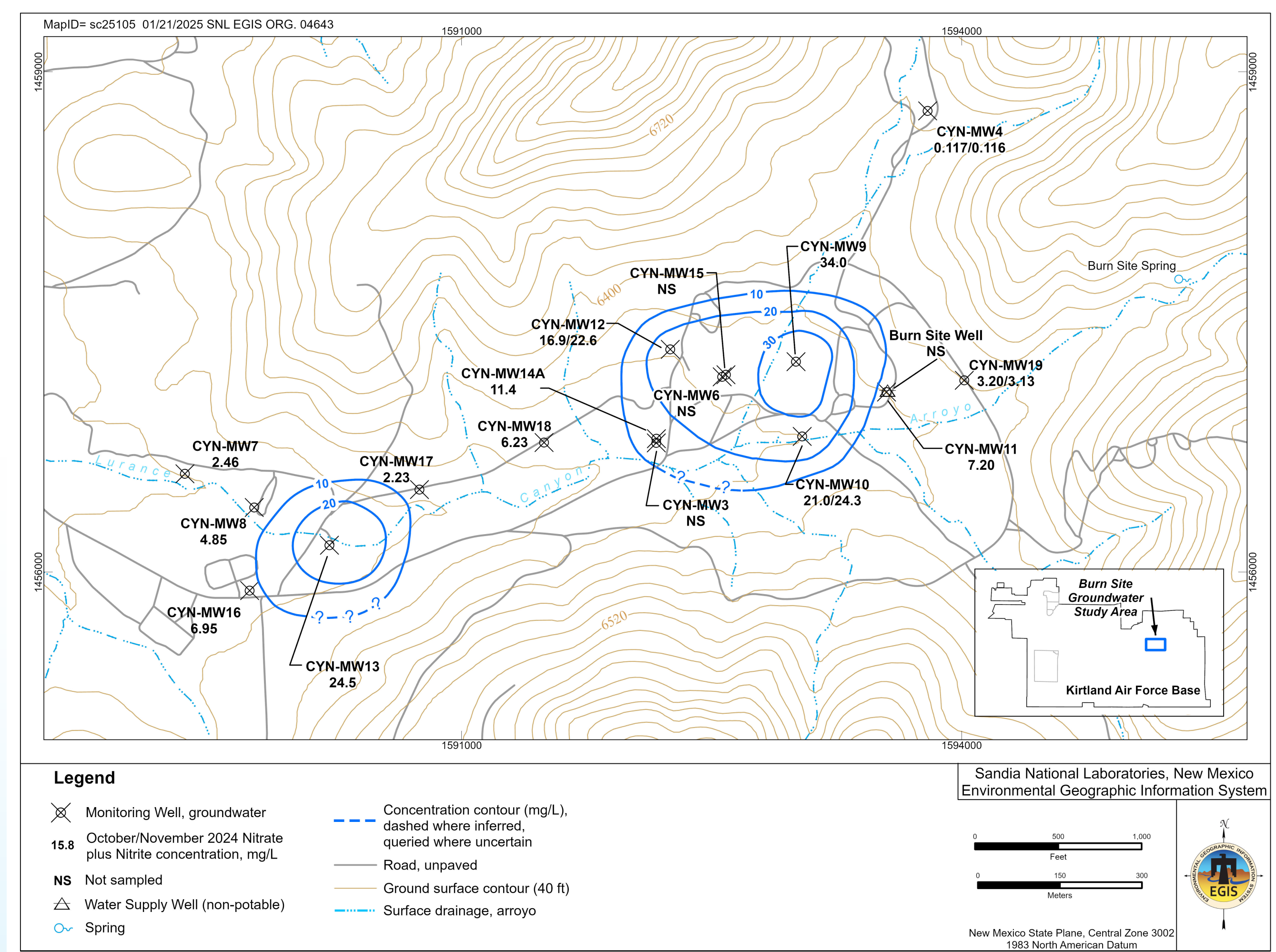
- Early SNL activities at the Burn Site included explosives testing and burn testing. Limited testing continues to present day.
- Early activities resulted in contamination of the groundwater.
- **BSG AOC is in the corrective action process.**
  - Nitrate is derived from manmade sources, including ammonium nitrate slurry, wastewater discharges, and degraded explosive compounds.
  - Nitrate could also be naturally occurring.



