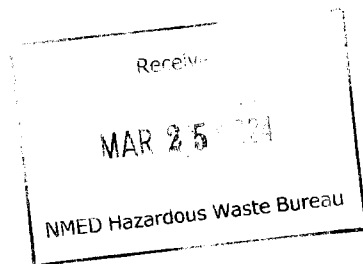




**DEPARTMENT OF THE AIR FORCE
377TH AIR BASE WING (AFGSC)**



19 March 2024



Colonel Michael J. Power, USAF
Commander
377th Air Base Wing
2000 Wyoming Blvd SE
Kirtland AFB NM 87117

Mr. Ricardo Maestas
Hazardous Waste Bureau Acting Chief
New Mexico Environment Department
2905 Rodeo Park Drive East Building 1
Santa Fe NM 87505-6303

Dear Mr. Maestas

This letter is in response to the New Mexico Environment Department (NMED) Hazardous Waste Bureau's (HWB's) letters dated September 16, 2022, Request for Soil Vapor Monitoring Work Plan, and October 2, 2020, requesting a Groundwater Monitoring Work Plan. These letters require an annual update to each work plan by April first of each year or a letter stating that no changes to the monitoring program are proposed. This letter is being submitted to NMED to:

- Inform NMED that there are no proposed changes to the current approved Soil Vapor Monitoring Work Plan approved on January 9, 2024.
- Request NMED approval for an additional groundwater sampling method comparison study discussed at the February 21, 2024, meeting held between the United States Air Force (USAF) and NMED. This study will collect additional samples using both the passive and low-flow methods from three wells in the source area plume for a period of eight quarters and comparing the trends. The purpose of this study is to further evaluate the intrinsic differences between these methods and inform a revised Groundwater Monitoring Work Plan for the Bulk Fuels Facility Site at Kirtland AFB, Solid Waste Management Units ST-106/SS-111.
- Request an extension for the Groundwater Monitoring Work Plan annual update until the sampling method comparison study is complete.

The September 16, 2022, letter requested an updated Soil Vapor Monitoring Work Plan with an annual update due on April first of each subsequent year, with the first update due April 1, 2024. The *Work Plan for Soil Vapor Monitoring, Bulk Fuels Facility, SWMUs ST-106/SS-111, Revision 1* was submitted to NMED in July 2023, approved by NMED in the letter dated January 9, 2024, and will be implemented in the second quarter 2024 semiannual monitoring event. No changes to the Work Plan for Soil Vapor Monitoring are proposed at this time.

KAFB5344



The October 2, 2020, letter regarding the Groundwater Monitoring Work Plan required a work plan consolidating five NMED-approved work plans into one site wide groundwater monitoring work plan, with an annual update due on April first of each subsequent year. The previously approved work plans are listed in Attachment 1, with references to NMED approval and descriptions of each documents' contribution to the current groundwater monitoring program. The requested consolidated work plan was submitted to NMED in April 2021 and a notice of disapproval was issued by NMED on November 8, 2022, which re-evaluated a sampling method comparison study performed in 2016. Based on the February 21, 2024, meeting between the USAF and NMED, historical data was deemed acceptable for use, and NMED requested an additional study to compare the analytical data trends from samples collected using both passive and low-flow sampling methods.

The groundwater sampling method comparison study will be conducted at three wells for a period of eight consecutive quarters. Samples will be collected at each well using both passive and low-flow sampling methods for 1,2-dibromoethane (EDB) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) and analyzed using methods SW8011 (for EDB) and SW8260D (for BTEX). Sampling and analysis will be conducted in accordance with the methods described in the *Work Plan for Bulk Fuels Facility Expansion of the Dissolved-Phase Plume Groundwater Treatment System Design Revision 2* which was submitted to NMED in January 2017 and approved with conditions in the letter dated May 31, 2017 (Attachment 1).

The three wells selected for this study, KAFB-106S1-447, KAFB-106S2-451, and KAFB-106S5-446, are shown in Attachment 2. These wells were selected based on the following criteria:

- Consistent historical detections of EDB and benzene
- No historical light non-aqueous phase liquid (LNAPL) detected, as passive sampling is not appropriate for wells with LNAPL.
- Spatial coverage of the source area plume
- Screens spanning the water table, which eliminates the potential for mixing stagnant water from above the well screen into the sampling zone.

