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# NEW MEXICO ENVIRONMENT DEPARTMENT

## *Hazardous Waste Bureau*

**2905 Rodeo Park Drive East, Building 1**
**Santa Fe, New Mexico 87505-6303**
**Phone (505) 476-6000 Fax (505) 476-6030**
***www.nmenv.state.nm.us***

SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

DAVE MARTIN
Secretary

BUTCH TONGATE
Acting Deputy Secretary


**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

August 17, 2011

Colonel Robert L. Maness
Base Commander
377 ABW/CC
2000 Wyoming Blvd. SE
Kirtland AFB, NM 87117-5606

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

**RE: QUARTERLY PRE-REMEDY MONITORING AND SITE INVESTIGATION REPORT FOR JANUARY–MARCH 2011, BULK FUELS FACILITY SPILL, SOLID WASTE MANAGEMENT UNITS ST-106 AND SS-111, MAY 2011 KIRTLAND AIR FORCE BASE, EPA ID# NM9570024423 HWB-KAFB-11-008**

Dear Colonel Maness and Mr. Pike:

The New Mexico Environment Department (NMED) has reviewed the document *Quarterly Pre-Remedy Monitoring and Site Investigation Report for January-March 2011, Bulk Fuels Facility Spill, Solid Waste Management Units ST-106 and SS-111*, dated May 2011 (hereinafter referred to as the Quarterly Report). The NMED has determined that the Quarterly Report is deficient. NMED will not require the U. S. Air Force (Permittee) to correct or augment the Quarterly Report; however, the deficiencies noted herein must be adequately addressed in future submittals of such reports. Be advised that NMED will require the deficiencies be corrected in the next quarterly report. Below are comments on the deficiencies identified by the NMED.

**Comments**

1. There are no graphs showing trends of major contaminant concentrations versus time for groundwater or soil vapor. For groundwater, at a minimum, the major contaminants are EDB, benzene, toluene, xylene (total), naphthalene, 1-methyl naphthalene, 2-methylnaphthalene, DRO, GRO, and lead. For soil-vapor, at a minimum, the major

contaminants are EDB, EDC, benzene, toluene, ethylbenzene, xylenes, acetone, GRO, 1,3,5-trimethylbenzene; and 1,2,4-trimethylbenzene. Include such graphs in future quarterly reports.

2. There is not a complete and updated table of survey data (horizontal and vertical coordinates) for all groundwater and soil-vapor monitoring wells, and soil borings. Include such a table or tables in future quarterly reports and in MSExcel™ format on a CD or DVD.

3. Geophysical logs are not included in the Quarterly Report, even though Table 3-1 lists the wells where logs were conducted. Include geophysical logs in future quarterly reports.

4. There is no discussion or interpretation of geophysical data on a well by well basis, multiple well basis, or with respect to the conceptual site model. Include such discussion in future quarterly reports.

5. There was no inclusion of the field data acquired during the purging of groundwater monitoring wells. Include such data in future quarterly reports.

6. There were no data tables presenting historical data for groundwater, soil vapor or soil. Include such tables in future quarterly reports and in MSExcel™ format on a CD or DVD.

7. The Quarterly Report does not provide adequate information to evaluate the effectiveness of the SVE units. While NMED can discern how much contaminant mass is being removed from the vadose zone during the reporting period and how much mass has been removed cumulatively since initiation of SVE, NMED cannot easily evaluate possible trends or determine if the SVE system is pulling increasing or decreasing amounts of contaminants with time, or monitor if system maintenance or optimization is successful. NMED also cannot determine how much propane is being consumed, or monitor the ratio of propane use versus contaminant extraction. To correct this problem, data tables and graphical representations of the data must be prepared showing by each quarterly period and cumulatively since SVE has commenced for a given area, hours of operation (by engine and by unit), propane used, and mass of contaminants extracted (separate from biodegradation) and treated.

