

ENTERED



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH FIGHTER WING (ACC)
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

APR 15 2008

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

Subject: Response to 30 Jan 2008 Notice of Disapproval: RCRA Facility Investigation (RFI)
Work Plan, Chemical Agent Disposal Site (DP-64), October 2007 Holloman AFB,
NM6572124422 HWB-HAFB-07-010

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.


A. DAVID BUDAK
Deputy Base Civil Engineer

Attachement:
RFI Work Plan

cc:

(w/Atch)
Mr. David Strasser
Hazardous Waste Bureau
5500 San Antonio Dr. NE
Albuquerque, NM 87109

(w/o Atch)
Mr. Will Moats
Hazardous Waste Bureau
5500 San Antonio Dr. NE
Albuquerque, NM 87109

(w/o Atch)
Ms. Laurie King
USEPA, Region 6 (6PD-F)
1445 Ross Ave., Ste 1200
Dallas, TX 75202-2733

7007 1490 0000 7439 0807

Global Power for America

Response to Comments
Voluntary Corrective Measure Report for DP-64 (AOC 1), June 2005,
Holloman AFB, NM

Comment No.	Section	Page	Comment	Response
Author	James P. Bearzi		Date of Comments: April 14, 2006, Notice of Deficiency HWB-HAFB-05-009	Date of Response: March 21, 2008
1	2.7.3	2-7	<p>The geophysical prove-out procedure determined that the use of the MTADS EM-61 electromagnetic system was the most effective method of detecting anomalies at the subject site. It was therefore the only method employed to conduct the site-wide geophysical investigation. Section 2.7.3 states the following: "Items such as individual glass ampoules cannot be detected using DGM (digital geophysical mapping). However, if disposal of the ampoules occurred in the same location as metallic debris or in an area of ground disturbance large enough to be detected, then the geophysical survey may indicate where intrusive remediation should be considered."</p> <p>NMED has concerns about whether the EM-61 geophysical survey was able to locate all of the subsurface glass ampoules that were potentially disposed of at this site, particularly those that were not associated with metal debris or large area of ground disturbance. According to Figure B-5, at least one glass ampoule was found outside of the 10 foot by 60 foot area. The Permittee is required to provide a discussion of the efficacy of the geophysical survey performed at the site to locate all subsurface glass ampoules.</p> <p>In addition, there is no clear discussion of the maximum depth that the EM-61 electromagnetic system was able to detect anomalies at this site. The Permittee is required to provide a discussion on this issue.</p>	<p><u>Response Provided by Jason Blair of the US Army Corps of Engineers:</u></p> <p>There is guidance from 1948 that outlines the proper disposal procedure for pigs (tin canisters used to dispose of the CAIS kits or glass ampoules). In summary, a trench/pit was excavated and lined at the bottom with wood. The glass ampoules were then positioned on the wood and burned with diesel fuel.</p> <p>The following instruments were utilized to collect data over seeded test plots: MTADS EM61, MTADS MAG, EM 31, and GPR. Based on evaluation of the geophysical data collected over the geophysical prove-out grids, a decision was made by Zapata Engineering and US Army Corps of Engineers Huntsville project personnel that the MTADS EM 61 instrument yielded the most repeatable results when compared to the other geophysical instruments tested. Additionally, project personnel believed that if individual pigs or tin canisters that held the ampoules could be geophysically located, then the EM61 would be the most useful tool in delineating the potential disposal areas. Project personnel surmised that the pigs or the tin cans were disposed of at the same time as the glass ampoules. Zapata Engineering personnel in conjunction with the US Army Corps of Engineering Huntsville personnel evaluated the MTADS EM61 data from the geophysical prove out constructed for site evaluation at DP-64 (AOC 1), Holloman Air Force Base, EPA ID#NM6572124422 HWB-HAFB-05-009 and determined that a 17 mV threshold was optimal for target picking. Based on review of Table 13 from Appendix C of the Final Site Specific Final Report for Ordnance and Explosive Removal Action at Holloman Air Force Base New Mexico, Volume 1, a threshold of 17 mV would be suitable to detect munitions/simulants of a similar size to seed item SC#379 buried at a depth of 48". A depth of 48" is a typical clearance depth for land use conditions for the following activities: public access, farming agricultural, surface recreational, parking, and surface supply storage. With all that said, it is possible that glass ampoules remain at the site since the EM61 is a metal detector.</p>
2	2.11	2-9	This Section indicates that soil samples were collected at locations where the glass ampoules were	Concur. Please see the attached figure (Soil Sampling Location Map DP-64), table (Table for Response to Comment #2), and laboratory analytical

