



SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

State of New Mexico
ENVIRONMENT DEPARTMENT

Office of the Secretary

Harold Runnels Building
1190 Saint Francis Drive, PO Box 5469
Santa Fe, NM 87502-5469
Telephone (505) 827-2855 Fax (505) 827-1628
www.env.nm.gov



BUTCH TONGATE
Cabinet Secretary

J. C. BORREGO
Deputy Secretary

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

November 16, 2017

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

Chris Segura
Environmental Restoration
377 Civil Engineering Division
2050 Wyoming Blvd SE, Suite 116
Kirtland AFB, NM 87117-5270

**RE: NOTICE OF DEFICIENCY
BULK FUELS FACILITY SPILL
SOLID WASTE MANAGEMENT UNIT ST-106/SS-111
KIRTLAND AIR FORCE BASE, NEW MEXICO
EPA ID# NM9570024423, HWB-KAFB-MISC**

Dear Colonel Gibbs and Mr. Segura:

On August 3, 2017, the New Mexico Environment Department (“NMED”) sent the U.S. Air Force (“Permittee”) a letter containing three issues that were identified during NMED’s preliminary review of the *Resource Conservation and Recovery Act Facility Investigation Report* (“RFI Report”) dated January 20, 2017. The issues were raised ahead of formal completion of the NMED RFI Report review, as the issues are critical and required immediate attention from the Permittee. As part of the August 3, 2017 NMED letter, NMED required that the Permittee submit a work plan for NMED review and approval within 60 days of the conclusion of the technical working group meetings to address the issues outlined in the August 3, 2017 NMED letter. The technical working group meetings concluded on September 8, 2017, and therefore a work plan or a request for extension should have been submitted to NMED by November 8, 2017.

KAFB4766



The accelerated rise in the water table that occurred in the first half of 2017 resulted in the rapid reduction to nine out of 62 groundwater monitoring wells screened at the water table and increased the urgency in enacting a plan for replacement of water table wells to maintain the sentinel well network and provide continued confidence in the delineation of the EDB plume at the water table. During the September 6-8, 2017 technical working group meetings, the locations of new water table groundwater monitoring wells were discussed and existing Pneulog and soil vapor monitoring wells were identified for incorporation into the groundwater monitoring program. The action items for the Permittee were to submit a work plan for the drilling and installation of the groundwater monitoring wells and to submit a modification to the Quality Assurance Project Plan ("QAPP") for groundwater monitoring to add the existing wells into the monitoring program. To date, the Permittee has neither submitted a work plan nor requested an extension, and is therefore deficient in meeting the requirements set forth in the NMED's August 3, 2017 letter.

The reduced resolution of monitoring data at the water table also impacts the Permittee's ability to complete a robust calculation of EDB plume mass and removal. Additional groundwater monitoring wells are required to adequately quantify the mass of EDB in groundwater and removed by the "pump and treat" interim measure. Additionally, both NMED and the Albuquerque Bernalillo County Water Utility Authority ("WUA") have expressed concerns with the Permittee's analysis of plume capture as presented in the Q2 2017 quarterly report. Specifically, the capture zone analysis appears to incompletely follow the U.S. Environmental Protection Agency ("EPA") guidance for plume capture analysis, focusing only on water levels for determining horizontal and vertical capture (Step 3) rather than following all six steps defined in the EPA guidance. The Permittee points to Step 5, *Evaluate concentration trends*, as the justification for skipping Steps 4 and 6, citing decreasing concentration trends as sufficient evidence of capture. In doing so, the Permittee fails to recognize that the observed concentration trends noted in the target capture zone could be attributed to the rising water table and loss of resolution of EDB concentration data across the thickness of the plume, and therefore is not a robust measure of plume capture effectiveness. Moreover, skipping Step 4 of the process results in an inadequate accounting of flow dynamics, drawdown, and uncertainty in hydraulic conductivity at the site. There is a wide range of measured hydraulic conductivity at the Kirtland Air Force Base ("KAFB") Bulk Fuels Facility ("BFF") leak site, ranging from 12 to 290 feet per day based on the constant rate pumping test completed at groundwater extraction well KAFB-106228. When Step 4 is executed, specifically the capture zone width calculation using the range of measured hydraulic conductivity, the current three extraction wells are not sufficiently capturing the EDB plume. For this level of uncertainty, the guidance states:

"If hydrogeologic information such as hydraulic conductivity distribution and hydraulic gradient (magnitude and direction) are highly uncertain, then some of the techniques for evaluating capture may be subject to an unacceptable degree of uncertainty, and additional characterization may be appropriate." (EPA, 2008; Section B, p. 5).

