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HOLLOMAN AIR FORCE BASE, NEW MEXICO

MEMORANDUM FOR NEW MEXICO ENVIRONMENT DEPARTMENT

Attn: Mr. James Bearzi
Hazardous Waste Bureau
2905 Rodeo Park Drive East
Santa Fe NM 87105-6303



JUL 16 2008

FROM: 49 CES/CD
550 Tabosa Ave
Holloman AFB NM 88330-8458

Subject: Response to 25 Jun 2008 Notice of Disapproval: Basewide Background Study Work Plan, February 2008 Holloman AFB, NM6572124422 HWB-HAFB-08-002

1. The subject response is hereby submitted to NMED for review and approval.
2. 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 fine and imprisonment for knowing violations.
3. If you have any questions, please feel free to contact Mr. David Scruggs at (575) 572-5395.

for
A. DAVID BUDAK
Deputy Base Civil Engineer

Attachment:
NOD Response Table and Corrected Work Plan Pages

cc:		
(w/Atch)	(w/o Atch)	(w/o Atch)
Mr. David Strasser	Mr. Will Moats	Ms. Laurie King
Hazardous Waste Bureau	Hazardous Waste Bureau	USEPA, Region 6 (6PD-F)
5500 San Antonio Dr. NE	5500 San Antonio Dr. NE	1445 Ross Ave., Ste 1200
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NEW MEXICO
ENVIRONMENT DEPARTMENT

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RON CURRY
Secretary

JON GOLDSTEIN
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

June 25, 2008

REC'D JUL 02 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.

Mr. David Scruggs
June 25, 2008
Page 6 of 6

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
D. Strasser, NMED HWB
L. King, EPA, Region 6 (6PD-F)
File: HAFB 2008 and Reading
HWB-HAFB-08-002

**RESPONSE TO COMMENTS
BASEWIDE BACKGROUND STUDY
WORK PLAN, FEBRUARY 2008
HOLLOMAN AIR FORCE BASE, NM**

Comment No.	Section	Page	Comment	Response
Author	NMED- Hazardous Waste Bureau, Santa Fe, NM		Date of Comments: July 02, 2008	Date of Response: July 14, 2008
1	3.1	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.	Concur. The Work Plan will be revised to include an in-depth discussion of how monitoring wells were selected.
2	3.2; 4.2.2.3; Table 4-1; and Appendix B, Table 4-1	3-1; 4-3	<p>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.</p> <p>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.</p>	Concur. The Work Plan will be revised to indicate that discreet soil samples will be collected from the surface (0 to 6 inches), subsurface (6 inches to the saturated zone), and the saturated zone.
3	Section 3.2, 1 st paragraph, second sentence	3-1	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: <i>The analytical results for soil and groundwater samples will be evaluated for each</i>	Concur. The Work Plan will be revised to include the provided text.

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BASEWIDE BACKGROUND STUDY
WORK PLAN, FEBRUARY 2008
HOLLOMAN AIR FORCE BASE, NM**

Comment No.	Section	Page	Comment	Response
Author	NMED- Hazardous Waste Bureau, Santa Fe, NM		Date of Comments: July 02, 2008	Date of Response: July 14, 2008
			<i>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.</i>	
4	Section 3.2, 2 nd , 3 rd , and 4 th paragraphs	3-1	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: <i>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.</i>	Concur. The Work Plan will be revised to include the provided text.
5	3.2; 4.2.3.6: Table 4-3 and Appendix B, Table 4-2	3-2; 4-7	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.	Concur. The Work Plan will be revised to indicate that only one round of groundwater sampling will occur.
6	3.3	3-2	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.	Concur. The Work Plan will be revised to indicate that samples collected during this study will be pooled based on the depth of the samples. Three data sets will be collected, one from the surface samples, one from the subsurface samples, and one from the saturated zone.
7	3.4, 2 nd paragraph, 3 rd sentence	3-3	The Permittee shall revise this sentence to also include the number of samples, the number of non-detects, the first and third quartiles (or 25 th or 75 th percentiles), the 95 th percentile,	Concur. Section 3.4, 2 nd Paragraph, 3 rd sentence has been revised to state: "The summary statistics to be developed and presented will include the number of samples, the number of