**Response to Comments
Voluntary Corrective Measure Report for DP-64 (AOC 1), June 2005,
Holloman AFB, NM**

Comment No.	Section	Page	Comment	Response
Author	James P. Bearzi		Date of Comments: April 14, 2006, Notice of Deficiency HWB-HAFB-05-009	Date of Response: March 21, 2008
			<p>found. Based upon the quality control reports, there appears to have been six (6) soil samples collected (DP64-01 through DP64-06); these were only analyzed for chemical agents (i.e. ABP, mustard, Lewisite). This Section indicates only that the results were negative for chemical agents and agent breakdown products. The locations of these samples were not shown on any figures nor were the results tabulated or laboratory reports provided.</p> <p>The Permittee is required to provide a figure showing the locations of sample collection, a tabulation of the results (including analytes and test methods, method detection limits, sample depths, and dates), and the laboratory reports.</p>	<p>data (Environmental Monitoring Laboratory Clearance Report). Please note that Bhate was unable to determine the location of sample DP6406 collected on July 14, 2004. The locations of the other samples were determined based on information provided in the text, daily quality control reports, maps, dig sheet records, and soil & sediment sample logs.</p>
3	2.11		<p>According to the Dig Sheets and other field documentation provided in this report, ordnance and explosive (OE) material and scrap was discovered in several "burn pits" at the site. These appear to be target ID numbers 104, 105, 109, 112, and 137. The Section on soil sampling makes no mention of any soil samples being collected at the "burn pit" locations. Therefore, the Permittee is required to submit a work plan to collect a minimum of one soil sample from the bottom of the "burn pits" and analyze the soils for RCRA metals, volatile organic compounds (VOCs), semi-volatile compounds (SVOCs), and explosives.</p>	<p>Concur. A Work Plan including soil sampling for RCRA metals, VOCs, SVOCs, and explosives was submitted to NMED in October 2007.</p>
4	Appendix B	Figures B-5 and B-6	<p>These figures show the locations of the anomalies discovered during the geophysical survey and subsequent intrusive investigation. However, these figures do not show the target ID numbers. Therefore, the Permittee is required to resubmit these figures with the target ID numbers shown.</p>	<p>Concur. Please see the revised Figures B-5&B-6 attached.</p>
5	Appendix D	Figure 3	<p>Figure 3 shows the results of the geophysical survey. However, most of the target ID numbers are not</p>	<p>Concur. Please see the attached Figure No. 3 – MTADS EM61 Geophysical Survey.</p>

**Response to Comments
Voluntary Corrective Measure Report for DP-64 (AOC 1), June 2005,
Holloman AFB, NM**

Comment No.	Section	Page	Comment	Response
Author	James P. Bearzi		Date of Comments: April 14, 2006, Notice of Deficiency HWB-HAFB-05-009	Date of Response: March 21, 2008
			readable as they bleed into the background of the figure. Therefore, the Permittee is required to revise and resubmit this figure with readable target ID numbers.	

**Response to Comments
RCRA Facility Investigation (RFI) Work Plan, Chemical Agent Disposal Site (DP-64), October 2007,
Holloman Air Force Base,
NM6572124422 HWB-HAFB-07-010**

Comment No.	Section	Page	Comment	Response
Author	James P. Bearzi		Date of Comments: January 30, 2008 Notice of Disapproval HWB-HAFB-07-010	Date of Response: March 21, 2008
1(b)			The RFI Work Plan, as submitted, does not provide an adequate response to the aforementioned Notice of Deficiency for the ordnance removal action, dated April 14, 2006. In particular, the Permittee did not provide responses to comment numbers 1, 2, 4, or 5. Comment number 3, which required that the Permittee submit a work plan to conduct sampling activities at the burn pit sites, was the only comment responded to. NMED can not finalize review the subject Work Plan until the remaining comments are responded to. The Permittee must revise the subject Work Plan to respond to all of the Notice of Deficiency comments.	See the response above for comments 1, 2, 4, and 5.

