Semi-Annual Public Meeting

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29 Oct 24

Kirtland AFB Optimized Remediation Contract (ORC)

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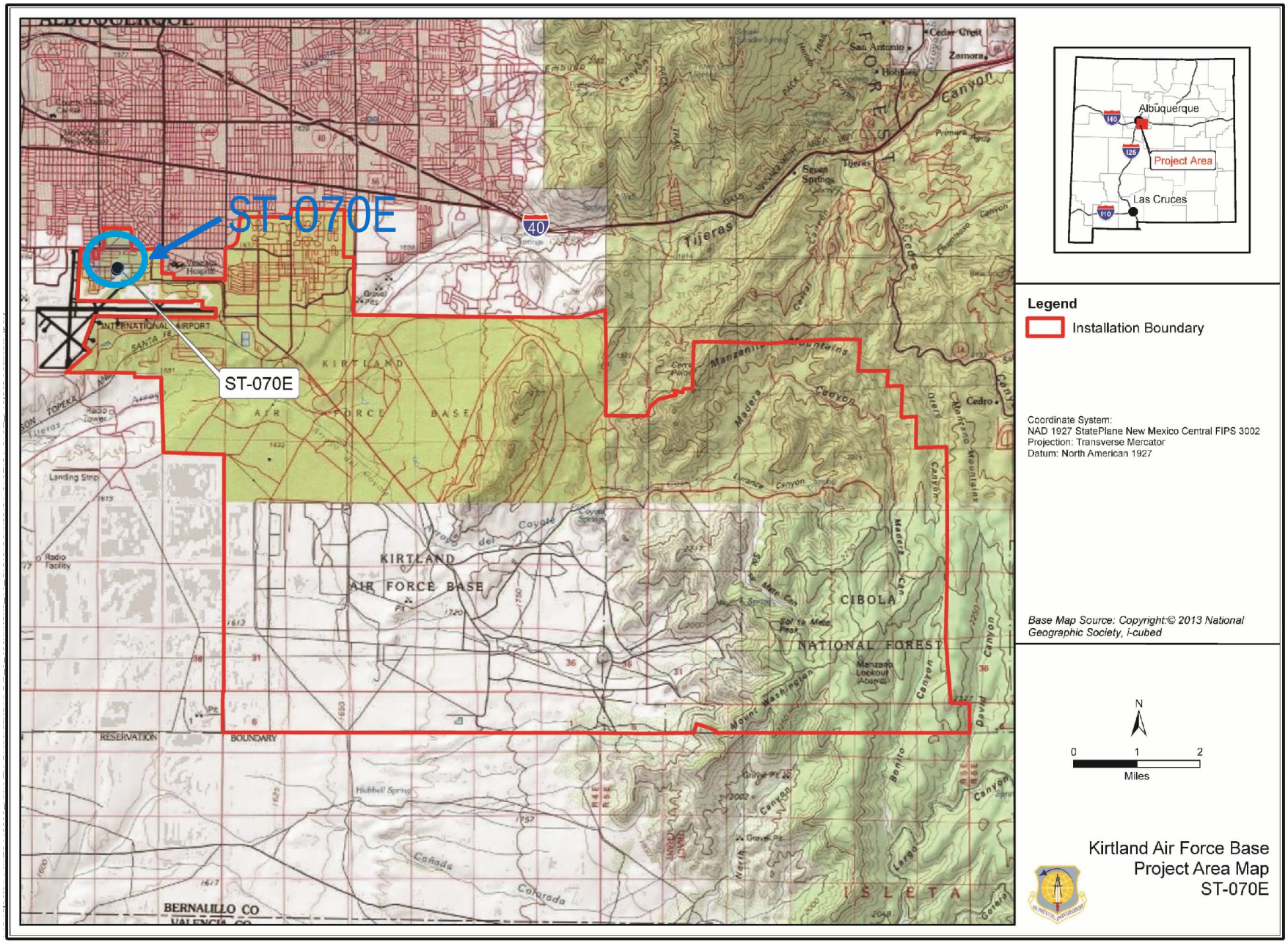
29 Oct 24

Oil/Water Separator, ST-070E (SWMU ST-219)



Oil/Water Separator, ST-070E (SWMU ST-219)

Site Background

- Area used for aircraft movement and parking around hangar buildings 481 & 482
- Potential historic releases of fuels, lubricants and degreasers
- Former Oil Water Separator (OWS) identified as a contaminant release site based on inspections and sampling in 1990 & 1992
- Several RCRA Facility Investigation (RFI) phases conducted between 1993 & 1999
- 39 soil borings were advanced and sampled up to 150 feet depth below surface
- 7 soil vapor monitoring wells were installed

Oil/Water Separator, ST-070E (SWMU ST-219)

Site Background (cont.)

- Petroleum hydrocarbon contamination (Avgas, jet fuel, diesel and gasoline and limited mineral spirits and chlorinated solvents) impacted soils below the former OWS and drainage sump
- Groundwater characterization began in 2001 with installation of monitoring well KAFB-7001, a 480 ft deep well screened in the regional aquifer
- Two new groundwater wells (KAFB-7004 and KAFB-7005) were installed in September 2021
- To date, no site-related contaminants have exceeded regulatory standards in groundwater samples. Trichloroethylene (TCE) and tetrachlorethylene (PCE) have been detected at levels below regulatory standards

Oil/Water Separator, ST-070E (SWMU ST-219)

Remediation History

- Bioventing was conducted between 1999 and 2001
  - Active subsurface ventilation with humidified air though a vapor well and extraction well
  - Soil samples collected to confirm presence of TPH degrading bacteria
  - Lower than anticipated degradation rates were achieved
- Soil Vapor Extraction (SVE) Pilot Tests conducted in 2003
  - Results of pilot testing indicated SVE would be an effective alternative for remediation of TPH and chlorinated solvents
  - Between 2007 and 2008 the SVE pilot scale system was expanded to full scale system by converting two monitoring wells to SVE wells

