



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 377TH AIR BASE WING (AFMC)



SEP 16 2013

RECEIVED

SEP 17 2013

NMED  
Hazardous Waste Bureau

Colonel Tom D. Miller  
377 ABW/CC  
2000 Wyoming Blvd SE  
Kirtland AFB, New Mexico 87117-5600

Mr. Tom Blaine, Manager  
RCRA Permits Management Program  
Hazardous Waste Bureau (HWB)  
New Mexico Environment Department (NMED)  
2905 Rodeo Park Road  
Santa Fe, New Mexico 87505

Dear Mr. Blaine

This letter is in response to the New Mexico Environment Department (NMED) letter *Pneulog Test Results, Bulk Fuels Facility (BFF) Spill, Solid Waste Management Units ST-106 and SS-111, Kirtland Air Force Base* dated May 10, 2013 and as a follow up to the June 13, 2013 working group conference call discussion. Pneulog well clusters KAFB-106151 through KAFB-106156 were not logged with Pneulog technology. To date, the well clusters that have been tested using Pneulog technology are KAFB-106148, KAFB-106149, and KAFB-106150. The results of this testing were reported in the 2<sup>nd</sup> Quarter 2012 Pre-Remedy Monitoring Report.

After consideration of the pneulog test results along with all other available data collected as part of the BFF project, it is the opinion of Kirtland Air Force Base (AFB) and Shaw (a CB&I company) engineers that further Pneulog testing is not necessary. Initially, this technology was proposed in response to the NMED, August 6, 2010 letter and to design additional SVE system components at the BFF. This letter requests a variance to the Interim Measures Work Plan to cease testing of the remaining six Pneulog well clusters. Additionally, this letter describes the reasons why additional Pneulog testing is unnecessary:

**1. In addition to the Pneulog results, the abundance of data collected at the BFF each quarter accurately characterizes the vadose zone.**

During the first three quarters of 2011, Kirtland AFB collected over 450 soil samples during the advancement of soil vapor monitoring wells and groundwater monitoring wells. Each quarter, Kirtland AFB collects soil vapor data from 278 soil vapor points at depths ranging between 50 and 450 feet (ft) below ground surface (bgs). A total of 17 soil vapor extraction (SVE) wells and soil vapor monitoring (SVM) clusters are in the vicinity of the Former Fuels Offloading Rack (FFOR), the suspected source area, and 42 SVM clusters are within the BFF, the area of highest vapor contamination. The quarterly soil vapor data provides a continually updated model of vadose zone contamination and vapor concentrations.

Each of the wells installed as part of the BFF project have been logged according to American Society for Testing and Materials International guidelines by a qualified geologist. In addition, core samples were collected at the vadose zone/water-table interface, and tested for geotechnical parameters. The cross sections generated from the soil boring logs, along with the core samples, provide a comprehensive model of vadose zone geology. Additionally, two radius of influence (ROI) tests have been performed at the

KAFB4087



BFF; one using the internal combustion engine (ICE) SVE units, and one on the currently installed SVE system. These ROI tests provide a qualitative assessment of the vadose zone vapor permeability at the BFF. Soil sampling, soil vapor sampling, geologic borehole logs, and ROI testing used in conjunction with the pneulog test data provides a large amount of data defining soil vapor concentrations, and vapor permeability at varying depths. The results of the Pneulog testing of KAFB-106148, KAFB-106149, and KAFB-106150 confirm that the quarterly soil vapor monitoring results are providing an accurate and complete picture of subsurface contamination at the BFF project site.

**2. The soil total volatile petroleum hydrocarbon (TVPH) pneulog results are consistent with expectations based on quarterly soil vapor sampling.**

Pneulog testing was conducted during Second Quarter 2012. A comparison of the soil vapor data from that quarter with the pneulog results demonstrates that in general, the pneulog profiles of TVPH soil gas correlate well with soil vapor maps generated during that quarter:

**KAFB-106148:** The pneulog profile of TVPH soil gas for KAFB-106148 indicates elevated vapor concentrations from 25-300 ft bgs, with a marked decrease in concentrations at 350 ft bgs to the bottom of the borehole. An anomaly at 275 ft bgs indicates dramatically heightened vapor concentrations across an interval of approximately 25 ft. The soil vapor data collected as part of quarterly monitoring during the Second Quarter 2012 also indicates heightened concentrations of both total volatile organic compounds (VOCs) and benzene to at least 250 ft bgs in the area of KAFB-106148. Similarly to the pneulog profile, concentrations in the area of the borehole drop at 350 ft bgs and decline steadily to the bottom of the borehole.