Response to Comments
RCRA Facility Investigation (RFI) Work Plan, Chemical Agent Disposal Site (DP-64), October 2007,
Holloman Air Force Base,
NM6572124422 HWB-HAFB-07-010

Comment No.	Section	Page	Comment	Response
Author	James P. Bearzi		Date of Comments: January 30, 2008 Notice of Disapproval HWB-HAFB-07-010	Date of Response: March 21, 2008
2 (b)	3	3-1	This sentence states that "...if results from the soil samples do not indicate concentration above the reporting limit, additional sampling will not be conducted and the RFI Report will be prepared." This appears to exclude any groundwater sampling. The Permittee is required to install a minimum of three groundwater monitoring wells (of the proposed six) and sample the groundwater for VOCs, SVOCs, RCRA Metals, explosives and TDS. This activity must occur regardless of the soil sampling results. The three remaining monitoring wells, including the deep wee, will also be installed and sampled as proposed in the Work Plan if conditions warrant. The Permittee must revise the subject Work Plan to reflect this requirement.	Concur. The Work Plan will be revised to reflect that groundwater sampling will occur regardless of the soil sampling results.
3 (b)	3.3.2	3-4	This paragraph provides a list of proposed groundwater analytes. In addition to the proposed analytes, the Permittee is required to revise the subject Work Plan to include nitrate/nitrite in the list of analytes.	Concur. The Work Plan will be revised to include nitrate/nitrite to the list of proposed analytes.
4 (b)	4.2	4-1	This section indicates that "Metals detected in soil will be evaluated against the current NMED residential risk-based soil screening levels (SSLs)". The Permittee is required to revise the subject Work Plan to include evaluating metals detected in soils above the reporting limit against the soon-to-be established base-wide concentrations, as well as the SSLs. The maximum detected concentration for each contaminant that is detected above the reporting limit must be used. These comparisons will then be used to determine the site hazard index, which must be less than 1.0. Any contaminant concentrations above the SSLs can not be screened out.	Concur. The Work Plan will be revised to include the evaluation of metals against the soon-to-be established base-wide concentrations, as well as the SSLs.



BILL RICHARDSON
GOVERNOR

State of New Mexico
ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Telephone (505) 428-2500
Fax (505) 428-2567
www.nmenv.state.nm.us



RON CURRY
SECRETARY

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

April 14, 2006

Ms. Debbie Hartell
Chief
Environmental Flight
49 CES/CEV
550 Tabosa Ave.
Holloman AFB, NM 88330-8458

**SUBJECT: NOTICE OF DEFICIENCY: VOLUNTARY CORRECTIVE MEASURE
REPORT FOR DP-64 (AOC 1), JUNE 2005
HOLLOMAN AIR FORCE BASE, EPA ID# NM6572124422
HWB-HAFB-05-009**

Dear Ms. Hartell:

The New Mexico Environment Department (NMED) has reviewed the Holloman Air Force Base (HAFB) document entitled "Final Site-Specific Final Report for Ordnance and Explosive Removal Action at Holloman AFB". Based on this review, NMED has determined that a No Further Action (NFA) determination cannot be made at this time. The following are the deficiencies that HAFB (the Permittee) is required to address before such a determination can be made.

1. Page 2-7, Section 2.7.3, Geophysical Investigation

The geophysical prove-out procedure determined that the use of the MTADS EM-61 electromagnetic system was the most effective method of detecting anomalies at the subject site. It was therefore the only method employed to conduct the site-wide geophysical investigation. Section 2.7.3 states the following: "Items such as individual glass ampoules cannot be detected using DGM (*digital geophysical mapping*). However, if disposal of the ampoules occurred in the same location as metallic debris or in an area of ground disturbance large enough to be detected, then the geophysical survey may indicate where intrusive remediation should be considered".

