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June 6, 2014

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John Pike
Director, Environmental Management Services
377 MSG
2050 Wyoming Blvd. SE, Suite 116
Kirtland AFB, NM 87117-5270

RE: DISAPPROVAL OF WHITE PAPER ON INTERIM MEASURE FOR EDB DISSOLVED PLUME

Dear Colonel Miller and Mr. Pike:

The New Mexico Environment Department (NMED) has reviewed the U. S. Air Force's White Paper on the Interim Measure for EDB Dissolved Plume (White Paper), for the Bulk Fuels Facility Spill that we received on April 8, 2014. The White Paper proposes to increase the pumping rate of Kirtland Well #3, draw the EDB contamination into this operating public water supply well, and install a carbon treatment unit when detectable EDB concentrations reach the well. In our meeting of May 7, 2014, I informed the U.S. Air Force that the approach presented in the White Paper would not be considered by NMED as a viable interim measure. In our meeting of May 28, 2014, however, I was informed that the U.S. Air Force contractor, CB&I, was nonetheless working with the Office of the New Mexico State Engineer to move forward with the modeling of the pumping of Kirtland Well #3 as proposed in the White Paper.

The purpose of this letter is to clearly articulate the position of NMED. For the reasons explained below, the approach proposed by the White Paper is inconsistent with applicable federal and state law, and is hereby disapproved.

Under longstanding EPA policy implementing the Resource Conservation and Recovery Act (RCRA), the purpose of Interim Measures is "to control or abate threats to human health and/or the environment from releases and/or to *prevent or minimize the further spread of contamination*

while long-term remedies are pursued." RCRA Corrective Action Plan, OSWER Directive 9902.3-2A, May 1994. (emphasis added). Accordingly, the Hazardous Waste Permit NMED issued to Kirtland provides that in the course of corrective action the Department may require interim measures as necessary "*to reduce or prevent migration* of hazardous waste or hazardous constituents . . . while long-term corrective action remedies are being evaluated and implemented. See Permit No. NM9570024423 at section 6.2.2.2.12.1. (emphasis added).

Inducing the EDB plume to migrate into clean or noncontaminated groundwater is in direct opposition to the purpose of interim measures. Rather than stabilizing the plume by minimizing or preventing migration of hazardous constituents, the proposed strategy would actively enhance the spread of contamination into the very resource NMED seeks to protect, Albuquerque's drinking water supply. Not only would this do nothing to reduce risk to human health and environment in the short term, it poses a substantial risk of limiting the range of final corrective actions available. As a matter of fundamental logic, such an approach cannot be considered an appropriate interim measure for implementation while a long term corrective action remedy is evaluated.

Moreover, numerous technical deficiencies in the White Paper approach have been identified by the Hazardous Waste Bureau and previously conveyed to the Air Force. Specifically:

- The proposed "interim measure" is based on incomplete characterization data with regard to preferential flow pathways which could cause the plume to split or be diverted in a direction other than to the Kirtland Well #3.
- The vertical extent of EDB contamination has not been defined.
- The White Paper does not address the capability of Kirtland Well #3 to accomplish the intended goal of redirecting and capturing EDB plume. Kirtland Well #3 was designed as a water supply well and is screened across two confining layers (A-1 and A-2). Because pumps are not typically placed close to the top of the screen in water supply wells, the uppermost confining unit (A-2) likely creates a barrier between the primary zone where water is extracted and the water table. The length of the screened interval and the location of the pump in the well will likely affect the ability of pumping to influence flow direction at depths less than 150 feet below the water table where the EDB plume has been detected.
- The referenced model, used to support the proposed interim measure, is presented in an unreviewed, unapproved document, which is not appropriate
- The White Paper assumes isotropic conditions in the aquifer. There is no direct evidence in the record to support this assumption.
- The pattern of hydraulic conductivity consistent with extant regional and local geologic studies and aquifer tests must be considered.
- The design basis for interim measures must fully describe the hydraulic conditions created by potential extraction wells including specifying capture zone dimensions,

stagnation point distances and groundwater velocities based on actual data. This information is not provided in the White Paper.

Similar technical deficiencies were identified by the Albuquerque Bernalillo County Water Utility Authority (ABCWUA), the agency charged with meeting the increasing challenges of protecting the quality and quantity of water in the groundwater aquifer. The ABCWUA provided written comments on the White Paper, which are attached as Appendix A (Technical Memorandum dated May 1, 2014 prepared by INTERA (Geoscience and Engineering Solutions). Among other things, INTERA found that CB&I had not adequately modeled the hydrologic flow system to demonstrate the feasibility of proposed method; had not explained how a single extraction well could overcome the regional gradient caused by numerous wells with a much larger aggregate pumping rate; had not demonstrated that the proposed method would not split the EDB plume or demonstrated how much of the known EDB mass would be captured; had not demonstrated whether the EDB plume would be spread across other volumes, and had proposed designs that contained inconsistencies and made assumptions contradicting available data. More fundamentally, INTERA found that the design "if it were to function as described, would spread, not contain, the EDB plume over an additional 3,500 ft of clean aquifer." Encouraging the migration of EDB into noncontaminated groundwater is at variance with the ABCWUA's protection efforts. Every effort must be taken to contain and prevent the EDB plume from contaminating a larger volume of the aquifer.

Despite the objections of NMED and of the ABCWUA, work has continued on the White Paper approach. Any proposal involving the use of an extraction well that would enhance the migration of the EDB plume through an extensive volume of noncontaminated groundwater in the aquifer is fundamentally defective and will not be accepted by the NMED. Further discussions of this concept will not only be unproductive, but may also delay the development of an acceptable interim measure as is required by December 31, 2014.

NMED would be willing to consider a proposal to drill a well or wells closer to the toe of the EDB plume that could be used to capture contaminants. The U.S. Air Force is hereby directed to pursue an approach that will not allow further degradation of the aquifer. Deliver an approach in the form of a Work Plan that is responsive to these issues to NMED no later than by June 30, 2014.

If you have any questions, please contact me at 505-827-2855.

Sincerely,

Tom Blaine, P.E.
Director
Environmental Health Division

TB/DM

cc: Col. J. Lanning, KAFB
D. Wilson, KAFB
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File: KAFB 2014 Bulk Fuels Facility Spill and Reading