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NEW MEXICO ENVIRONMENT DEPARTMENT

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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

June 25, 2008

Mr. David Scruggs, Chief
Environmental Restoration Program
49 CES/CEVR
550 Tabosa Ave.
Holloman AFB, NM 88330-8458

SUBJECT: NOTICE OF DISAPPROVAL: BASEWIDE BACKGROUND STUDY WORK PLAN, FEBRUARY 2008
HOLLOMAN AIR FORCE BASE, NM, EPA ID# NM6572124422
HWB-HAFB-08-002

Dear Mr. Scruggs:

The New Mexico Environment Department (NMED) has reviewed the subject Work Plan, which was submitted to propose work elements of a study to determine background constituents in soil and ground water at Holloman Air Force Base (the Permittee). NMED has determined that the Work Plan cannot be approved at this time, as revisions are necessary. The following are the deficiencies the Permittee is required to address before the NMED can take action on the Work Plan:

1. **Page 3-1, Section 3.1**

This section does not provide a complete description of the groundwater sample location selection process. The Permittee shall provide an in-depth discussion of how the existing monitoring wells that were selected for sampling were chosen to ensure that they are representative of natural conditions. This discussion shall state that all groundwater samples will be collected from the same aquifer.

2. **Page 3-1, Section 3.2; Page 4-3, Section 4.2.2.3; Table 4-1; and Appendix B, Table 4-1**

These sections and tables indicate that three soil samples will be collected from each boring. The proposed sample collection depths are from the surface (from 0 to 2 feet below ground surface [bgs] to a maximum of 0 to 5 feet bgs), the subsurface (from 2 feet bgs to the saturated zone), and the saturated zone at the water table. The surface and saturated zone samples are proposed to be discreet samples and the subsurface sample is proposed to be a composite sample.

The Permittee shall revise these sections and tables to state that the surface samples shall be collected from 0 to 6 inches bgs and the subsurface samples shall be collected from 6 inches bgs to the saturated zone. In addition, these sections shall be revised to state that all soil samples will be collected as discreet samples. No composite sampling shall be conducted.

3. **Page 3-1, Section 3.2, 1st Paragraph, Second Sentence**

This sentence indicates that the Permittee intends to treat the entire installation as a single population for statistical purposes. Although the Permittee may initially assume that a given constituent can be represented as a single population, whether this is true when the analytical data for this study are evaluated must be verified. The Permittee shall include text at the end of Section 3.2 that states: *The analytical results for soil and groundwater samples will be evaluated for each constituent to determine if the results represent one or more populations. If the results indicate multiple populations exist for a constituent, then statistical descriptors for each population will be derived and reported separately for each population.*

4. **Page 3-1, Section 3.2, 2nd, 3rd and 4th Paragraphs**

Once the analytical results are available for the samples collected for this study, the Permittee shall use the method described in Paragraph 3 of this Section to determine whether the number of samples actually collected for a given constituent/media is adequate. Therefore, the Permittee shall include text at the end of Section 3.2 that states: *The method described in Paragraph 3 of this Section will be used to determine if the appropriate number of samples have been collected for this study for each constituent/media. For a given constituent/media, if the number of samples is not adequate, additional samples will be collected and analyzed as necessary to correct the deficiency in sample size.*

5. **Page 3-2, Section 3.2; Page 4-7, Section 4.2.3.6; Table 4-3; and Appendix B, Table 4-2**

These sections and tables indicate that 30 background monitoring wells will be sampled on a quarterly basis for one year. The Permittee is advised that only one round of ground water samples need be collected to determine background levels. The Permittee shall revise these sections and tables to indicate this.

6. **Page 3-2, Section 3.3**

As indicated in Section 3.2, the Permittee shall collect soil samples from three different depths. The Permittee shall indicate in Section 3.3 whether the analytical results of soil samples from different depths will be pooled and what procedure will be used to make the decision to pool or not pool the data sets for each constituent.

7. **Page 3-3, Section 3.4, 2nd Paragraph, 3rd Sentence**

The Permittee shall revise this sentence to also include the number of samples, the number of non-detects, the first and third quartiles (or 25th or 75th percentiles), the 95th percentile, the Upper Tolerance Limit (UTL), and the number of outliers excluded from analysis as part of the summary statistics for each constituent or media.

Note that calculation of either an Upper Confidence Level (UCL) or UTL assumes that data are normally distributed, which may not be the case for some constituents. UTLs should be calculated based on a 95% coverage and a 95% confidence limit.