NMED has concerns about whether the EM-61 geophysical survey was able to locate all of the subsurface glass ampoules that were potentially disposed of at this site, particularly those that were not associated with metal debris or large areas of ground disturbance. According to Figure B-5, at least one glass ampoule was found outside of the 10 foot by 60 foot area. The Permittee is required to provide a discussion of the efficacy of the geophysical survey performed at the site to locate all subsurface glass ampoules.

In addition, there is no clear discussion of the maximum depth that the EM-61 electromagnetic system was able detect anomalies at this site. The Permittee is required to provide a discussion on this issue.

2. Page 2-9, Section 2.11, Soil Sampling

This Section indicates that soil samples were collected at locations where the glass ampoules were found. Based upon the quality control reports, there appears to have been six (6) soil samples collected (DP64-01 through DP64-06); these were only analyzed for chemical agents (i.e. ABP, mustard, and Lewisite). This Section indicates only that the results were negative for chemical agents and agent breakdown products. The locations of these samples were not shown on any figures nor were the results tabulated or laboratory reports provided.

The Permittee is required to provide a figure showing the locations of sample collection, a tabulation of the results (including analytes and test methods, method detection limits, sample depths and dates), and the laboratory reports.

3. Section 2.11, Soil Sampling

According to the Dig Sheets and other field documentation provided in this report, ordnance and explosive (OE) material and scrap was discovered in several "burn pits" at the site. These appear to be target ID numbers 104, 105, 109, 112 and 137. The Section on soil sampling makes no mention of any soil samples being collected at these "burn pit" locations. Therefore, the Permittee is required to submit a work plan to collect a minimum of one soil sample from the bottom of the "burn pits" and analyze the soils for RCRA metals, volatile organic compounds (VOCs), semi-volatile compounds (SVOCs) and explosives.

4. Appendix B, Site Maps, Figures B-5 and B-6

These figures show the locations of the anomalies discovered during the geophysical survey and subsequent intrusive investigation. However, these figures do not show the target ID numbers. Therefore, the Permittee is required to resubmit these figures with the target ID numbers shown.

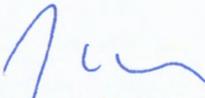
Ms. Debbie Hartell
April 14, 2006
Page 3 of 4

5. **Appendix D, Figure 3**

Figure 3 shows the results of the geophysical survey. However, most of the target ID numbers are not readable as they bleed into the background of the figure. Therefore, the Permittee is required to revise and resubmit this figure with readable target ID numbers.

Please respond to this Notice of Deficiency by June 15, 2006. If you have any questions regarding this letter, please contact David Strasser of my staff at (505) 222-9526.

Sincerely,



James P. Bearzi
Chief
Hazardous Waste Bureau

JPB:dcs

cc: J. Kieling, NMED HWB
W. Moats, NMED HWB
C. Amindyas, NMED HWB
D. Strasser, NMED HWB
D. Tellez, EPA, Region 6 (6PD-F)
D. Griffin, HAFB
File: Reading and HAFB 2006



BILL RICHARDSON
Governor

DIANE DENISH
Lieutenant Governor

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



RON CURRY
Secretary

JON GOLDSTEIN
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

January 30, 2008

Ms. Debbie Hartell, Chief
Environmental Flight
49 CES/CEV
550 Tabosa Ave.
Holloman AFB, NM 88330-8458

**RE: NOTICE OF DISAPPROVAL: RCRA FACILITY INVESTIGATION (RFI)
WORK PLAN, CHEMICAL AGENT DISPOSAL SITE (DP-64), OCTOBER 2007
HOLLOMAN AIR FORCE BASE, NM6572124422
HWB-HAFB-07-010**

Dear Ms. Hartell:

The New Mexico Environment Department (NMED) has reviewed the subject Work Plan, which was submitted for the performance of site characterization activities at Site DP-64 (AOC-1) at Holloman Air Force Base (the Permittee). This site was subject to an ordnance and explosive removal action conducted under contract to the US Army Corps of Engineers in 2004. A report on this removal action, which the NMED considered a Voluntary Corrective Measure, was submitted in September 2005. Review of this report resulted in the NMED issuing a Notice of Deficiency dated April 14, 2006. The subject Work Plan was submitted in response to that Notice of Deficiency.