8. The Quarterly Report does not describe in detail what optimization was conducted for the SVE system during the reporting period. The Permittee is reminded that maintenance is not optimization. Describe what optimization, if any, occurred.

9. NMED is concerned that the geophysical and geologic data are not being fully integrated in the cross-sections to produce the best possible geologic model. Furthermore, explain how each of the lithologic units shown on the cross-sections are differentiated from each other, and what major type of depositional environment(s) are represented by each of the units. Use and show on cross-sections data from other KAFB wells and from the Water Utility Authority (WUA) wells wherever possible to provide additional information for preparation of the geologic cross-sections. Because the production wells in the area are deeper than the monitoring wells, these wells may be the only source for geologic information for deeper parts of the aquifer.

10. For groundwater, contaminant concentration maps at shallow, intermediate, and deep depths within the saturated zone need to be prepared (albeit for the Quarterly Report, only data at shallow depths were available at the time the report was generated). For soil and soil vapor, contaminant concentration maps at the various sampling and monitoring depths need to be prepared, as appropriate. Also, the data used to construct the concentration maps need to be posted on the maps.

    There are no soil contamination maps or cross sections included in the Quarterly Report. Each quarterly report should have these, even if there was no new data added during the reporting period.

    For soil vapor, the Quarterly Report has concentration maps at various levels, but no cross-sectional views. Also, the map views, Figures 4-1 through 4-4, do not post data values on the maps. Figures 4-1 through 4-4 should have a larger areal extent.

    Correct each of the aforementioned deficiencies.

11. The area of contamination shown on maps for a given groundwater contaminant must encompass the entire area of contamination, not just the part that exceeds a U. S. Environmental Protection Agency Maximum Contaminant Limit or a New Mexico Water Quality Control Commission standard.

12. To better understand the general hydrochemistry of the groundwater, Piper and stiff diagrams should be prepared for shallow, intermediate, and deep depths within the saturated zone. The stiff diagrams for a given depth should be posted on a map at the sample locations (wells) the diagrams represent.

13. The Quarterly Report should have a cross-section(s) showing redox conditions.

14. Maps and cross-sections depicting saturated hydraulic conductivity at shallow, intermediate, and deep depths within the saturated zone need to be prepared as data become available.

15. The water level maps (Figures 5-2 to 5-5) do not cover a large enough area. The maps should show all wells in the area, including at least the VA Hospital, KAFB and Water Utility Authority (Ridgecrest and Burton Fields) production wells and KAFB groundwater monitoring wells located nearest to the Bulk Fuels Facility.

16. Section 2.3.2, middle of last paragraph on Page 2-11, states "The primary variables that impacted recovery amounts for individual months was system downtime due to mechanical issues, air emissions testing issues, and the need to adjust operational settings on the systems due to decreasing well gas fuel concentrations as a result of interference between the systems." It is unclear what is meant by the phrase "the interference between the systems", given in particular that the SVE Units are approximately 400 feet apart. Clarify in future quarterly reports what this phrase means.

17. Table 2-3 lists the top of the screened interval as 484 feet for KAFB-1065, while information submitted on October 5, 2010, as part of the *Submission of Critical Data* under NMED's letter of August 6, 2010 (page 26, Items 7.i.through ix) indicates that the top of the screened interval is 479 feet. Provide the correct information in future reports.

18. In Table 2-3, the water-table depth from the quarter should be listed to ascertain the effective screen length.

19. Hydrographs are supplied in Appendix F. In the future, hydrographs should have the same vertical and horizontal scale for ease of comparison. Graphs showing water levels versus time for multiple wells in the same geographic area should be prepared and included in each quarterly report so that changes in water-level for a given well can be assessed relative to that of the overall water level change for the group of wells shown on the same plot.

20. The Quarterly Report does not provide a summary table listing the detected contaminants and their concentrations for each groundwater and soil-vapor monitoring well. Such a table must be provided in future Quarterly Reports.