These three wells are currently sampled on a quarterly basis for a baseline list of analytes. For the duration of the sampling method comparison study, they will continue to be sampled for this full analytical suite by one of the two methods each quarter. The analytical suite is provided in the *Work Plan for Vadose Zone Coring, Vapor Monitoring, and Water Supply Sampling Revision 1* which was submitted to NMED in December 2017 and approved with conditions in the letter dated February 23, 2018 (Attachment 1).

The groundwater sampling method comparison study will begin in Q2 2024 and be completed in Q2 2026. Following completion of the study, trends in EDB and benzene analytical results will be compared. Upon NMED's approval of this extension request, the results of the study will be used to inform the next update to the Groundwater Monitoring Work Plan.

USAF proposes to continue groundwater monitoring activities in accordance with the previously approved work plans (Attachment 1) for the duration of the sampling method comparison study.

USAF requests an extension for the revised Groundwater Monitoring Work Plan update until September 30, 2026, 90 days after the study will be completed.

If you have any questions or concerns, please contact Mr. Ryan Wortman at commercial line (505) 853-3484 or email ryan.wortman.3@us.af.mil.

Sincerely

POWER.MICHA
EL.J.1017246581
MICHAEL J. POWER, Colonel, USAF
Commander

Digitally signed by
POWER.MICHAEL.J.1017246581
Date: 2024.03.19 19:27:28 -06'00'

2 Attachments:

Attachment 1: Approved Work Plans Governing the Groundwater Monitoring Program
Attachment 2: 1,2-Dibromoethane (EDB) Concentrations in Groundwater, Reference Elevation Interval 4857, Q4 2023

cc:

NMED Resource Protection Division (Shean), letter and CD
NMED HWB (Maestas, Dhawan, Eads, Davidson), 2 Hard Copies/2 CDs
EPA Region 6 (King), letter and CD
AFCEC/CZ (Clark, Kottkamp, Segura), electronic only
Public Info Repository, Admin. Record/Info. Repository (AFB/Miranda), Hard Copy/CD
USACE-ABQ District Office (Watts-Gravette, Moayyad, Hernandez), Electronic