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 make a decision about approval of the Work Plan:

1. The RFI Work Plan, as submitted, does not provide an adequate response to the aforementioned Notice of Deficiency for the ordnance removal action, dated April 14, 2006. In particular, the Permittee did not provide responses to comment numbers 1, 2, 4, or 5. Comment number 3, which required that the Permittee submit a work plan to conduct sampling activities at the burn pit sites, was the only comment responded to. NMED can not finalize review the subject Work Plan until the remaining comments are responded to. The Permittee must revise the subject Work Plan to respond to all of the Notice of Deficiency comments.

2. **Page 3-1, Section 3, 3rd Paragraph, 3rd Sentence**

This sentence states that "...if results from the soil samples do not indicate concentrations above the reporting limit, additional sampling will not be conducted and the RFI Report will be prepared." This appears to exclude any groundwater sampling. The Permittee is required to install a minimum of three groundwater monitoring wells (of the proposed six) and sample the groundwater for VOCs, SVOCs, RCRA Metals, explosives and TDS. This activity must occur regardless of the soil sampling results. The three remaining monitoring wells, including the deep well, will also be installed and sampled as proposed in the Work Plan if conditions warrant. The Permittee must revise the subject Work Plan to reflect this requirement.

3. **Page 3-4, Section 3.3.2, 2nd Paragraph**

This paragraph provides a list of proposed groundwater analytes. In addition to the proposed analytes, the Permittee is required to revise the subject Work Plan to include nitrate/nitrite in the list of analytes.

4. **Page 4-1, Section 4.2**

This section indicates that "Metals detected in soil will be evaluated against the current NMED residential risk-based soil screening levels (SSLs)". The Permittee is required to revise the subject Work Plan to include evaluating metals detected in soils above the reporting limit against the soon-to-be established base-wide background concentrations, as well as the SSLs. The maximum detected concentration for each contaminant that is detected above the reporting limit must be used. These comparisons will then be used to determine the site hazard index, which must be less than 1.0. Any contaminant concentrations above the SSLs can not be screened out.