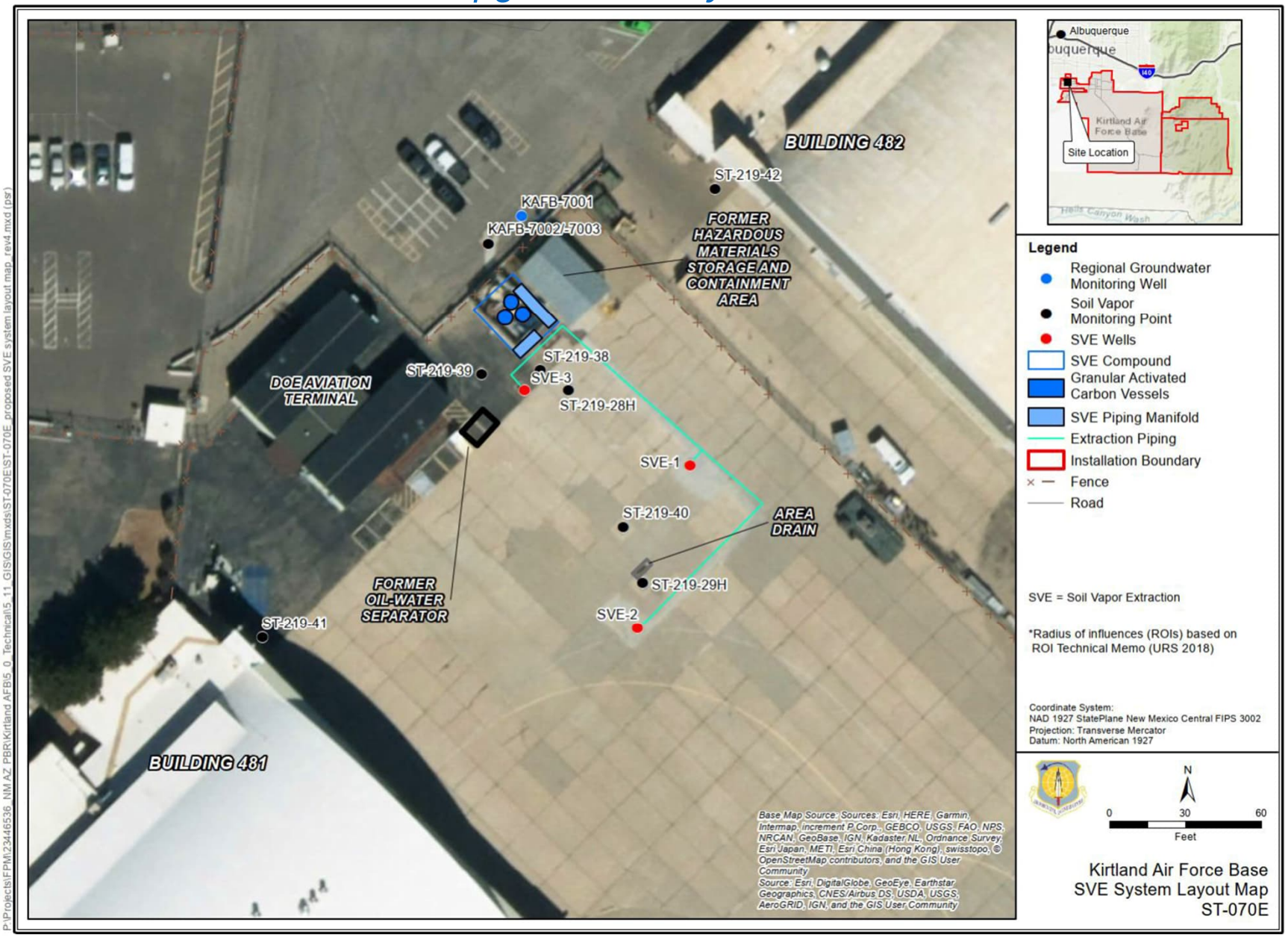
Oil/Water Separator, ST-070E (SWMU ST-219)

Remediation History (cont.)

- SVE full scale system operation 2008 - 2016
  - The SVE treatment system was upgraded in 2008 with 3 SVE wells
  - Full operation under previous contract between June 2014 and June 2016
  - System operated at an air extraction rate of 80 to 85 standard cubic feet per minute (scfm)
- Upgraded SVE System – Three New SVE Extraction Wells (2016)
  - SVE-1 (nested well screens at 7-12 ft; 16-26 ft; and 31-36 ft)
  - SVE-2 (single well screen at 32-42 ft)
  - SVE-3 (nested well screens at 35-50 ft; 94-104 ft; 132-142 ft)

Oil/Water Separator, ST-070E (SWMU ST-219)

Upgraded SVE System



Oil/Water Separator, ST-070E (SWMU ST-219)

Additional Investigation

- Installation of groundwater monitoring wells KAFB-7004 and KAFB-7005 (2021)
  - Two down-gradient, 4” wells installed in Sept. 2021 (~460 ft total depth)

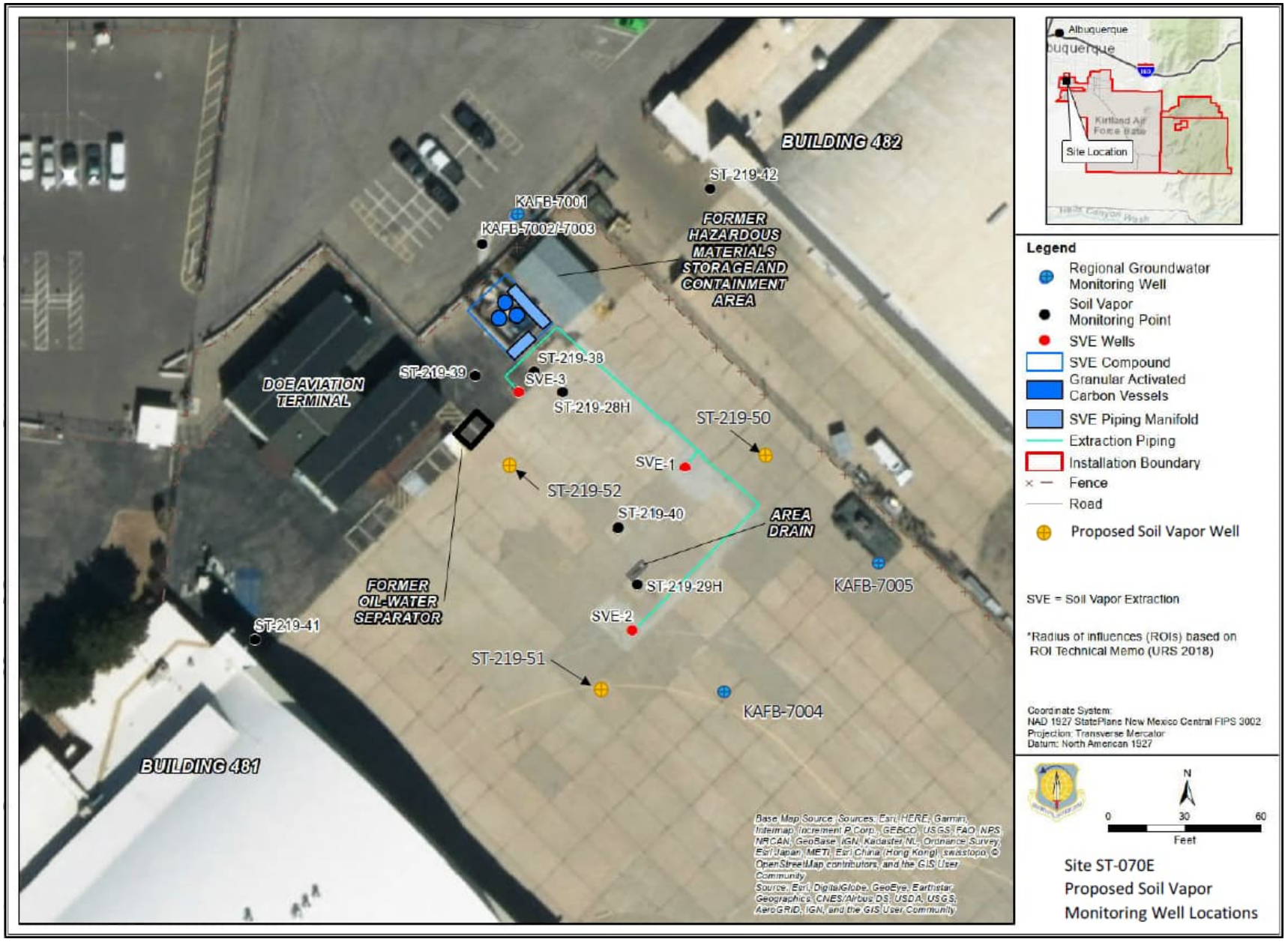
Oil/Water Separator, ST-070E (SWMU ST-219)

