NEW MEXICO ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau

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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

January 17, 2013

Colonel John Kubinec
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Kirtland AFB, NM 87117-5606

John Pike
Director, Environmental Management Services
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RE: 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, JANUARY 2013
KIRTLAND AIR FORCE BASE,
EPA ID# NM9570024423

Dear Colonel Kubinec and Mr. Pike:

The New Mexico Environment Department (NMED) has reviewed the Permittee's document *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. This document was submitted in response to the NMED's letter of December 7, 2012, which conveyed several concerns regarding the planned sampling of gas bubbles observed entrained in groundwater samples.

The presence of gas bubbles in groundwater samples can lead to underestimating the actual concentrations of volatile organic compounds, such as those known to be present in contaminated groundwater associated with the Bulk Fuels Facility (BFF) Spill. Thus, the source of gas bubbles must be investigated to determine if their origin is natural or anthropogenic. If of anthropogenic origin, the Permittee must take immediate action to eliminate the generation of the gas bubbles.

The Permittee's response to NMED's December 7, 2012 letter was inadequate as enumerated below.

1. 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.

2. Isotech Laboratories, the supplier of the 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.

3. 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 at LANL was referenced. Therefore, the NMED has no reason to believe that ARCH drilling is the source of the bubbles observed for BFF wells.

4. Collecting and analyzing gas samples from only two wells out of the more than thirty 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.

Additionally, NMED notes that the Permittee states "...bubbles do not consistently occur in all wells from quarter to quarter." For those wells in which bubbles are not consistently observed, carbon dioxide bubbling out of solution is ruled out. The Permittee is directed to provide NMED with a list indicating which wells consistently produce purge water and water samples with bubbles and the wells that do not.

Until this issue is resolved, the quality of groundwater data associated with many BFF wells will remain questionable.

The Permittee must submit a written response to this letter by **February 15, 2013**. Should you have any questions, please contact Mr. William Moats of my staff at (505) 222-9551.

Sincerely,

John E. Kieling
Chief
Hazardous Waste Bureau

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