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 **ENTERED**



BUTCH TONGATE  
Cabinet Secretary

J. C. BORREGO  
Deputy Secretary

**CERTIFIED MAIL – RETURN RECEIPT REQUESTED**

February 23, 2018

Colonel Richard W. Gibbs  
Base Commander  
377 ABW/CC  
2000 Wyoming Blvd SE  
Kirtland AFB, NM 87117-5606

Mr. Chris Segura  
Chief, Installation Support Section  
AFCEC/CZOW  
2050 Wyoming Blvd SE, Suite 124  
Kirtland AFB, NM 87117-5270

**RE: WORK PLAN FOR VADOSE ZONE CORING, VAPOR MONITORING, AND WATER  
SUPPLY SAMPLING, REVISION 2  
BULK FUELS FACILITY  
SOLID WASTE MANAGEMENT UNIT ST-106/SS-111  
KIRTLAND AIR FORCE BASE  
EPA ID# NM9570024423, HWB-KAFB-13-MISC**

Dear Colonel Gibbs and Mr. Segura:

The New Mexico Environment Department (“NMED”) is in receipt of the Kirtland Air Force Base (“KAFB”) (“Permittee”) *Work Plan for Vadose Zone Coring, Vapor Monitoring, and Water Supply Sampling Revision 1* (“Work Plan”), dated December 15, 2017. The Work Plan addresses activities to be performed at the Bulk Fuels Facility (“BFF”) site, including:

- Continuous coring and sample collection from up to twelve (12) boring locations;
- Installation of soil vapor monitoring (“SVM”) points in three continuous coring locations;
- Installation of dual-completion soil vapor/groundwater monitoring wells in up to eight (8) boring locations;
- Vadose zone monitoring, maintenance, and reporting of existing SVM network; and
- Sampling and reporting for water supply wells.



The data collected under the Work Plan will provide critical data to address the existing data gap which is complicating efforts to define the nature and extent of light non-aqueous phase liquid (“LNAPL”) at the Site along with allowing the Permittee to estimate the remaining mass of LNAPL. Further, as indicated in the Work Plan, the data will also be important for development of treatability studies at the BFF site in support of the Corrective Action process.

As stated in the Work Plan (Section 3.1.1), when the fuel leak began, the water table was likely higher than today. As the water table dropped over time due to increased demand and pumping of the aquifer, a “smear zone” was created. Therefore, the vertical extent of LNAPL is from a maximum elevation of the LNAPL layer above the highest historical water table elevation to the minimum elevation of LNAPL-water interface at the lowest water table elevation. The horizontal extent can be anticipated to be variable over time, with LNAPL migrating some distance over time, even as the water table dropped. An additional level of complexity is how the LNAPL thickness over time will be affected by the submergence of water table well screens, as the water table has rebounded since 2009. The coring locations, depths, and procedures provided in the Work Plan were scoped and designed over a series of technical working groups to most effectively and efficiently characterize the LNAPL remaining in the subsurface and understand any potential sources that remain.

An additional key component of the Work Plan is the installation of groundwater monitoring wells screened across the water table at the coring locations. With the rising water table, the majority of the water table groundwater monitoring well network has become submerged, resulting in a loss of data refinement at the water table for both dissolved-phase contaminants and measurable LNAPL thickness. A newly installed groundwater monitoring well, KAFB-106MW1, is monitored in support of the in-situ bioremediation pilot test and had measurable LNAPL in September and October 2017. This occurrence of LNAPL in a water table groundwater monitoring well, along with concentration data from 2017, indicates that LNAPL is present in sufficient quantities at the water table to enter a monitoring well in a measurable thickness.

The Work Plan is hereby approved, subject to the following conditions:

1. Photoionization detector (“PID”) readings will be collected every twenty (20) feet from the ground surface to the top of the 1970 high water mark, at which point the frequency shall be increased to at least every ten (10) feet in order to capture zones of residual fuel contamination in the vadose zone.
2. Coring intervals will begin at least ten (10) feet above the 1970s high water mark, which is equivalent to the 1960s high water mark. Coring intervals may be changed based upon preceding coring and field data, and will be conveyed by the Permittee to NMED for approval prior to implementing changes in coring depths.
3. Figure 3-7 indicates that mineralogical and microbial data will only be collected from samples within the saturated and or smear zone. The Permittee shall propose, for NMED approval, unsaturated zone coring intervals for source area locations KAFB 106V1 and KARB-106V2 where these analyses also will be conducted.

4. Coring location KAFB-106S7 will remain as optional, pending the results obtained from coring locations KAFB-106S3 and KAFB-106S5.
5. Background coring ST-106 SBBG shall be the last drilling location. The Permittee and NMED shall meet to discuss observations and test results from other coring locations, and the Permittee shall propose to NMED for approval, coring intervals and analyses for ST-106 SBBG that will provide actual background data to use for screening data and informing decisions. The Permittee and NMED shall meet and agree on coring intervals and analyses for ST-106 SBBG, as expeditiously as possible, so as not to incur drilling down-time or a separate mobilization.
6. If the location of background well ST-106 SBBG becomes problematic due to its closeness to the airport runway, the Permittee shall propose, and obtain NMED approval for, a new location.
7. The Permittee shall core and install a groundwater monitoring well at location KAFB-106S5 first, so that information from this well can be used to monitor contamination conditions south of groundwater extraction well KAFB-106239.
8. During drilling, the Permittee shall provide a PDF copy of lithologic logs daily along with an update email documenting daily and planned activities. A well approval form with the proposed screen intervals for groundwater monitoring well completions must be submitted for NMED approval prior to the start of well construction. NMED understands the importance of no field delays and will return the approved well form within one working day of receipt.
9. This approval also applies to the drilling and construction of soil vapor monitoring and injection wells, injection points, and an air lift well that will be used in bioventing and air lift pilot tests. NMED is currently reviewing the full workplans for these pilot tests and will provide the Permittee with comments in the near future, but the Permittee is authorized to proceed with the drilling and construction of these wells and points.
10. Prior to drilling de-mobilization, and after the coring program has generated additional data, NMED and the Permittee shall meet to discuss feasibility of continuous coring and groundwater monitoring well installation at locations near KAFB-106MW1, where LNAPL was measured in September and October 2017, and KAFB-106018 where measurable LNAPL and high dissolved-phase hydrocarbons have been detected in the past.

If you have any questions regarding this letter, please contact NMED, Chief Scientist Dennis McQuillan at (505) 827-2140.

Sincerely,



Juan Carlos Borrego  
Deputy Secretary  
Environment Department

Col. Gibbs and Mr. Segura

February 23, 2018

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File: KAFB 2018 Bulk Fuels Facility Spill