Additional Investigation (cont.)

- Three new soil-vapor monitoring (SVM) wells planned
  - Three SVM wells with 7 sampling intervals (2 - triple nested and 1 - single nested) will be installed at locations proximate to the 2016 SVE wells
  - The ST-070E SVM Well Work Plan is currently being updated to address NMED's comments and will be resubmitted to NMED in January 2025
  - The Work Plan will include a requirement for quarterly sampling of all Site ST-070E SVM wells for a period of at least two years

Oil/Water Separator, ST-070E (SWMU ST-219)

New and Planned Wells

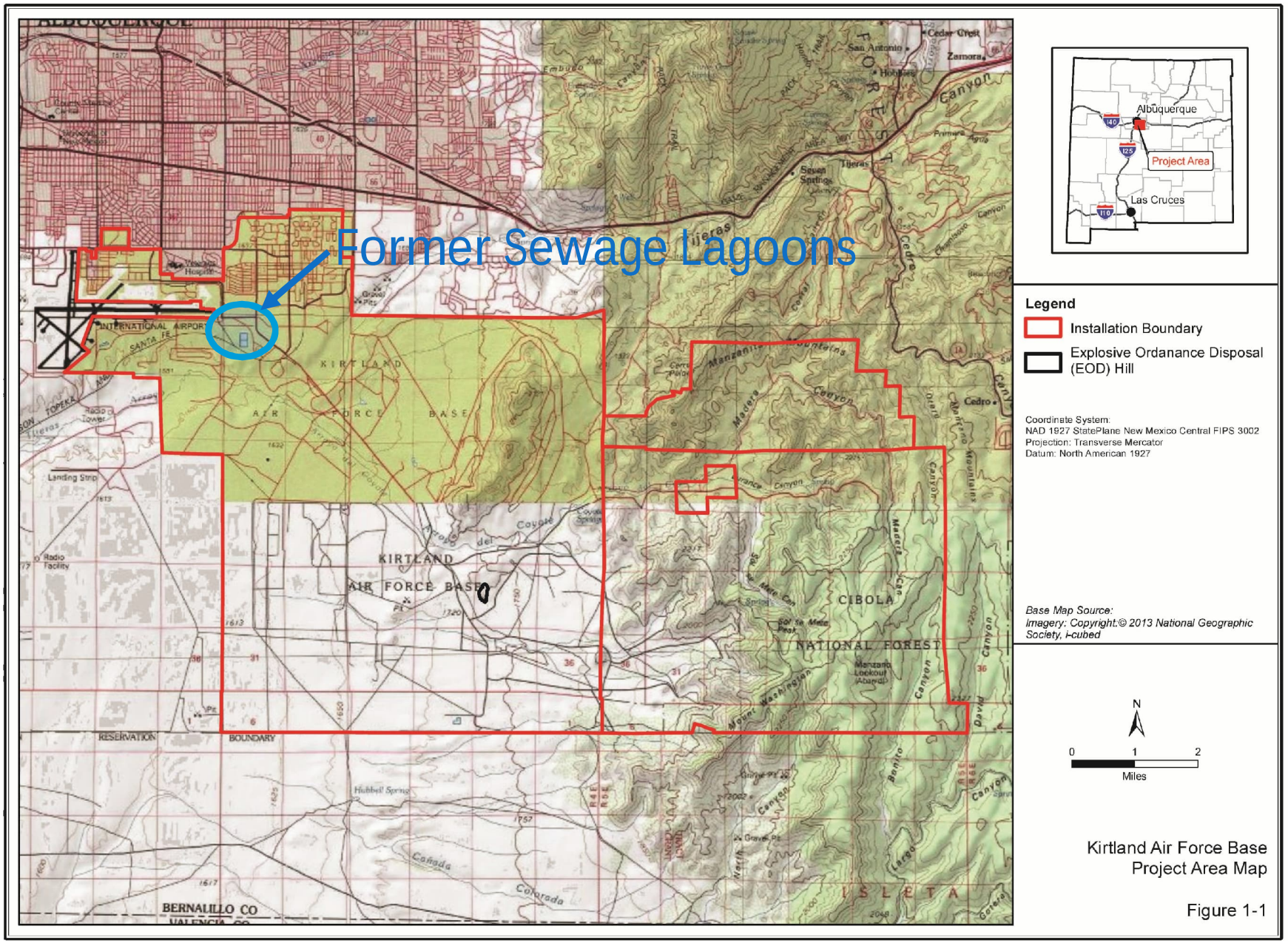


Oil/Water Separator, ST-070E (SWMU ST-219)

Path Forward

- SVE System is currently shut down (May 2019)
- Awaiting installation of three new soil vapor monitoring (SVM) wells
- Initiation of quarterly SVM (vapor) monitoring
- Continued quarterly groundwater sampling of three site wells
- Re-evaluation of site risk and determine appropriate path forward

Former Sewage Lagoons (SWMU WP-026)



Former Sewage Lagoons (SWMU WP-026)

Site Background

- Site WP-026 includes two distinct areas – Former Base Sewage Lagoons and Golf Course Main Pond (GCMP)
- Sites linked because GCMP historically received effluent from the Sewage Lagoons thus they shared the same waste stream
- Both the perched groundwater zone and the regional aquifer are present at the former Sewage Lagoons and at the GCMP
- Three groundwater monitoring wells are screened in the perched zone at the GCMP, and nitrate is the only constituent that exceeds regulatory levels
- Nitrate in groundwater at the GCMP is regulated under Kirtland AFB Site ST-105, through NMED Ground Water Quality Bureau

Former Sewage Lagoons (SWMU WP-026)

Former Sewage Lagoons Background

- Constructed in 1962 – operated through 1987
- Unlined north and south cells
- Approximately 14 acres filled up to 6 ft depth
- Approximately 330 million gallons raw sewage handled from April through October each year
- November to March KAFB sewage was diverted into City of Albuquerque sewer system
- Lagoon side slopes reinforced with soil cement and concrete in 1970 & 1975

Former Sewage Lagoons (SWMU WP-026)

Former Sewage Lagoons Background (cont.)