Both NMED and the Permittee agree that delineating the nature and extent of light non-aqueous phase liquid ("LNAPL") at the BFF leak site was an outstanding gap of data that needs to be addressed. The LNAPL data gap of extent and mass is critical data for informing the selection of

remedies and for understanding potential impacts to groundwater concentrations at the BFF leak site as the water table continues to rise. Groundwater concentrations of benzene and EDB in the source area from Q2 2017 have increased in areas where LNAPL has historically been observed with concentrations greater than their respective site-specific effective solubility, indicating the presence of LNAPL at the water table. Through a series of technical working groups in 2015 and 2016, a work plan was scoped to fill the LNAPL data gap. On June 29, 2017, the Permittee submitted a *Work Plan for Vadose Zone Coring, Vapor Monitoring, and Water Supply Sampling*. On September 20, 2017, NMED and the Permittee met to discuss the June 2017 work plan and determined a path forward. As of the date of this letter, a draft revised work plan document was provided to NMED for concurrence. However, there remains outstanding concerns that the proposed coring intervals do not sufficiently address the LNAPL data gap.

NMED acknowledges receipt of an email from the Permittee dated November 14, 2017 that was sent to address the issues in this letter, in addition to concerns over the continued shutdown of groundwater extraction well KAFB-106233. The email indicates the willingness of the Permittee to work with NMED and technical working groups to make progress on plume capture, groundwater monitoring wells, and extraction well operation, but lacks any detail or dates on when deliverables will be submitted. The position of NMED is that all groundwater monitoring wells scoped to fill the data gap at the water table are priority and need to be installed as soon as possible. Additionally, the new water table groundwater monitoring wells were scoped with a reliance on the United States Geological Survey ("USGS") sentinel wells for continued confidence in the WUA water supply wells. The Permittee must either: A) Start reporting the results of the monitoring of the USGS sentinel wells in the quarterly reports; B) Integrate sampling and reporting of those wells into the BFF monitoring program; or C) Install sentinel wells that fill the need for the down-gradient water table and deep well screens. NMED acknowledges that the Permittee sent a second email dated November 15, 2017, again recognizing the need for the groundwater monitoring well work plan and the NMED's request for reporting USGS data.

As a point of clarification, plume capture and mass removal of EDB in the down-gradient plume are of utmost importance to NMED. The concern expressed to the Permittee regarding the continued shutdown of groundwater extraction well KAFB-106233 is that the well continues to be non-operational despite modeling and preliminary capture analysis showing that the well provides important mass removal and plume capture. NMED's position is that operational decisions should be data-driven and adhere to the primary goal of the interim measure – plume capture and mass removal.

As required by the August 3, 2017 letter, the Permittee shall submit a work plan for the installation of additional groundwater monitoring wells and a corrected, revised work plan for continuous coring by December 15, 2017, so that field work to address this critical data gap can begin as soon as possible. Additionally, the Permittee must submit a complete six-step capture zone analysis, including a numerical or analytical model, to NMED for review by December 31, 2017. Failure to submit these two documents by the deadlines of this letter could result in an issuance of a Notice of Violation.

Col. Gibbs and Mr. Segura
November 16, 2017
Page 4

If you have any questions regarding this letter, please contact Diane Agnew at (505) 222-9555.

Sincerely,



Mr. Juan Carlos "J.C." Borrego
Acting Resource Protection Division Director
Deputy Secretary
Environment Department

cc: Col. M. Harner, KAFB
K. Lynnes, KAFB
B. Renaghan, AFCEC
S. Clark, KAFB-AFCEC
H. O'Grady, KAFB-AFCEC
T. Simpler, USACE

J. Kieling, NMED-HWB
D. Agnew, NMED-GWQB
S. Pullen, NMED-GWQB
M. Hunter, NMED-GWQB
D. McQuillan, NMED-OTS

File: KAFB 2017 Bulk Fuels Facility Spill