Attachment 1
Approved Work Plans Governing the Groundwater Monitoring Program

Work Plan Reference	NMED Approval ^a	Contribution to GWM Program
Kirtland AFB. 2016. Operations and Maintenance Plan, Groundwater Treatment System, Bulk Fuels Facility, SWMU ST-106/SS-111, Kirtland Air Force Base, New Mexico. Prepared by EA Engineering, Science, and Technology, Inc., PBC for Kirtland AFB under USACE–Albuquerque District Contract No. W912DR-12-D-0006. August.	Approved with modifications on December 12, 2016 (NMED, 2016). NMED Facility Record #4644.	This plan was listed in the October 2, 2020 letter (NMED, 2020a) as contributing to GWM requirements. Waste management for GWM is detailed in this plan. Monitoring well purge water is categorized into non-hazardous, hazardous, and water of unknown quality. Non-hazardous water is discharged to the GWTS. Water of unknown quality is sampled and analyzed. Once determined to be non-hazardous, it is discharged to the GWTS. Hazardous water is not discharged to the GWTS.
Kirtland AFB. 2017a. Work Plan for Bulk Fuels Facility Expansion of the Dissolved-Phase Plume Groundwater Treatment System Design Revision 2, Solid Waste Management Unit ST-106/SS-111. Prepared by EA Engineering, Science, and Technology, Inc., PBC for Kirtland AFB under USACE–Albuquerque District Contract No. W912DR-12-D-0006. January.	Approved with conditions on May 31, 2017 (NMED, 2017). NMED Facility Record #4554.	This plan was listed in the October 2, 2020 letter (NMED, 2020a) as contributing to GWM requirements. The Work Plan for BFF Expansion of the Dissolved Phase Plume Groundwater Treatment System Design includes the basis for GWM. This plan also includes and describes the GWM network at that time (2017) and provides approval to sample select wells using passive sampling methods.
Kirtland AFB. 2017b. Work Plan for Vadose Zone Coring, Vapor Monitoring, and Water Supply Sampling Revision 1, Bulk Fuels Facility, Solid Waste Management Unit ST-106/SS-111. Prepared by EA Engineering, Science, and Technology, Inc., PBC for Kirtland AFB under USACE–Albuquerque District Contract No. W9128F-13-D-0006. December.	Approved with conditions on February 23, 2018 (NMED, 2018a). NMED Facility Record #4656	This plan was listed in the October 2, 2020 letter (NMED, 2020a) as contributing to GWM requirements. The Work Plan for Vadose Zone Coring, Vapor Monitoring, and Water Supply Sampling, BFF, adds nine monitoring wells installed in 2018 and 2019 to the GWM network (KAFB-106S1-447, KAFB-106S2-451, KAFB-106S3-449, KAFB-106S4-446, KAFB-106S5-446, KAFB-106S7-451, KAFB-106S8-451, KAFB-106S9-447, and KAFB-106247-450).
Kirtland AFB. 2017c. Work Plan for Data Gap Monitoring Well Installation, Solid Waste Management Unit ST-106/SS-111. Prepared by EA Engineering, Science, and Technology, Inc., PBC for Kirtland AFB under USACE–Albuquerque District Contract No. W912DR-12-D-0006. December.	Approved with conditions on February 28, 2018 (NMED, 2018b). NMED Facility Record #4657.	This plan was listed in the October 2, 2020 letter (NMED, 2020a) as contributing to GWM requirements. The Work Plan for Data Gap Monitoring Well Installation adds six new wells installed in 2018 (KAFB-106240-449, KAFB-106241-428, KAFB-106242-418, KAFB-106243-425, KAFB-106244-445, KAFB-106245-460) and 11 existing wells (KAFB-106041, KAFB-106148-484, KAFB-106149-484, KAFB-106150-484, KAFB-106151-484, KAFB-106152-484, KAFB-106153-484, KAFB-106154-484, KAFB-106155-484, KAFB-106156-484, and KAFB-106211) to the GWM network. The existing wells were previously dry as they were originally installed in the vadose zone. Due to the rising water levels, these wells could now be used for sampling or gauging.
Kirtland AFB. 2018. Work Plan for Bioventing and Air-Lift Enhanced Bioremediation Pilot Tests, Bulk Fuels Facility, Solid Waste Management Unit ST-106/SS-111. Prepared by EA Engineering, Science, and Technology, Inc. for USACE–Albuquerque District under contract W912WR-12-D-006. April.	Approved with conditions on April 6, 2018 (NMED, 2018c). NMED Facility Record #4665.	This plan was listed in the October 2, 2020 letter (NMED, 2020a) as contributing to GWM requirements. The Work Plan for Bioventing and Air-Lift Enhanced Bioremediation Pilot Tests included groundwater sampling as part of monitoring the air-lift enhanced bioremediation pilot study. The air-lift enhanced bioremediation pilot test well has not been installed, and a request to defer the pilot study was submitted to NMED on July 23, 2018 (Appendix A-1). The request was submitted since it was deemed that the pilot study would be ineffective due to excessive well fouling. Any future monitoring under the scope of this work plan would be a part of the pilot study and not the GWM Work Plan.
Kirtland AFB. 2019a. Work Plan for Data Gap Monitoring Well Installation KAFB-106248 to KAFB-106252, Bulk Fuels Facility, SWMUs ST-106/SS-111. Prepared by Sundance Consulting, Inc. for the USACE–Albuquerque District. December.	Approved with modifications on July 14, 2020 (NMED, 2020b). NMED Facility Record #4974.	The Work Plan for Data Gap Monitoring Wells Installation, KAFB-106248 to KAFB-106252 and KAFB-106S10, adds six new wells, installed in 2020 and 2021, to the GWM network (KAFB-106248-452, KAFB-106249-450, KAFB-106250-447, KAFB-106251-443, KAFB-106252-425, and KAFB-106S10-443).