- USGS study and Stage 2 RFIs – 1988 through 1992
- Groundwater monitoring initiated 1994 through 1996
  - Focus was chromium
  - Several exceedances of nitrate in groundwater (max concentration 14.3 mg/L, but no nitrate exceedances since 1997 in the perched groundwater zone)
- Annual monitoring initiated in 1996 (on-going)
- Supplemental Soil Investigations 1998 through 2000
- Soils excavation and removal (dry sludge near surface) – 2010 Accelerated Corrective Measure

Former Sewage Lagoons (SWMU WP-026)

Former Sewage Lagoons Background (cont.)

- Current remaining contaminant of concern is TCE in perched groundwater zone
- 2012 RFI addressed data gaps with installation of three new monitoring wells in the perched groundwater zone and two new monitoring wells in the regional aquifer for better characterization of extent on the south and east sides of the former sewage lagoons
- Soil samples during well/borehole installation did not have any analytes above NMED residential soil screening levels
- Limited VOCs were detected in perched groundwater zone, including TCE, but none exceeded regulatory levels in new wells

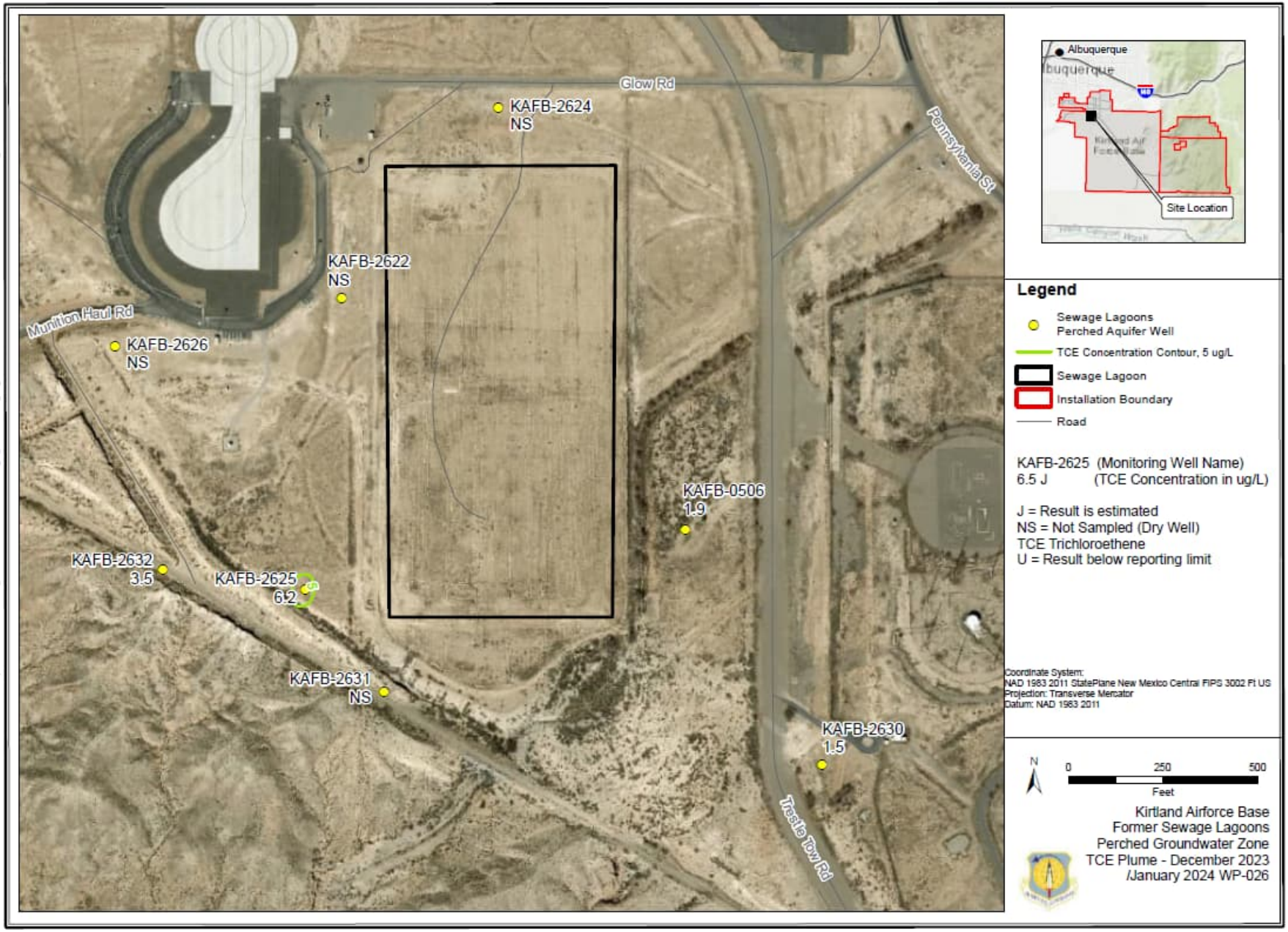
Former Sewage Lagoons (SWMU WP-026)

Former Sewage Lagoons Background (cont.)