Conceptual Site Model for the BSG AOC and Vicinity

- The groundwater occurs in fractured Precambrian bedrock that is intermittently recharged by infiltrating precipitation.
- Groundwater flow is controlled by changes in rock type, faults, and fractures.
- Depth to groundwater ranges from 45 to 360 feet below ground surface.
- The groundwater flows west into the Regional Aquifer.
- The nearest downgradient potable production well (KAFB-4) is 8.4 miles to the west.

- Groundwater monitoring at the Burn Site began in 1996.
- The current monitoring well network consists of 17 monitoring wells, including an inactive non-potable production well.
- SNL is implementing Long-Term Monitoring remedy in the BSG AOC.
  - Measure groundwater levels quarterly.
  - Sample 13 monitoring wells annually for nitrate and water quality parameters.
  - Conduct per- and polyfluoroalkyl substances (PFAS) sampling in 2026.



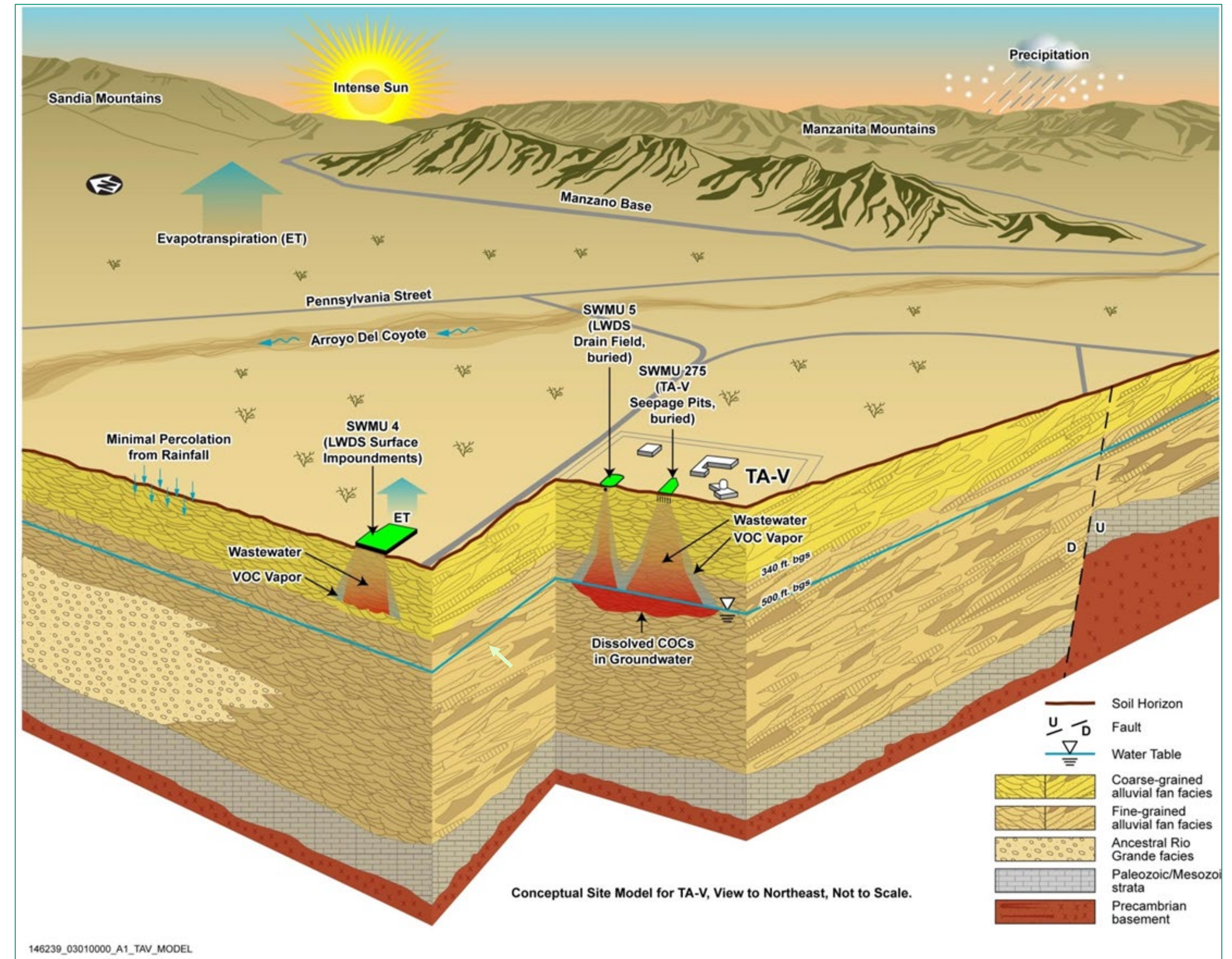
COC	Maximum Concentration in 2024	Plume Area in 2024 (Concentration > MCL)
Nitrate	34.0 milligrams per liter	49 acres (two plumes combined)



