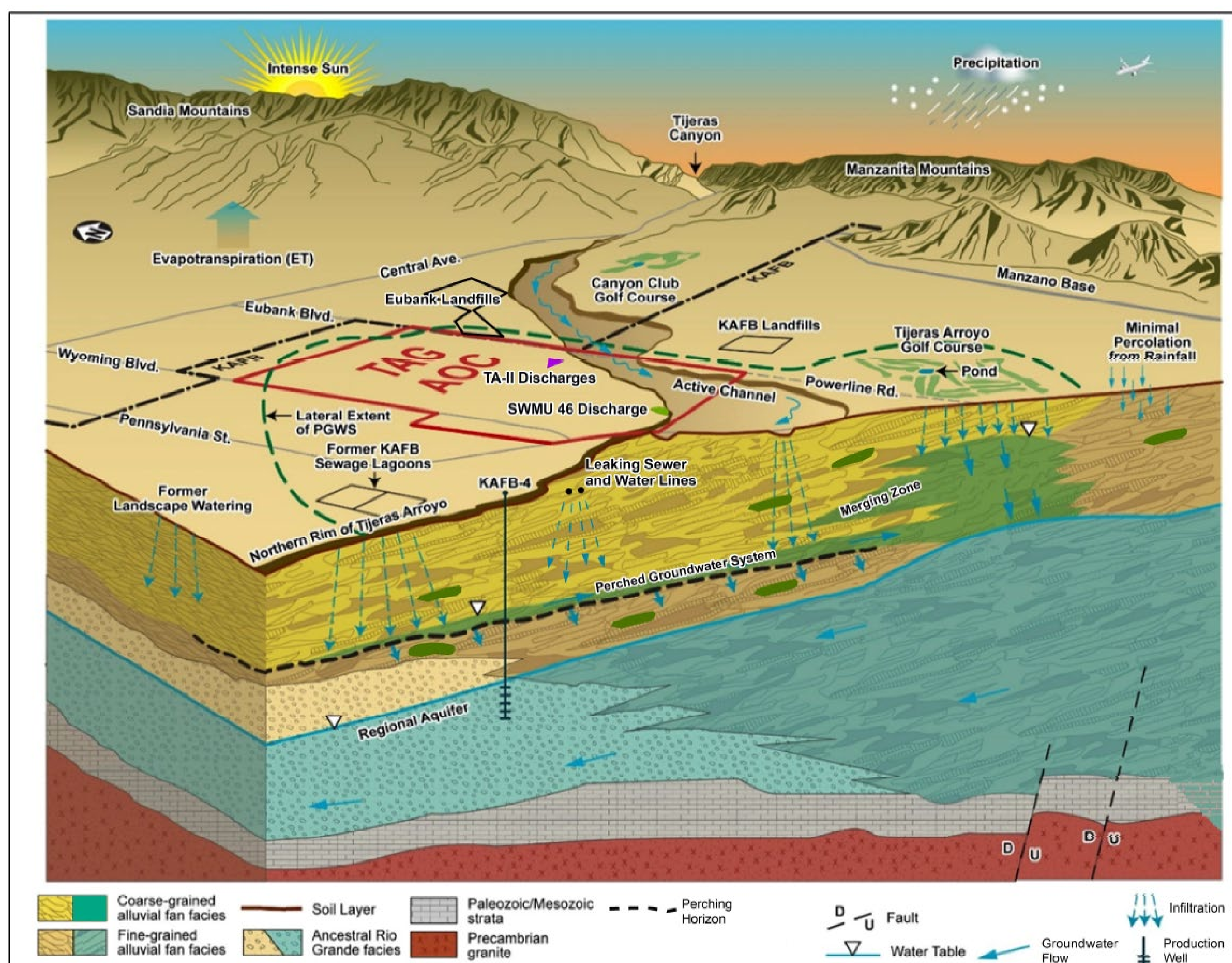




# Tijeras Arroyo Groundwater Investigation

## Site Description

- The Tijeras Arroyo Groundwater (TAG) Area of Concern (AOC) covers 1.82 square miles (1,165 acres) in the north-central part of Kirtland Air Force Base (KAFB) and spans Sandia National Laboratories Technical Areas I, II, and IV. Research activities in these areas began in 1948.
- The unconsolidated alluvial-fan sediments that underlie the TAG AOC contain two water-bearing zones: the Perched Groundwater System (PGWS) and the Regional Aquifer.
  - The PGWS water table is approximately 330 feet below ground surface. The PGWS was created by manmade recharge sources, including sewage lagoons, septic leach fields, and wastewater outfalls. These sources have been eliminated, and the saturated thickness of the PGWS is naturally decreasing at approximately 0.5 feet per year.
