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



Colonel John C. Kubinec
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Kirtland AFB NM 87117-5600

MAR 29 2013

Mr. John Kieling, 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. Kieling

In the NMED letter dated January 17, 2013, the NMED responded to proposed actions presented in our letter; *Response to NMED Letter Dated December 7, 2012: Repeat Sampling and Gas Bubbles in Groundwater Samples, Bulk Fuels Facility Spill, Solid Waste Management Units ST-106 and SS-111*, dated January 4, 2013. NMED conveyed concerns related to the following four specific items which are addressed in this letter:

1. **NMED Comment:** NMED directed the Permittee to collect an ambient air sample for the purpose of establishing background air composition at the site. However, the Permittee did not agree to collect and analyze an ambient air sample, citing that the use of argon in place of compressed air renders understanding ambient air composition as useless. NMED disagrees; not only is ambient air composition useful for analyzing earlier data collected by compressed-air-driven pumps, but is necessary for setting the baseline atmospheric argon concentration to be used for evaluating data from samples collected with argon-powered pumps. The Permittee shall collect, analyze, and provide the results of an ambient air sample to the NMED as previously directed. Furthermore, the ambient air sample shall be collected at one of the wells and on the same day where the sampling of gas bubbles is to take place at the well.

Response: As directed by the NMED in the January 17, 2013, letter a single ambient air sample will be collected. The ambient air sample will be collected from a location within 25 feet of one of the wells where gas samples are to be obtained from groundwater and will be collected immediately prior to, at the same time as, or immediately after the gas sample is collected from the well. The ambient air sample will be collected over a duration not to exceed 60 minutes; the exact location will be determined in the field in order to prevent contamination by any exhaust emitting equipment in the immediate area; the location selected will be upwind of such equipment. The ambient air sample will be collected in a cali-5 bond bag, provided by IsoTech® Laboratories, Inc., following the methods in the attached product sheet (Attachment A). Both the ambient air and gas bubble samples will be analyzed in the same laboratory for the same suite of analyses.

The results of the ambient air sample will be used as a laboratory quality control. Additionally, the ambient air sample results will be used to establish the background content of CO₂, argon, methane, and other gases in ambient air.

KAFB3996



2. **NMED Comment:** Isotech Laboratories, the supplier of IsoBag® sample container to be used in this effort, has specific recommendations for collecting water samples by pulsating pump for dissolved gas analysis. NMED directed the Permittee to report these procedures, if any, as they relate to collecting samples at BFF wells. The Permittee's response was that Isotech Laboratories "recommendations have been incorporated into the design of the evaluation," meaning that there are recommendations to report, which were not provided. The Permittee shall report the recommendations made by Isotech Laboratories as directed in NMED's December 7, 2012, letter.

Response: Prior to submittal of the Kirtland AFB November 30, 2012 letter, Shaw contacted Isotech Laboratories to discuss sampling of gas bubbles; Shaw specifically discussed the Bennett™ pumps and the appropriateness of the standard protocol. Isotech Laboratories recommended no change to their sampling protocol (Attachment A) using their Isobag® sample container. As stated in the Kirtland AFB January 3, 2013 letter, the instructions in the attached laboratory-provided sheet have been incorporated into the sampling procedure outlined in the Kirtland AFB November 30, 2012 letter.

3. **NMED Comment:** The NMED directed the Permittee to provide details on sites in New Mexico where ARCH drilling technology was used to install wells where bubbles in water samples have been observed as a result of air forced into groundwater by the drilling method. The Permittee cites an opinion from an NMED staff member that ARCH may be the source for entrained air in groundwater in the case of some wells at Los Alamos National Laboratory (LANL). No information was provided by the Permittee to indicate that conditions similar to LANL exist for wells installed for the BFF project. In addition, no documentation regarding entrained air in groundwater LANL was referenced. Therefore, the NMED has no reason to believe that ARCH drilling is the source of the bubbles observed for BFF wells.

Response: Detailed information concerning the use of ARCH drilling methodology during LANL's groundwater investigation, and subsequent reporting, has not been located. The information regarding gas bubbles as a result of ARCH drilling was anecdotal information provided by an NMED staff member in the field during the well sampling on November 6, 2012. The original intent was to remind all parties of the conversation.