Attachment 1
Approved Work Plans Governing the Groundwater Monitoring Program

^a NMED approval letters are provided in Appendix A-1 of this Work Plan for Groundwater Monitoring.

AFB = Air Force Base

BFF = Bulk Fuels Facility

GWM = Groundwater Monitoring

GWTS = Groundwater treatment system

NMED = New Mexico Environment Department

SWMU = Solid Waste Management Unit

USACE = U.S. Army Corps of Engineers

NMED. 2016. Correspondence from Kathryn Roberts, Director, Resource Protection Division to Colonel Eric. H. Froehlich, Base Commander, Kirtland AFB, New Mexico, and Mr. John Pike, Director, Environmental Management Division, 377 MSG, Kirtland AFB, New Mexico, re: Operation and Maintenance Plan, Groundwater Treatment System, Bulk Fuels Facility Solid Waste Management Unit ST-106/SS-111, Kirtland Air Force Base. EPA ID No. NM9570024423, HWB-KAFB-13-MISC. December 12.

NMED. 2017. Correspondence from Juan Carlos Borrego, Deputy Secretary, Environment Department to Colonel Eric H. Froehlich, Base Commander, Kirtland AFB, New Mexico, and Lieutenant Colonel Wayne J. Acosta, Civil Engineer Office, Kirtland AFB, New Mexico, re: Work Plan for Bulk Fuels Facility Expansion of the Dissolved-Phase Plume Groundwater Treatment System Design Revision 2, Bulk Fuels Facility SWMUs ST-106/SS-111, Kirtland AFB, EPA ID No. NM9570024423, HWB-KAFB-13-MISC. May 31.

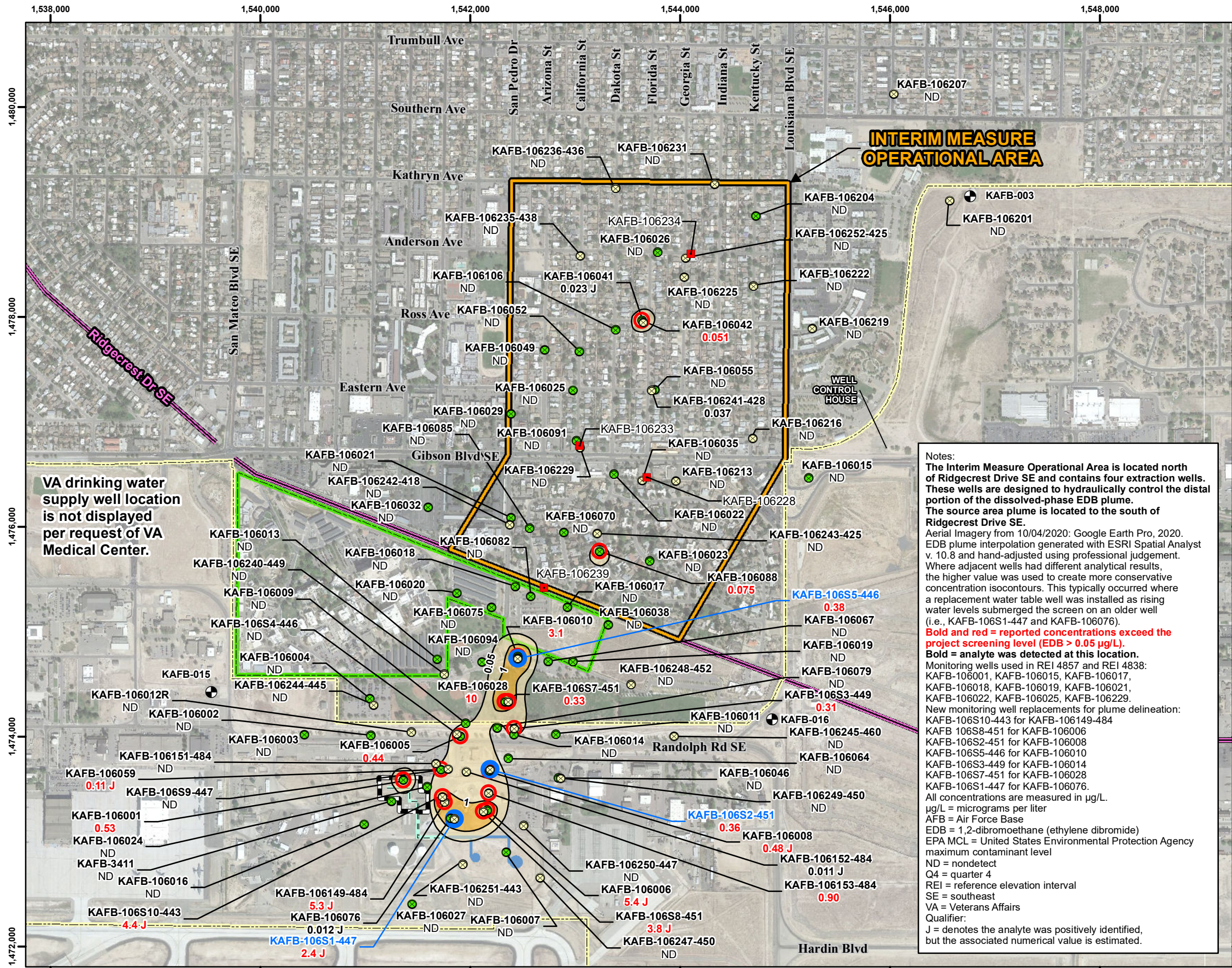
NMED. 2018a. Correspondence from Mr. Juan Carlos Borrego, Deputy Secretary Environment Department, to Colonel Richard W. Gibbs, Base Commander, 377 ABW/CC, Kirtland AFB, New Mexico and Mr. Chris Segura, Chief, Installation Support Section, AFCEC/CZOW, Kirtland AFB, New Mexico, re: Work Plan for Vadose Zone Coring, Vapor Monitoring, and Water Supply Sampling, Revision 2, SWMUs ST-106/SS-111, Kirtland AFB, New Mexico, EPA ID No. NM9570024423, HWB-KAFB-13-MISC. February 23.