- In 2015 NMED disapproved the 2012 RFI, and an updated RFI report was submitted to NMED (Revision 1, December 2019), and revised and submitted again in April 2021 (Revision 2)
- NMED approved the 2012 RFI Report (Revision 2, April 2021) in September 2021, with the condition that Kirtland AFB conduct a constant discharge aquifer pump test in the perched groundwater zone below the Former Sewage Lagoons
- Conducted aquifer pump test in perched groundwater zone below Former Sewage Lagoons (September 2022)

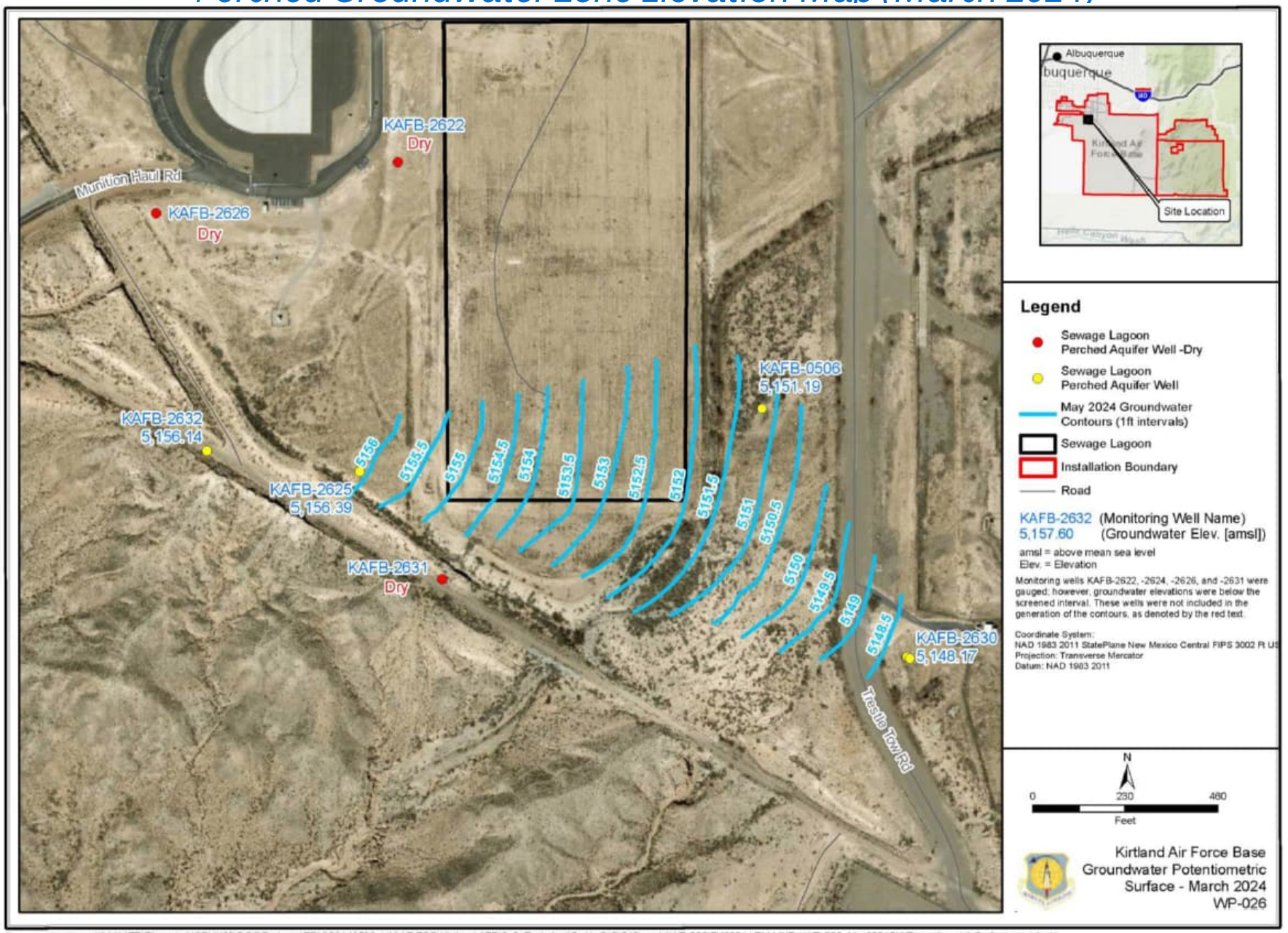
Former Sewage Lagoons (SWMU WP-026)

TCE Detections in Perched Groundwater Zone December 2023

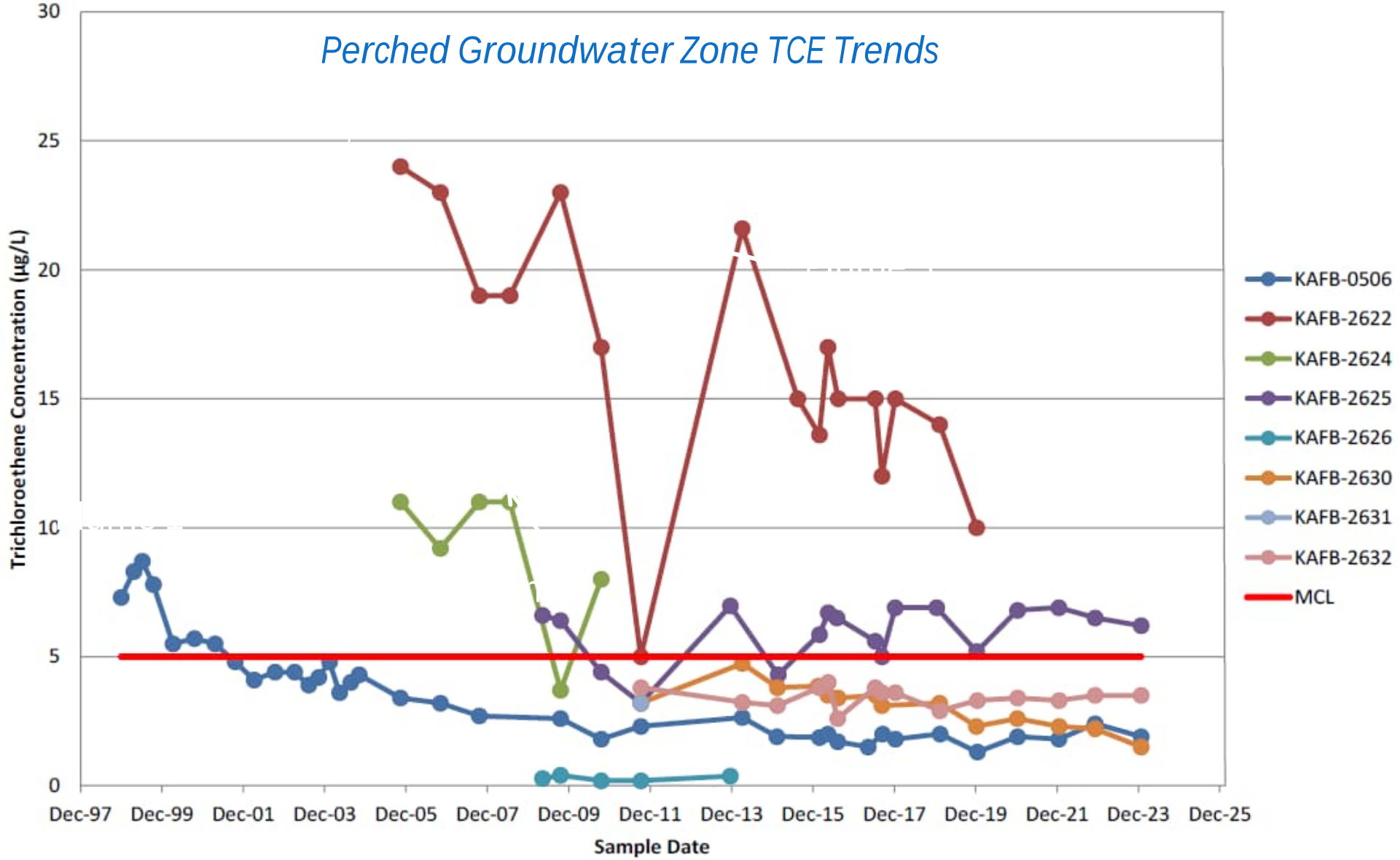


Former Sewage Lagoons (SWMU WP-026)