4. **NMED Comment:** Collecting and analyzing gas samples from only two wells out of the more than 30 wells that have been observed with entrained gas bubbles in purge water and water samples is insufficient to support a conclusion with regard to the source of the gas bubbles. The Permittee shall propose at least six wells for gas sampling, as directed previously.

Response: As stated in the Kirtland AFB January 3, 2013 letter, the following six wells are proposed for the sampling of gas bubbles in groundwater:

- KAFB-106205: This well is one of the most recently installed groundwater monitoring wells and had bubbles observed in groundwater during sampling in November 2012.
- KAFB-106206: This well is one of the most recently installed groundwater monitoring wells and had bubbles observed in groundwater during sampling in November 2012.
- KAFB-1069 (or KAFB-106094): This well was installed during initial drilling of monitoring wells for the Bulk Fuels Facility spill and is located in the historic nonaqueous phase liquid footprint at the toe of the plume. KAFB-106094 is a proposed alternate location; this well has had two quarters with observed bubbles and is also a shallow well.
- KAFB-106089: This is an intermediate well located along the plume axis that has had bubbles observed during the past four quarters of sampling.

- KAFB-106090: This is a deep well along the plume axis that has had bubbles during the past four quarters of sampling.
- KAFB-106107: This is a deep well located along the western edge of the plume and it has had bubbles observed during the past four quarters of sampling.

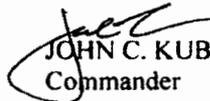
NMED will be notified no less than 10 days in advance of sampling. Initially, gas bubbles will be sampled from wells KAFB-106205 and KAFB-106206, with a 72-hour turn-around time for laboratory results. The results will be evaluated and will be used to inform the sampling of the four remaining wells. The attached schedule shows that the four wells will be sampled within approximately 10 days of receipt of the results from wells KAFB-106205 and KAFB-106206. This time period accounts for time to validate the gas analytical results from the first two samples plus the ambient sample. If there are any issues with the sample collection method or analytical data, more time may be required to have further discussions with the NMED on sample wells, approach, and/or laboratory. Sampling of gas bubbles will also be dependent on the observation of gas bubbles, since bubbles do not consistently occur in all wells from quarter to quarter (Attachment B). If no bubbles are found in groundwater at a well that is proposed for the collection of gas samples in this letter, an alternate well will be selected and proposed to NMED for approval. KAFB will request that the NMED select an alternative well within two working days of discovery that bubbles are not present in groundwater at a well.

Attachment B is an updated table illustrating the occurrences of bubbles during quarterly groundwater monitoring events. The table is current through Fourth Quarter 2012. First Quarter 2013 sampling is ongoing and Attachment B will be updated and delivered to the NMED on March 29, 2013.

Attachment C is an updated schedule for gas bubble sampling and reporting. The first two gas bubble samples will be collected two weeks after receipt of NMED approval of this plan. A data letter report documenting the findings of the gas bubble sampling, as well as conclusions and recommendations, will be submitted to the NMED by **May 28, 2013**.

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


JOHN C. KUBINEC, Colonel USAF
Commander

cc:
 NMED-RPD (Skibitski) w/o atch
 NMED-HWB (Moats, McDonald, Brandwein) w/atch
 NMED-GWQB (J. Schoepner) w/atch
 NMED-PSTB (Reuter) w/atch
 NMED-OGC w/o atch
 EPA Region 6 (L. King) w/o atch
 AFCEE/CMSE (Mr. Oyelowo) w/o atch
 Public Info Repository (Central New Mexico) w/atch
 Administrative Record/Information Repository (AR/IR) w/atch
 File, w/ atch

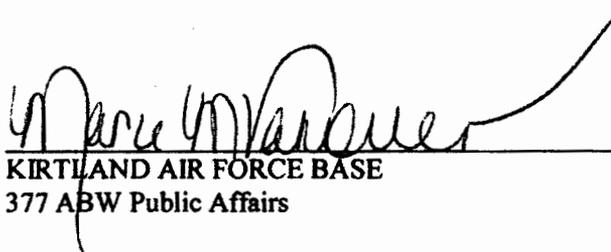
**40 CFR 270.11
DOCUMENT CERTIFICATION
MARCH 2013**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.



JOHN C. KUBINEC, Colonel, USAF
Commander

This document has been approved for public release.



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