NMED. 2018b. Correspondence from Mr. Juan Carlos Borrego, Deputy Secretary Environment Department, to Colonel Richard W. Gibbs, Base Commander, 377 ABW/CC, Kirtland AFB, New Mexico and Mr. Chris Segura, Chief, Installation Support Section, AFCEC/CZOW, Kirtland AFB, New Mexico, re: Work Plan for Data Gap Monitoring Well Installation, Bulk Fuels Facility, Solid Waste Management Unit (SWMU) ST-106/SS-111, Kirtland AFB, New Mexico. February 28.

NMED. 2018c. Correspondence from Mr. Juan Carlos Borrego, Deputy Secretary Environment Department, to Colonel Richard W. Gibbs, Base Commander, 377 ABW/CC, Kirtland AFB, New Mexico and Mr. Chris Segura, Chief, Installation Support Section, AFCEC/CZOW, Kirtland AFB, New Mexico re: Work Plan for Bioventing and Air-Lift Enhanced Bioremediation Pilot Tests, Bulk Fuels Facility, Solid Waste Management Unit ST-106/SS-11. April 6.

NMED. 2020a. Correspondence from Mr. Kevin M. Pierard, Chief, Hazardous Waste Bureau, NMED to Colonel David S. Miller, Base Commander, 377 ABW/CC, Kirtland AFB, New Mexico and Lt. Colonel Wayne J. Acosta, Civil Engineer Office, 377 Civil Engineer Division, 377 ABW/CC, Kirtland AFB, New Mexico re: Groundwater Monitoring Work Plan, Bulk Fuels Facility Spill Solid Waste Management Units ST-106 and SS-111, Kirtland AFB, New Mexico, EPA ID# NM6213820974 [sic], HWB-KAFB-BFFS-MISC. October 2.