Perched Groundwater Zone Elevation Map (March 2024)



Former Sewage Lagoons (SWMU WP-026)



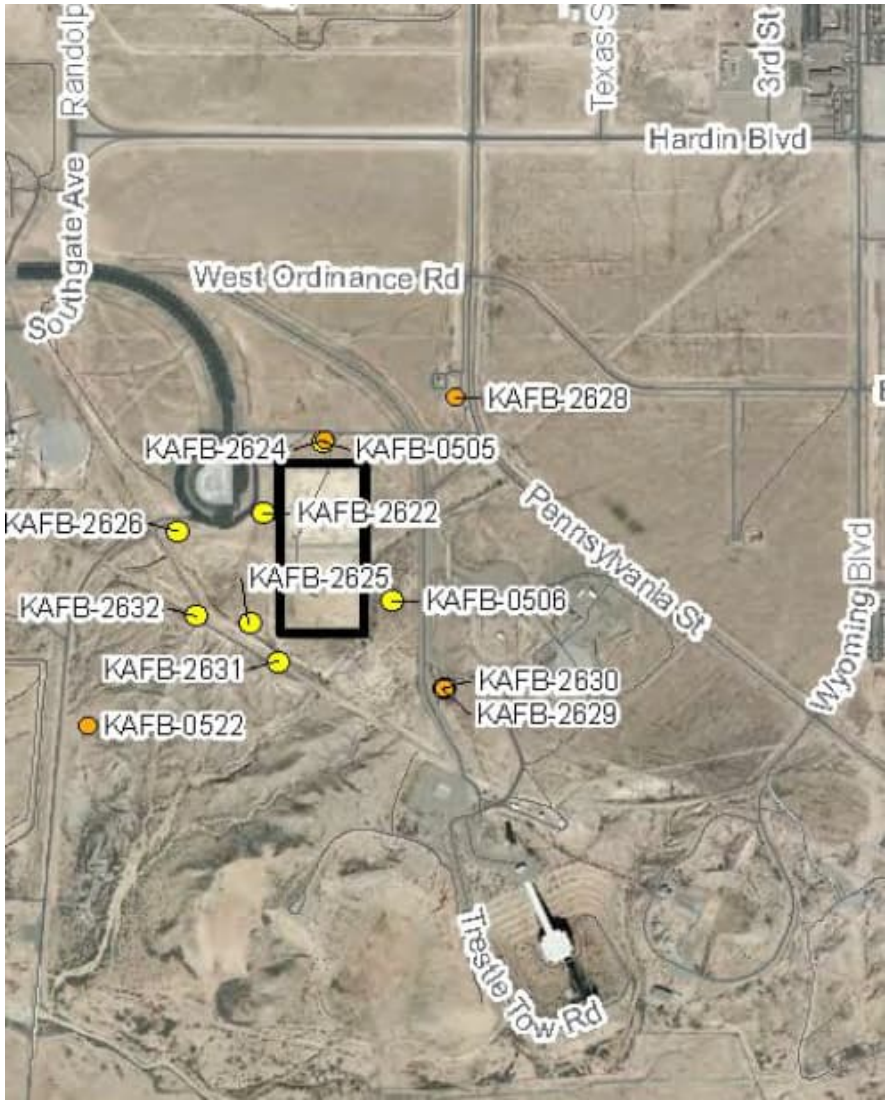
Former Sewage Lagoons (SWMU WP-026)

Perched Groundwater Zone - Summary

- Sampled annually for nitrate, anions, TAL metals, VOCs
- TCE only constituent exceeding groundwater standards (well KAFB-2625 occasionally)
- Significant decreasing concentration trend in well of highest concentration (KAFB-2622, at 10 µg/L in 2020, then went dry in 2021)
- Trend in declining water levels in wells (~ 0.35 ft/year on average for wells that still have water); 4 perched zone wells have gone dry, 4 wells still being sampled
- Based on aquifer testing maximum sustainable yield for perched groundwater zone measured between 0.07 and 0.13 gpm

Former Sewage Lagoons (SWMU WP-026)

Regional Groundwater Monitoring Wells



Former Sewage Lagoons (SWMU WP-026)

Regional Groundwater - Summary

- 4 wells sampled annually for anions (including nitrate), TAL metals, VOCs
- All VOC sample results are below laboratory reporting limits
- Well KAFB-0522 has intermittently had nitrate exceedances – this well is up-gradient of the Site WP-026 and has groundwater chemistry indicative of a natural "geogenic" nitrate source. Well KAFB-0522 is also related to Site ST-105 nitrate.

Former Sewage Lagoons (SWMU WP-026)