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BASEWIDE BACKGROUND STUDY
WORK PLAN, FEBRUARY 2008
HOLLOMAN AIR FORCE BASE, NM**

Comment No.	Section	Page	Comment	Response
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			<p>the Upper Tolerance Limit (UTL), and the number of outliers excluded from analysis as part of the summary statistics for each constituent or media.</p> <p>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.</p>	<p>non-detects, the mean, median, range, standard deviation, type of distribution (normal, log normal, or other), coefficient of variation, and 95% Upper Confidence Level (UCL) of the mean of the data set, 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.”</p> <p>The note was added to end of Section 3.4.</p>
8	3.4.1, 1 st paragraph, 3 rd sentence	3-3	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).	Concur. The last sentence in Section 3.4.1 has been revised to state: “The descriptive summary statistics that should be computed for the background data sets are: the number of samples, the number of non-detects, the mean, median, range, standard deviation, type of distribution (normal, log normal, or other), coefficient of variation, the 95% Upper Confidence Level (UCL) of the mean of the data set, the first and third quartiles (or 25 th or 75 th percentiles), the 95 th percentile, the UTL, and the number of outliers excluded from analysis as part of the summary statistics for each constituent or media.
9	3.4.2	3-3	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.	The Work Plan will be revised to state that the Cohen method will be used, however, half of the detection limit will only be used when 15% or less of the sample data is non-detect.
10	3.4.3, 1 st paragraph, 4 th sentence	3-4	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	Concur. The Work Plan will be revised with the provided statement.

**RESPONSE TO COMMENTS
BASEWIDE BACKGROUND STUDY
WORK PLAN, FEBRUARY 2008
HOLLOMAN AIR FORCE BASE, NM**

Comment No.	Section	Page	Comment	Response
Author	NMED- Hazardous Waste Bureau, Santa Fe, NM		Date of Comments: July 02, 2008	Date of Response: July 14, 2008
			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	3.4.3, 1 st paragraph, 5 th sentence	3-4	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..".	Concur. The Work Plan will be revised and the statement will be deleted.
12	3.4.4, 1 st paragraph, last sentence	3-5	<p>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.</p> <p>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.</p>	Concur: The 1 st paragraph of Section 3.4.4 has been revised to state: "The following graphical plots will be prepared: normal probability plots, box plots, concentration maps for all constituents/media, and Piper diagrams and stiff diagrams for groundwater constituents."

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HOLLOMAN AIR FORCE BASE, NM**

Comment No.	Section	Page	Comment	Response
Author	NMED- Hazardous Waste Bureau, Santa Fe, NM		Date of Comments: July 02, 2008	Date of Response: July 14, 2008
13	3.4.5, last paragraph	3-6	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.	Concur. The 1 st two paragraphs have been deleted from Section 3.4.5. Testing for normality will be done using the Shapiro-Wilk W-Test.
14	3.5, 3.5.1, and 3.5.2	3-6	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.	Concur. The Work Plan will be revised and these sections will be deleted.
15	4.2	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.	Concur. The Work Plan will be revised to include a new subsection and table.
16	5.1.1, 1 st paragraph, 4 th sentence	5-2	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.	Concur. The Work Plan will be revised to match Table 4-3 of Appendix B.
17	5.1.2, 2 nd paragraph	5-2	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.	Concur. The Work Plan will be revised to include the provided statement.

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Comment No.	Section	Page	Comment	Response
Author	NMED- Hazardous Waste Bureau, Santa Fe, NM		Date of Comments: July 02, 2008	Date of Response: July 14, 2008
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).	Concur. The Work Plan will be revised to include the requested information.
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.	Although historical data sets are not included in the Background Study, the information was included as a reference used to determine the phase of carbonate most likely to be encountered. Appendix C is referenced in Section 4.2.3.1. and in the tables.
			End of Comments	