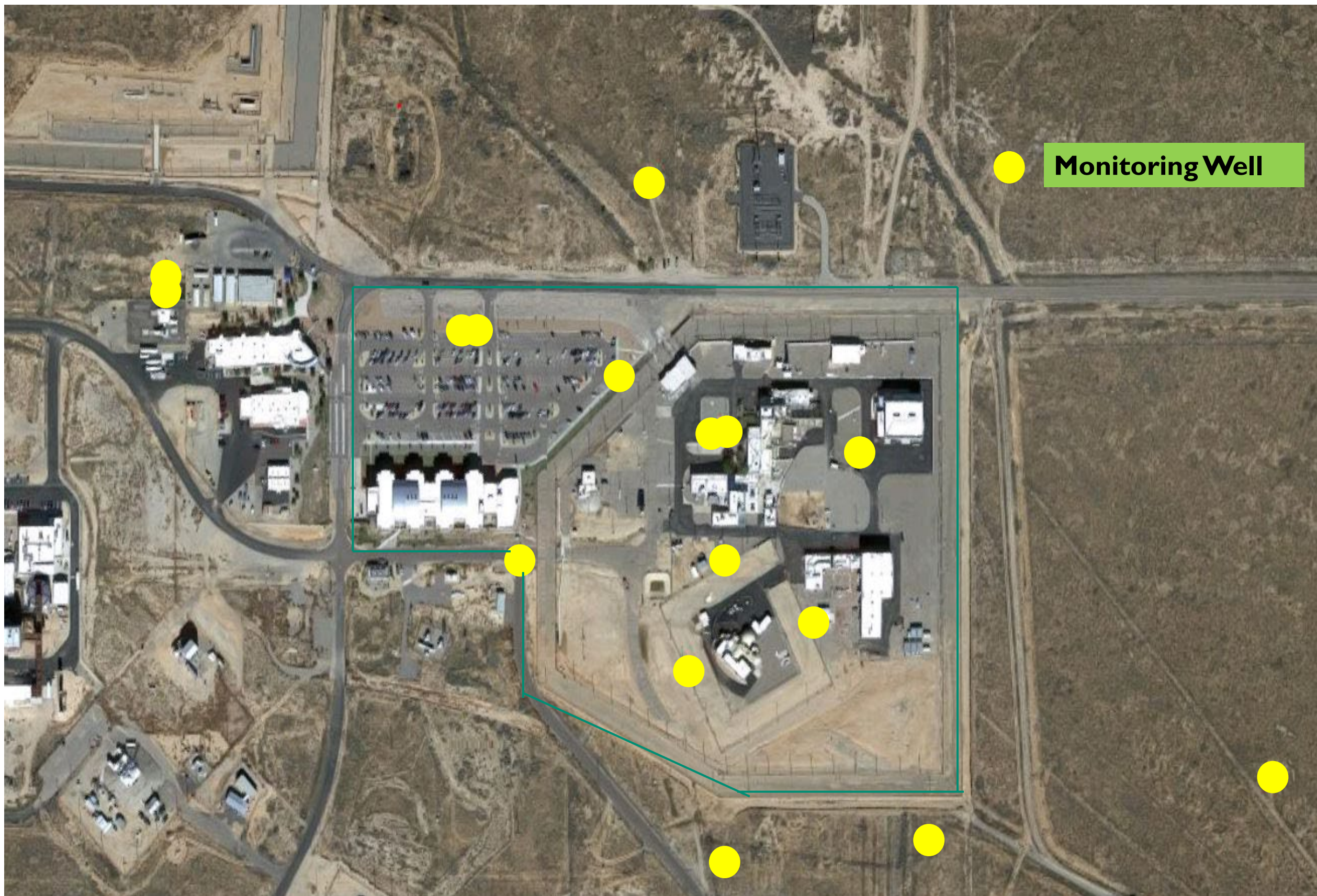


# Technical Area-V Groundwater Investigation

- TAV hosts nuclear facilities at SNL.
- Early activities resulted in contamination of the groundwater.
- **TAVG AOC is in the corrective action process.**
- Groundwater contamination resulted from industrial and septic wastewater discharges from the 1960s to 1992.
  - TCE is derived from industrial wastewater discharges.
  - Nitrate is derived from septic wastewater discharges.
  - Nitrate could also be naturally occurring.