2024 WP-026 Risk Evaluation Report

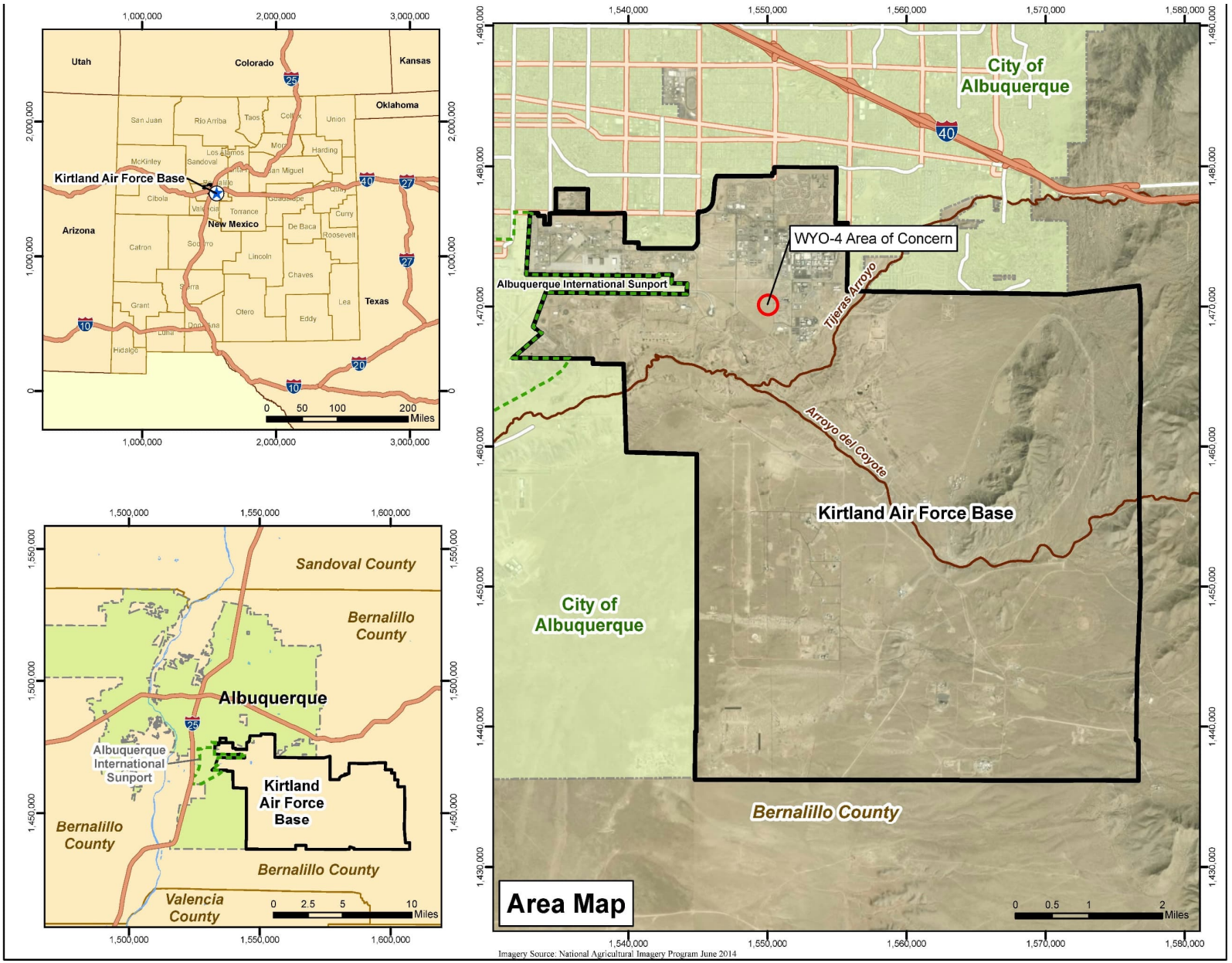
- Submitted to NMED in July 2024
- Evaluated human health and ecological risk from the Former Sewage Lagoons portion of WP-026
- Based on historical soil and vapor sampling results and using current NMED risk screening values there are no unacceptable risks to human or ecological receptors under current conditions
- Based on a conservative evaluation of potential transport of TCE from the perched groundwater zone to the regional aquifer there is estimated to be no unacceptable risk to human or ecological receptors based on exposure to TCE in regional aquifer production well water

Former Sewage Lagoons (SWMU WP-026)

Path Forward

- The Aquifer Test Report is in NMED review
- Risk Evaluation Report recommended two additional years of annual groundwater monitoring to confirm observed contaminant concentrations used in the Risk Evaluation Report
- If no additional changes in the Conceptual Site Model are observed after two years of additional groundwater monitoring, it will be recommended that the Site be considered for Corrective Action Complete. Land use controls may be required after CAC approval.

WYO-4 Area of Concern (CG-107)



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CG107 (WYO-4) Area of Concern

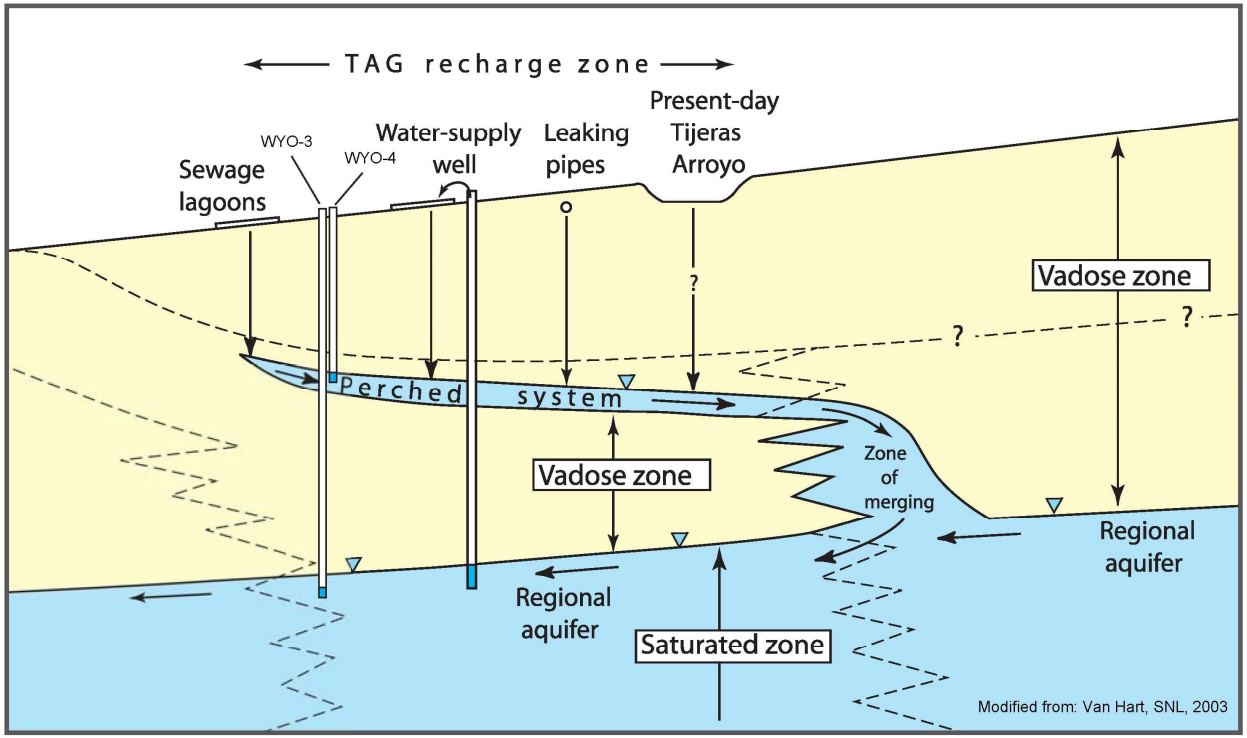
Site Background

- The CG107 (WYO-4) Area of Concern (AOC) is located near the Sandia National Laboratories' (SNL's) Tijeras Arroyo Groundwater (TAG) AOC
- No known current or past operations at CG107 (WYO-4); WYO-4 was installed in the perched groundwater in 2001 by SNL as part of the TAG investigation
- Groundwater sampling at WYO-4 from 2001 until 2019 showed trichloroethylene (TCE) consistently exceeding the 5 µg/L MCL, with a maximum concentration of 10.5 µg/L in 2014
- Three multiport SVM wells, TAG-SV-01, TAG-SV-02, TAG-SV-03 were installed and sampled in 2004 with low concentrations of TCE in each
- In 2018, NMED directed Kirtland AFB to develop an investigation to determine the source and extent of TCE in the vicinity of WYO-4