NMED. 2020b. Correspondence from Mr. Kevin M. Pierard, Chief, Hazardous Waste Bureau, New Mexico Environment Department to Colonel David S. Miller, Base Commander, 377 ABW/CC, Kirtland AFB, New Mexico and Lt. Colonel Wayne J. Acosta, Civil Engineer Office, 377 Civil Engineer Division, 377 ABW/CC, Kirtland AFB, New Mexico re: Workplan for Data Gap Monitoring Well Installation KAFB-106248 to KAFB-106252, Bulk Fuels Facility, SWMUs ST-106/SS-111. July 14.

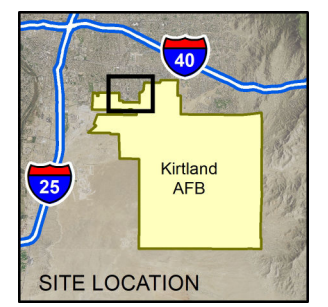


Legend

- Reference Elevation Interval 4857 Monitoring Well (Screen Not Submerged)
- Reference Elevation Interval 4857 and 4857/4838 Monitoring Well (Screen Submerged)
- Extraction Well
- Drinking Water Supply Well
- Wells Selected for Sampling Method Comparison Study
- Monitoring Well with Concentrations that Exceed the Project Screening Level (EDB > 0.05 µg/L)
- Former Aboveground Storage Tank
- Former Buried Fuel Transfer Line
- Former Aboveground Fuel Transfer Line
- Ridgecrest Drive SE
- EDB Concentration Isocontour
- Interim Measure Operational Area
- Installation Fence Boundary
- Source Area
- VA Boundary

Measured EDB Concentration Range

- 0.05 (EPA MCL) - 1.0 µg/L
- 1.0 - 10 µg/L



Notes:
The Interim Measure Operational Area is located north of Ridgecrest Drive SE and contains four extraction wells. These wells are designed to hydraulically control the distal portion of the dissolved-phase EDB plume. The source area plume is located to the south of Ridgecrest Drive SE.
 Aerial Imagery from 10/04/2020: Google Earth Pro, 2020. EDB plume interpolation generated with ESRI Spatial Analyst v. 10.8 and hand-adjusted using professional judgement. Where adjacent wells had different analytical results, the higher value was used to create more conservative concentration isocontours. This typically occurred where a replacement water table well was installed as rising water levels submerged the screen on an older well (i.e., KAFB-106S1-447 and KAFB-106076).
Bold and red = reported concentrations exceed the project screening level (EDB > 0.05 µg/L).
Bold = analyte was detected at this location.
 Monitoring wells used in REI 4857 and REI 4838: KAFB-106001, KAFB-106015, KAFB-106017, KAFB-106018, KAFB-106019, KAFB-106021, KAFB-106022, KAFB-106025, KAFB-106229.
 New monitoring well replacements for plume delineation: KAFB-106S10-443 for KAFB-106149-484; KAFB 106S8-451 for KAFB-106006; KAFB-106S2-451 for KAFB-106008; KAFB-106S5-446 for KAFB-106010; KAFB-106S3-449 for KAFB-106014; KAFB-106S7-451 for KAFB-106028; KAFB-106S1-447 for KAFB-106076.
 All concentrations are measured in µg/L. µg/L = micrograms per liter. AFB = Air Force Base. EDB = 1,2-dibromoethane (ethylene dibromide). EPA MCL = United States Environmental Protection Agency maximum contaminant level. ND = nondetect. Q4 = quarter 4. REI = reference elevation interval. SE = southeast. VA = Veterans Affairs. Qualifier: J = denotes the analyte was positively identified, but the associated numerical value is estimated.

N

0 500 1,000 2,000
 Feet
 1 inch = 1,000 feet
 Projection: NAD83 State Plane New Mexico Central FIPS 3002 Feet

SAMPLING METHOD COMPARISON STUDY
 BULK FUELS FACILITY
 SOLID WASTE MANAGEMENT UNITS ST-106/SS-111
 KIRTLAND AIR FORCE BASE, NEW MEXICO

ATTACHMENT 2

1,2-DIBROMOETHANE (EDB) CONCENTRATIONS
 IN GROUNDWATER, REFERENCE ELEVATION
 INTERVAL 4857, Q4 2023