**KAFB-106149:** The pneulog profile of TVPH soil gas for KAFB-106149 indicates very low concentrations of soil vapor from 25 to 175 ft bgs, at which point concentrations steadily climb to the bottom of the borehole. This trend is also seen in both benzene and total VOC vapor maps from Second Quarter 2012. The only anomaly that is not obvious from the quarterly soil vapor data is a 25 ft interval of heightened vapor concentration at 250 ft bgs.

**KAFB-106150:** The pneulog profile of TVPH soil gas for KAFB-106150, similarly to 106149, indicates low vapor concentrations to approximately 175 ft bgs, at which point vapor concentrations steadily climb, peaking at around 450 ft bgs. The soil vapor maps of benzene and total VOCs from 2<sup>nd</sup> quarter 2012 mirror this trend, with the exception of a single anomaly, again at 250 ft of heightened vapor concentrations demonstrated in the Pneulog profile.

**3. The pneulog results, although demonstrating some variability, are consistent with each other, suggesting that additional testing would not change the conceptual site model.**

Although the TVPH soil vapor profiles all correlate well with soil vapor concentrations measured during quarterly sampling, the Pneulog well profiles each demonstrate an anomaly that is not visible from the quarterly sampling. The anomaly, an interval of heightened vapor concentration between 250 and 275 ft bgs, is consistent to all three profiles. This consistent interval is valuable information for future remediation design, but is well defined in these three profiles suggesting additional testing will not change the conceptual site model.

The profiles of vapor permeability also demonstrate consistency across all three boreholes. In KAFB-106148, KAFB-106149, and KAFB-106150, the upper 200 ft is an interval of great variation in vapor permeability; however, from 200-350 ft bgs permeability is variable, but decreasing across all three permeability profiles. From 350 ft to the bottom of the borehole permeability is again variable, but steadily decreasing across all three profiles. Although the upper 200 ft of each borehole has large variability, over 75 percent of soil total petroleum hydrocarbon contamination is below 250 ft bgs. Below 200 ft, the permeability profiles demonstrate consistency across all three pneulog wells. It is the 100 ft above the water table that is the focus for remediation as part of the SVE Phase II Interim Measure; based

on the results of the ROI testing completed in March 2013 the current SVE treatment system is pulling from this depth interval. The consistency at this depth further indicates that additional testing will not change the conceptual site model.

Although the initial Pneulog test data is informative, the points discussed above demonstrate that additional testing is unlikely to change the conceptual site model, or provide further insight into vadose zone geology and contamination. Additionally, the large amount of soil vapor data collected each quarter provides a thorough view of vadose zone contamination that, in conjunction with Pneulog testing, has developed a comprehensive conceptual site model. Furthermore, testing the remaining Pneulog wells will delay the delivery of the Vadose Zone Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) report. This in turn would postpone the development of the final remedy, submittal of the Corrective Measures Evaluation (CME), and unnecessarily push the implementation of a final remedy back several months. The remaining Pneulog wells will be tested if it is determined that testing is necessary to complete the design of the final remedy; however, based on the current data available, the characterization of the source is complete and data is sufficient for completion of the RFI and development of the CME. I am requesting that permission be granted to cease further testing of Pneulog wells in order to focus our efforts on the production of the RFI report and the design and implementation of the final remedy.

Please contact Mr. L. Wayne Bitner at 505.853.3484 or at ludie.bitner@kirtland.af.mil or Ms. Victoria R. Martinez at 505.846.6362 or at victoria.martinez@kirtland.af.mil if you have any questions.

Sincerely



TOM D. MILLER, Colonel USAF  
Commander

cc:

NMED-EHD (Blaine) w/o attch  
NMED-HWB (Kieling, Cobrain, Moats, McDonald, Brandwein) w/attch  
NMED-GWQB (Schoepner) w/attch  
NMED-PSTB (Reuter) w/attch  
NMED-OGC (deSaillan) w/o attch  
EPA Region 6 (King) w/o attch  
AFCEC-CZRX (Oyelowo) w/o attch  
Public Info Repository (Central New Mexico) w/attch  
Administrative Record/Information Repository (AR/IR) w/attch  
File, w/attch