CG107 (WYO-4) Area of Concern

Groundwater Conditions

- Perched groundwater resulted from historical anthropogenic sources including leaking water lines (repaired), former septic systems (removed), and former sewage lagoons (removed)
- Due to removal of recharge sources, the perched groundwater has been draining to the regional aquifer and drying out
- The perched groundwater level in WYO-4 dropped below the bottom of the screened interval



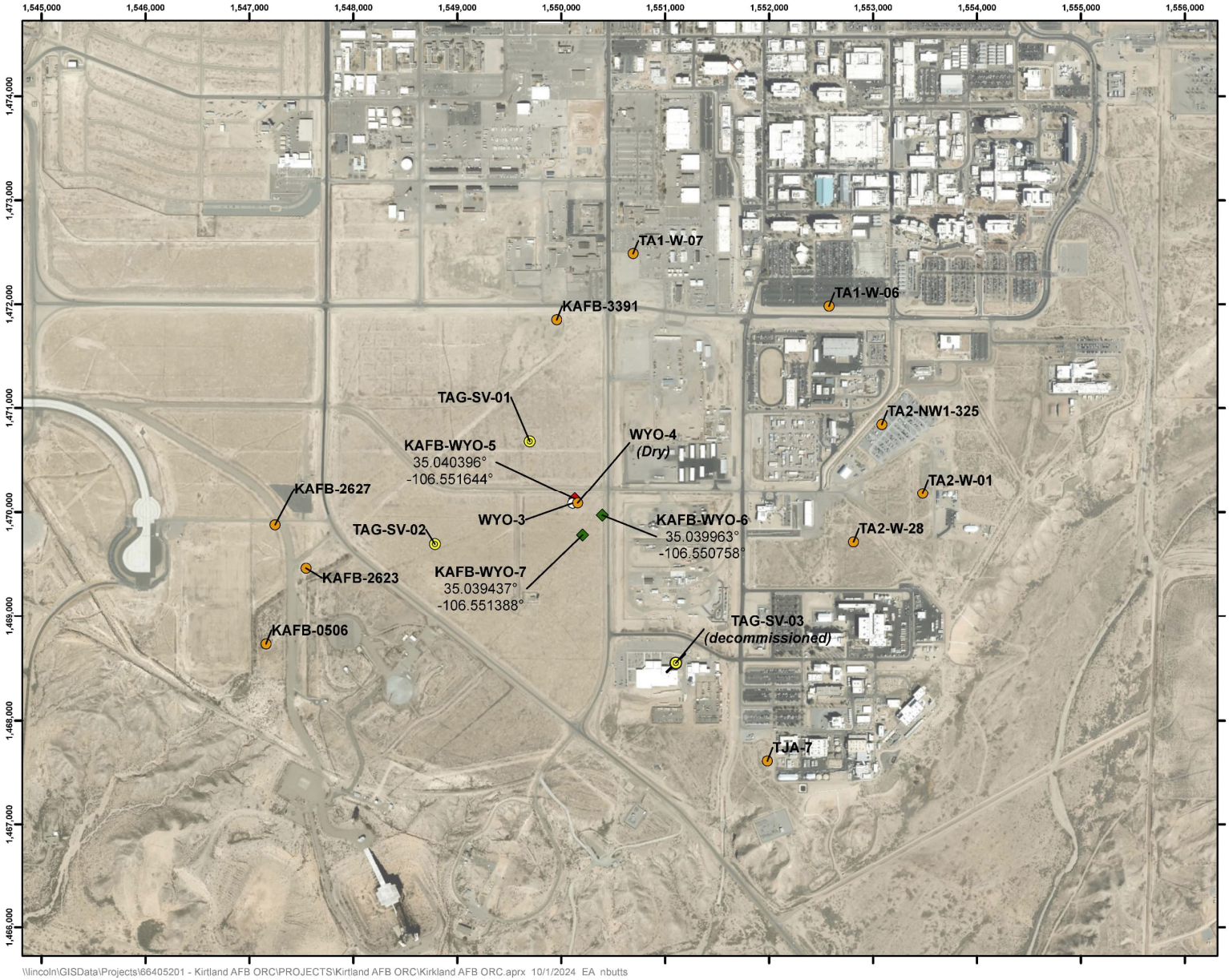
Groundwater Flow Model

CG107 (WYO-4) Area of Concern

Investigation – Completed Activities

- In 2023, NMED approved an RFI Work Plan for CG107 (WYO-4) AOC
- In July-August 2024, three monitoring wells were installed in the perched groundwater zone (to replace WYO-4)
  - WYO-5 was completed as a dual groundwater monitoring well with multi-level soil vapor sampling ports
  - WYO-6 and WYO-7 were completed as groundwater monitoring wells in the perched groundwater zone
- In September 2024, initial sampling was conducted including groundwater and soil vapor sampling and synoptic water level gauging

CG107 (WYO-4) Area of Concern



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Legend

- Location of GW monitoring well completed in Perched Zone
- Location of multiport soil vapor monitoring well
- Newly installed perched zone GW and multiport soil vapor monitoring well
- Newly installed perched zone GW monitoring well
- Location of GW monitoring well completed in regional zone

Note:
GW = Groundwater
Survey pending coordinates

N

0 500 1,000 2,000
Feet

1 inch = 1,000 feet

Projection: NAD83 State Plane New Mexico Central FIPS 3002 Feet

WELL INSTALLATION REPORT
CG-107 (WYO-4) AREA OF CONCERN
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-1

MONITORING WELL LOCATIONS

CG107 (WYO-4) Area of Concern

Investigation – Planned Activities

- A *Well Installation Report*, including results of the initial sampling event, is planned for submittal to NMED in June 2025
  - Analytical results will be used to assess the nature and extent of potential contamination in soil vapor and the perched groundwater
  - Gauging data will be used to provide updated hydrogeologic conditions of the perched groundwater zone
- An RFI Report will be developed to present all details of the monitoring well installation and sampling results, along with recommendations for future Site activities

CG107 (WYO-4) Area of Concern

Investigation – Planned Activities (concluded)

- A *Groundwater Monitoring Work Plan* is planned for submittal to NMED in June 2025
  - To described the groundwater monitoring sampling activities
  - To include eight consecutive quarters of groundwater monitoring

Questions

Questions?


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