  - A 7- to 20-foot-thick layer of saturation remains in the central TAG AOC. The saturated thickness of the PGWS is consistently decreasing, and one monitoring well in the PGWS is now dry.
  - The Regional Aquifer water table is approximately 520 feet below ground surface.
  - The PGWS and the Regional Aquifer are vertically separated by a Perching Horizon and approximately 200 feet of unsaturated sediments everywhere except the TAG AOC's southeast corner, where a Merging Zone connects the two water-bearing zones.



Conceptual Site Model for the TAG Vicinity

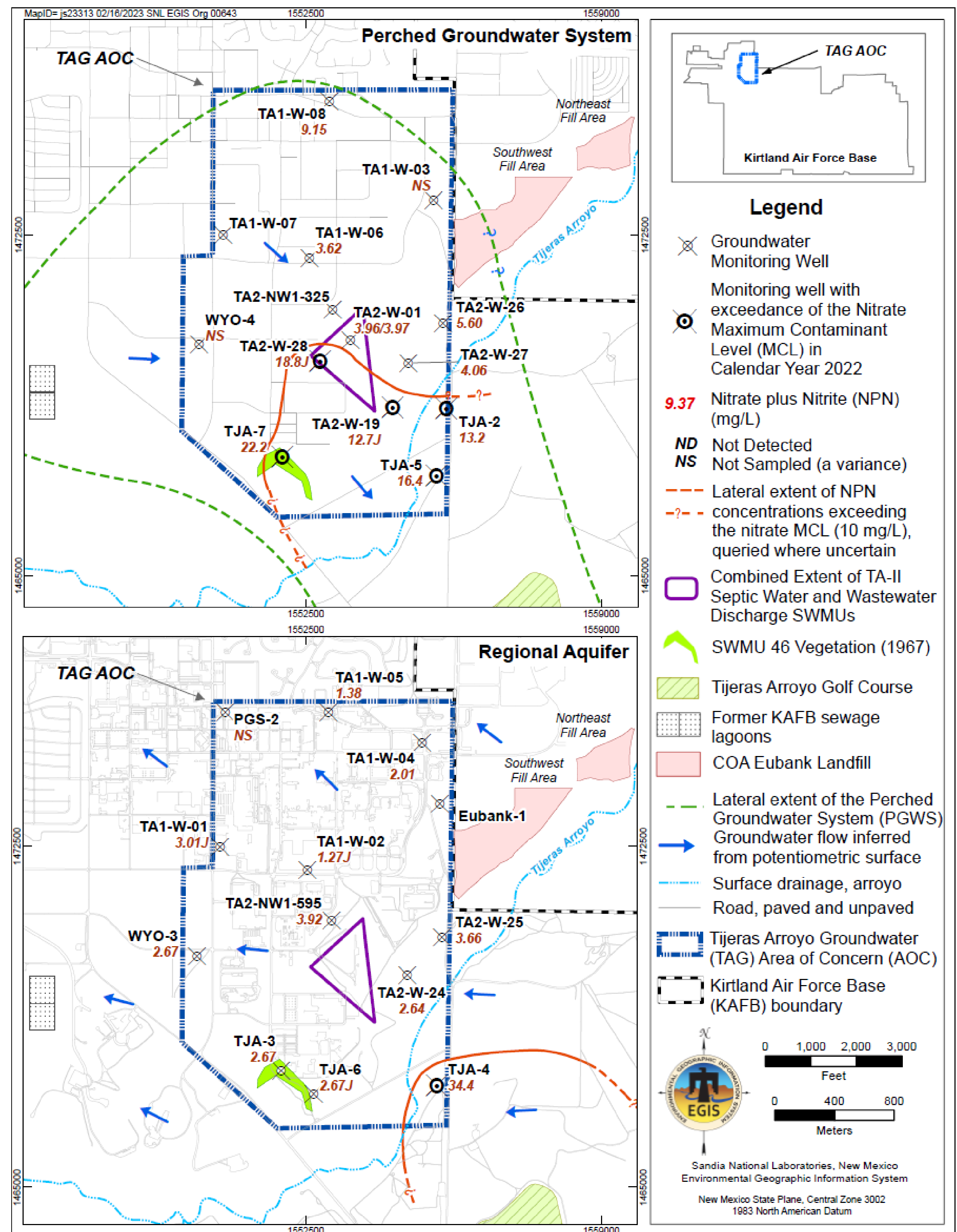
- The groundwater in the PGWS flows southeast at approximately 24 feet per year and merges with the groundwater in the Regional Aquifer, which flows west and northwest at approximately 55 feet per year.