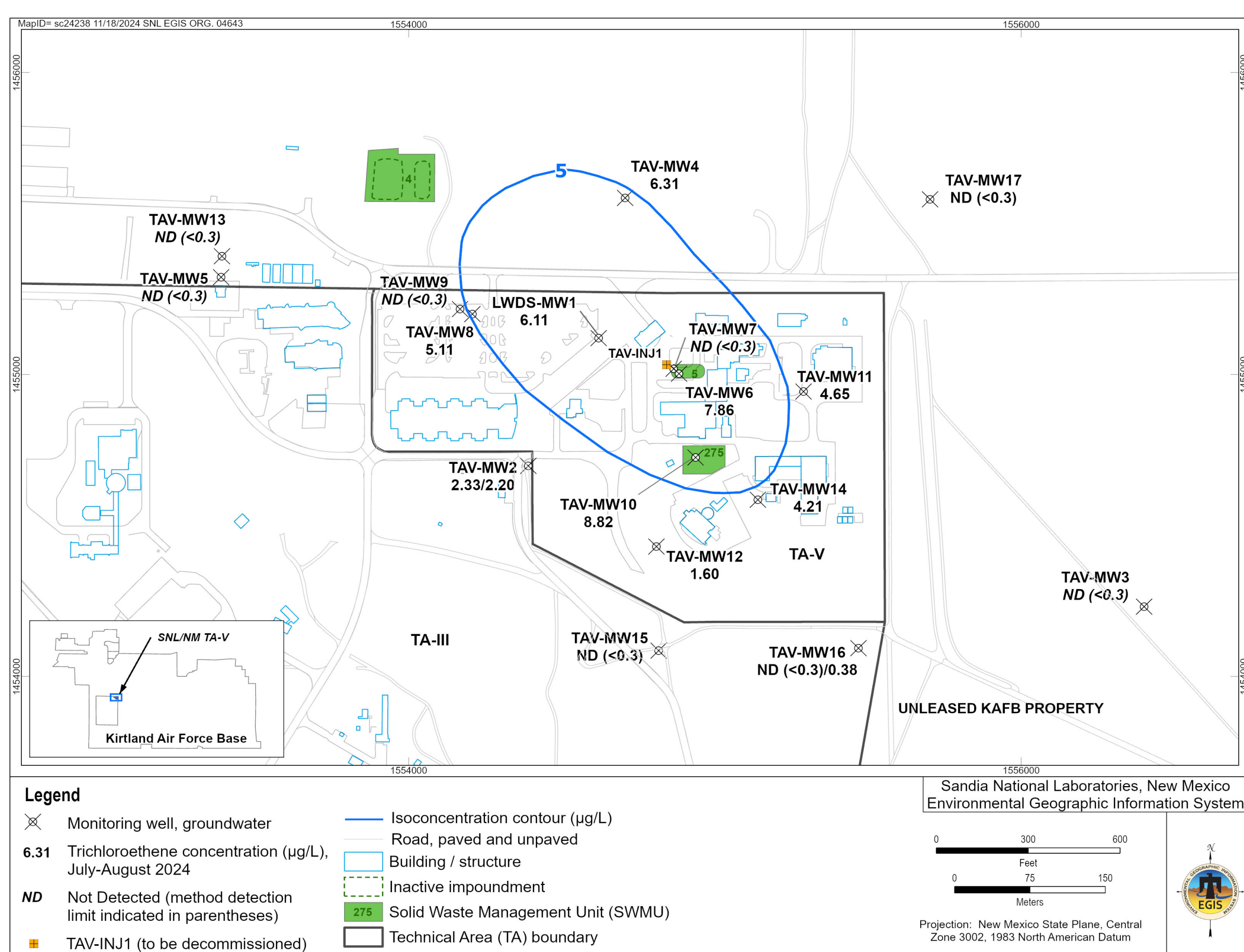