21. Provide electronic copies of the data summary tables in MSExcel™ format, including current and historical field and laboratory analytical data for soil, soil vapor and groundwater.

22. For the analytical laboratory reports, submitted in electronic format in this Quarterly Report in 6 separate summary data packages, it would be helpful if there was a table to show which package contains the data for which wells.

23. Explain why there are some blanks on Table 5-2 for groundwater elevation when depths to water are given.

24. Table 5-2 has different measuring point elevations than have been used in the past. The table (or another newly prepared table) needs to indicate for each well the elevations of any other measuring points used in the past and time period for which they applied, and if any of the other measuring points were found to be erroneous.

25. Table 5-1 shows "NS" for semi-volatile organic compounds (SVOC) data for many groundwater monitoring wells. All wells must be sampled for SVOCs as required under NMED's letter of August 6, 2010. Failure to collect and analyze sample fractions for SVOCs will delay completion of site characterization.

26. In Table 5-2 it appears that in all cases the column labeled "FLUID ELEV" is the same as the column "GW ELEV". Explain the difference between the two columns.

27. Section 3.2.2.2, Soil-Vapor Monitoring Wells, states: "For screens separated by 100 feet (150,250,350, and 450 bgs)' screens were adjusted by no more than 20 feet...." Soil-vapor monitoring well KAFB-10632 appears to have its 150 ft level screen set at 175 feet, which is more than 20 feet of adjustment. Correct the text or the screen level, as appropriate.

28. In the list of bullets in Section 1.1 on page 1-3, some of the requirements were not incorporated into the Quarterly Report, including graphs showing trends of major contaminants versus time, geophysical logs, and recommendations for future site activities. (Recommendations for future site activities are not the same as projected activities).

29. NMED's letter of December 23, 2010 directed the Permittee to correct the deficiencies noted in the October 5, 2010 critical data package and submit the required information and revisions to the NMED in the next quarterly report (due at that time in February 2011). NMED notes that this was not accomplished in the February 2011 quarterly report (as directed) nor is it accomplished in this Quarterly Report. Correct the deficiencies.

30. Earlier mistakes are not corrected in the Quarterly Report. For example, in Table 5-2 in the quarterly report for the 4$^{th}$ Quarter of 2010, the GRO and DRO analytical results are reported 3 orders of magnitude higher than they should be due to a mistake in units for groundwater sample results for KAFB-10626 (and other monitoring wells). This was also true for data reported in the quarterly report for the 2$^{nd}$ Quarter of 2010.

    Also, in the quarterly report for the 4$^{th}$ Quarter of 2010 the same gamma log was submitted for KAFB-10625 and KAFB-10626, and, similarly, identical gamma logs were submitted for KAFB-1061 and KAFB-1063. Clearly in each case, at least one of the logs is incorrect. Correct this data in the next quarterly report.

31. Section 1.1 states "It should be noted that only those data collected during each quarter will be presented in the quarterly report." Quarterly reports should be updated each quarter to also show the sum total knowledge (data and interpretation) of soil, soil-vapor and groundwater contamination, a complete table of surveyed locations, and an updated site conceptual model. Certain data tables/graphs may remain the same if no new data was collected or no corrections were necessary. This would allow for a complete update of site characterization as of the date of each quarterly report and a means to correct errors in previous reports.

Should you have any questions or would like to meet to discuss the deficiencies addressed in this letter, please contact Mr. William Moats of my staff at (505) 222-9551.

Sincerely,

John E. Kieling
Acting Chief
Hazardous Waste Bureau

cc: W. Moats, NMED HWB
W. McDonald, NMED HWB
S. Brandwein, NMED HWB
S. Reuter, NMED PSTB
J. Schoeppner, NMED GWQB
L. Barnhart, NMED OGC
B. Gallegos, AEHD
R. Shean, ABCWUA
L. King, EPA-Region 6 (6PD-N)
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