8. **Page 3-3, Section 3.4.1, 1st Paragraph, 3rd Sentence**

The Permittee shall revise the list of descriptive summary statistics in this sentence to match that found in the third sentence of Paragraph 2 of Section 3.4 (see Comment #7).

9. **Page 3-3, Section 3.4.2**

The Permittee shall revise this section to indicate that ½ of the detection limit will be substituted for non-detect data. In addition, NMED questions the use of a trimmed mean or Winsorized mean in a background study, as data values at both the upper and lower ends of the data range are normally excluded from the data set. If the data distribution is not symmetric, then the calculated mean may be biased unusually high or low. The Permittee shall revise this section to address this concern.

10. Page 3-4, Section 3.4.3, 1st Paragraph, 4th Sentence

This sentence states "These unusually large data may be due to an error or they might indicate that small areas of higher contamination levels are present". Since a background study should be designed to avoid known contaminated areas, the Permittee shall revise the sentence to read "These unusually large data may be due to error."

11. Page 3-4, Section 3.4.3, 1st Paragraph, 5th Sentence

A background study work plan does not need to discuss how environmental data will be compared to background levels to decide if contamination is present at a site. Therefore, the Permittee shall delete the fifth sentence starting with "Statistical tests for determining COPCs…".

12. Page 3-5, Section 3.4.4, 1st Paragraph, Last Sentence

This sentence states "The following graphical plots will be considered: boxplots, quantile plots, and probability plots". The Permittee shall prepare normal probability plots and box plots for all constituents, as these graphical methods are easy to construct and generally convey considerable information on the distribution of a data set. The Permittee shall prepare concentration maps for all constituents and contour them where possible. For groundwater constituents, the Permittee shall prepare Piper diagrams and post stiff diagrams on a map of the facility. These types of maps and diagrams are useful for determining if multiple populations are present for a given constituent, and where such populations are located.

Therefore, the Permittee shall revise this sentence to include the preparation of normal probability plots, box plots, and concentration maps for all constituents/media, and to include the preparation of Piper diagrams and stiff diagrams for groundwater constituents.

13. Page 3-6, Section 3.4.5, Last Paragraph

This paragraph appears to suggest that the Permittee intends to use the Shapiro-Wilk W-test to evaluate whether data are normally distributed. However, it is not clear to the NMED that this will be the case. The Permittee shall revise this section to indicate clearly if the Shapiro-Wilk W-test will be used to evaluate data for normality, in addition to normal probability plots.

14. Page 3-6, Sections 3.5, 3.5.1 and 3.5.2

As previously mentioned, a background study work plan does not need to discuss how environmental data will be compared to background levels to decide if contamination is present at a site. Therefore, the Permittee shall delete these sections.

15. Page 4-2, Section 4.2

This section provides a description of the proposed field activities. The Permittee shall add a subsection to this section and a new table that shows sample holding times, preservation techniques, container requirements and minimum collection quantities for soil and ground water samples.

16. Page 5-2, Section 5.1.1, 1st Paragraph, 4th Sentence

This sentence states that the precision target for soil field duplicates will be a relative percent difference (RPD) of 50 or less while Table 4-3 of Appendix B (Site Specific Addendum to Basewide Quality Assurance Plan) shows that this RPD will be 30 or less. This sentence also states that the RPD for the water matrix will be 35 or less while Table 4—3 of Appendix B shows that this RPD will be 25 or less. The Permittee shall revise this sentence to match what is presented in Table 4-3 of Appendix B.

17. Page 5-2, Section 5.1.2, 2nd Paragraph

The Permittee shall add a sentence to this paragraph that states that the percent recovery (%R) will be between 75 and 125 percent. This %R is supported by what is shown on Table 4-3 of Appendix B.

18. Page 5-6, Section 5.4.4

This section states that sampling data "will be reported according to the Basewide QAPP". The Permittee shall revise this section to provide a description of how the data will be reported (e.g., how the data presentation will be formatted).

19. Appendix C, Historical Data from Previous Investigations

This Appendix does not appear to be referenced anywhere in the Work Plan and NMED questions its applicability to the Work Plan. The Permittee shall address this concern.

Please respond to this Notice within sixty (60) calendar days of receipt of this notice. If you have any questions regarding this matter or if you would like to discuss the comments prior to your response, please contact David Strasser of my staff at (505) 222-9526.

Sincerely,

James P. Bearzi
Chief
Hazardous Waste Bureau

cc: J. Kieling, NMED HWB
W. Moats, NMED HWB
C. Amindyas, NMED HWB
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File: HAFB 2008 and Reading
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