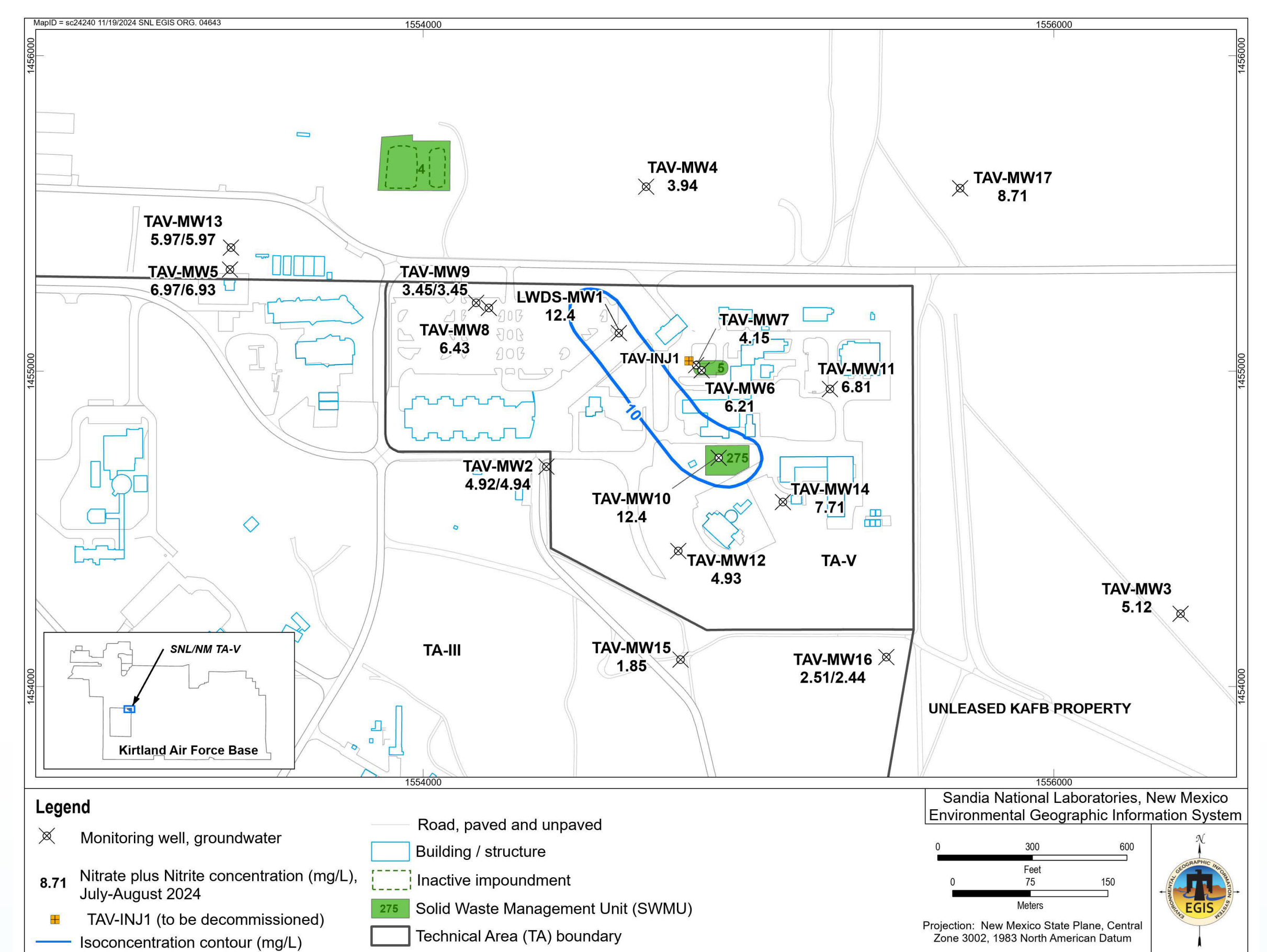