# Tijeras Arroyo Groundwater Investigation

## Site Description (continued)

- Groundwater monitoring began in 1992, with 31 monitoring wells installed in the TAG AOC to date.
- Monitoring wells in the surrounding area include 84 KAFB wells and 4 City of Albuquerque wells.
- The groundwater in the PGWS is contaminated with nitrate (the constituent of concern) at concentrations above the U.S. Environmental Protection Agency maximum contaminant level (MCL) for drinking water.
- The nitrate plume covers approximately 280 acres and does not pose a threat to the Regional Aquifer.
- The nitrate is derived from both manmade and natural sources, including septic leach fields, wastewater discharges, some fertilizers, degraded minerals, and the flushing of naturally occurring nitrate from decayed vegetation that has accumulated in vadose-zone sediments beneath arroyos.



Maximum 2022 Nitrate Concentrations in the PGWS and the Regional Aquifer

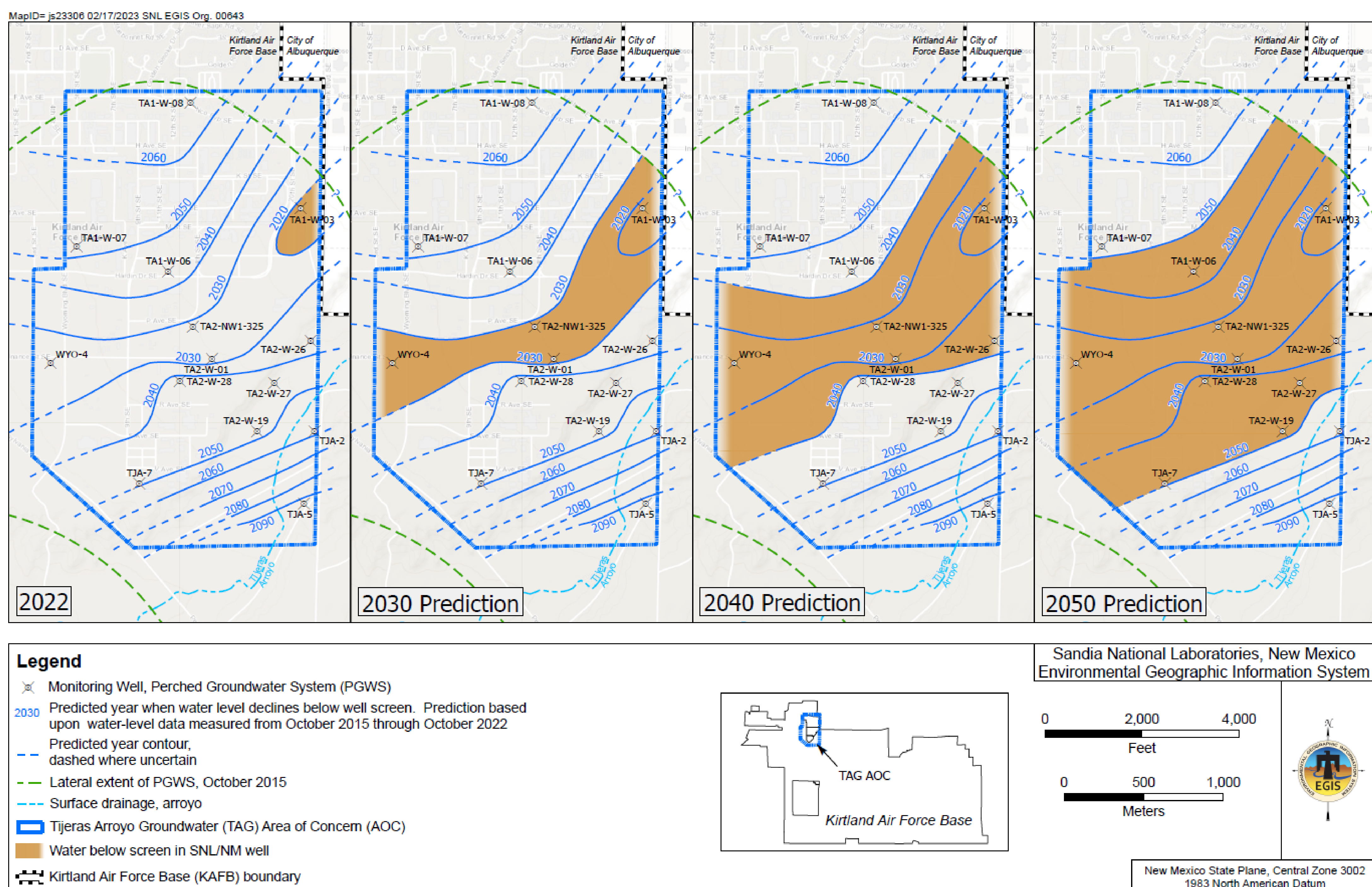
Constituent of Concern	MCL	Maximum Concentration in PGWS, 2022	Maximum Concentration in Merging Zone, 2022	Maximum Concentration in Regional Aquifer, 2022
Nitrate	10 milligrams per liter (mg/L)	22.2 mg/L at well TJA-7	34.4 mg/L at well TJA-4	3.92 mg/L at well TA2-NW1-595