Conceptual Site Model for the TAVG AOC and Vicinity



- The groundwater occurs in the Regional Aquifer, composed of fine, clay-rich sediments that were deposited by streams spreading out from the nearby mountains (called alluvial-fans).
- The water table is approximately 500–550 feet below ground surface.
- The groundwater in the Regional Aquifer flows west, then turns northeast toward the production wells near KAFB's northern boundary.
- The nearest potable production well (KAFB-4) is 2.8 miles northwest of TAV.

- Groundwater monitoring in TAV began in 1992.
- The current monitoring well network consists of 17 monitoring wells.
- Monitoring requirements:
  - Measure groundwater levels quarterly.
  - Sample 11 monitoring wells semiannually and 6 monitoring wells annually for TCE and nitrate.
  - Sample all 17 wells annually for water quality parameters.



COC	Maximum Concentration in 2024	Plume Area in 2024 (Concentration > MCL)
TCE	9.11 micrograms per liter	17 acres
Nitrate	12.9 milligrams per liter	3 acres



# Sandia National Laboratories Groundwater Investigations

## Current Status and Recent Activities

- All three groundwater AOCs are in the **corrective action process**.



CCM = current conceptual model CME = corrective measures evaluation CMIP = corrective measures implementation plan

### TAG AOC

- Groundwater monitoring, well maintenance, and land use control are ongoing.
- The corrective measures remedy is **Monitored Natural Attenuation**. The remedy duration projected in the 2018 CCM/CME Report is from 2018 to 2059 (41 years).
- The **overall objective of the remedy** is to measure the nitrate concentrations, monitor the lateral extent of the nitrate contamination in the PGWS, and prevent exposure until the remedial goals are met OR the PGWS naturally dewater.

### BSG AOC

- NMED approved the BSG CMIP in August 2025.
- Groundwater monitoring, well maintenance, and land use control are ongoing.
- The corrective measures remedy is **Long-Term Monitoring**.
- The **overall objective of the remedy** is to measure the nitrate concentrations, monitor the lateral extent of the nitrate contamination, and prevent exposure until the remedial goals are met.

### TAVG AOC

- NMED approved the TAV-INJI Decommissioning Report in July 2025.
- Groundwater monitoring, well maintenance, and land use control are ongoing.
- SNL proposed **Monitored Natural Attenuation** as the corrective measures remedy in the 2024 CCM/CME Report. NMED is reviewing the Report.