# Tijeras Arroyo Groundwater Investigation

## Site Description (concluded)

- Based on the water level trends, most of the monitoring wells in the PGWS will be dry by 2059, with 4 wells dry by 2030, 5 wells dry by 2040, and 10 wells dry by 2050.
- The groundwater in the PGWS is not used for any beneficial purpose; no one is drinking contaminated groundwater. Potentiometric surface maps and computer modeling show that the groundwater will not reach any drinking water supply wells.



## Current Status and Recent Activities

- Submitted the *Revised Tijeras Arroyo Groundwater Current Conceptual Model and Corrective Measures Evaluation Report* to the New Mexico Environment Department (NMED) in February 2018. The NMED approved this report in January 2023.
- The NMED-approved final remedy for the TAG AOC is monitored natural attenuation. The NMED approved the remedy implementation plan (*Tijeras Arroyo Groundwater Corrective Measures Implementation Plan [Revised]*) in March 2024. This plan requires semiannual groundwater sampling at 11 monitoring wells in the PGWS, annual groundwater sampling at 8 monitoring wells in the Regional Aquifer, sample analysis for nitrate, and quarterly water level measurements at 27 monitoring wells throughout the TAG AOC.
- The projected remedy duration is 30 years. Started implementing best management practices in January 2024 and will start implementing the final remedy in 2025.