Ms. Debbie Hartell
January 30, 2008
Page 3 of 3

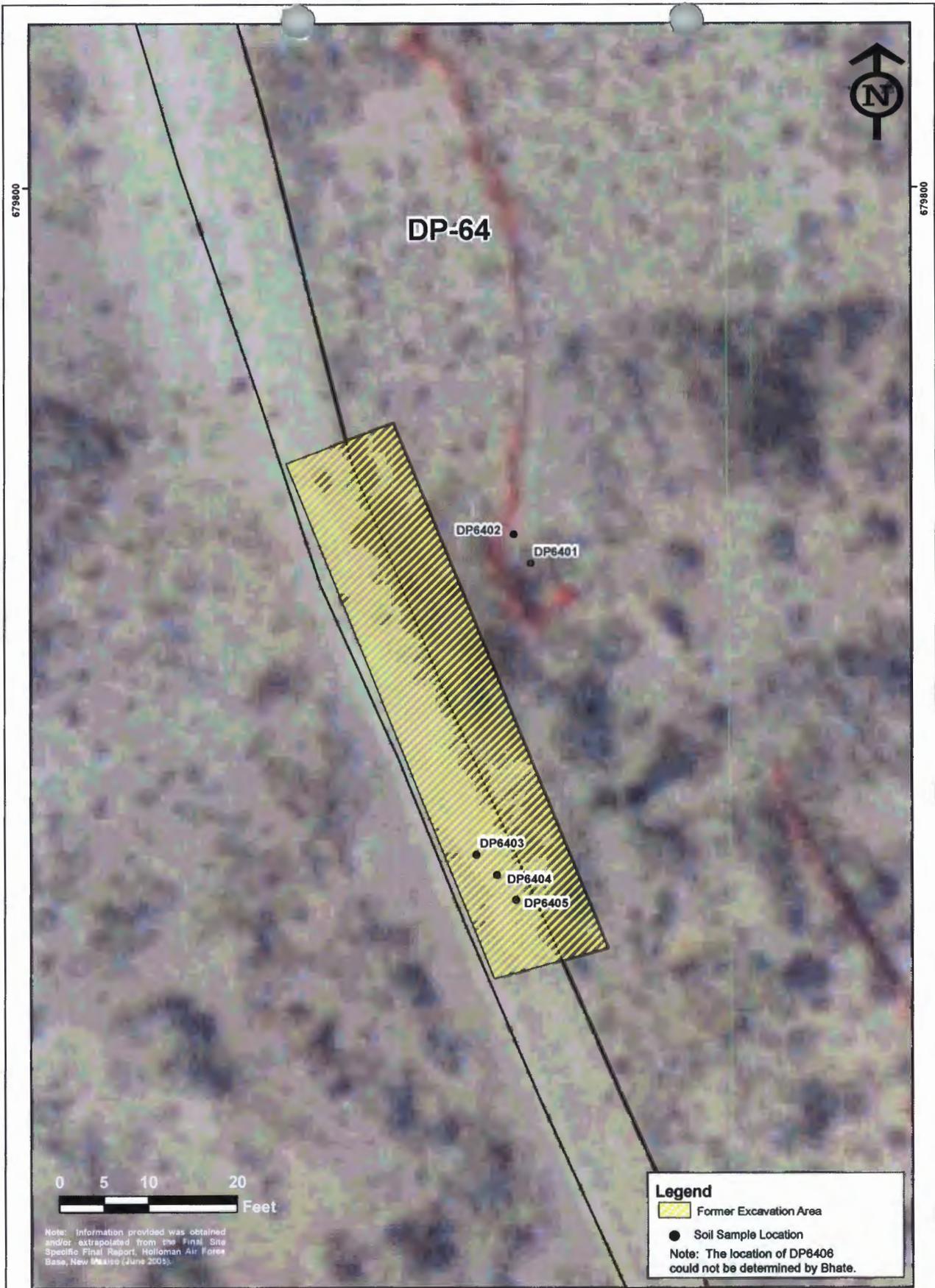
The Permittee must respond within ninety (90) calendar days of receipt of this letter. If you have any questions regarding this matter or if you would like to discuss the comments prior to your response, please contact David Strasser of my staff at (505) 222-9526.

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-07-010



Note: Information provided was obtained and/or extrapolated from the Final Site Specific Final Report, Holloman Air Force Base, New Mexico (June 2005).

Legend

- Former Excavation Area
- Soil Sample Location

Note: The location of DP6406 could not be determined by Bhate.



**Soil Sampling Location Map
DP-64**

Response to Comment 2,
NMED Notice of Disapproval
April 14, 2006

PROJECT NO.	SCALE	DATE	DRAWN BY:
9070127	1"=10'	3/21/08	cm
			DRAWING NO:
			figx-x

Table for Response to Comment #2 - Voluntary Corrective Measure Report for DP-64 (AOC 1), June 2005, Hollman AFB, NM

Sample ID	Sample Depth	Sample Date	Analyte	PQL	Result
DP6401	Surface	5/25/2004	1,4-Dithiane	200	ND
			1,4-Thioxane	200	ND
			BFB (Surrogate)		84%
			HD	200	ND
			L	400	L
DP6402	Surface	5/25/2004	1,4-Dithiane	200	ND
			1,4-Thioxane	200	ND
			BFB (Surrogate)		92%
			HD	200	ND
			L	400	L
DP6403	4-6"	5/28/2004	1,4-Dithiane	100	53J
			1,4-Thioxane	100	ND
			BFB (Surrogate)		79%
			HD	100	ND
			L	100	ND
DP6404	6-8"	7/1/2004	1,4-Dithiane	100	ND
			1,4-Thioxane	100	ND
			BFB (Surrogate)		89%
			HD	100	ND
			L	100	ND
DP6405	6-12"	7/8/2004	1,4-Dithiane	100	ND
			1,4-Thioxane	100	ND
			BFB (Surrogate)		84%
			HD	100	ND
			L	100	94BJ
DP6406	Unknown	7/14/2004	1,4-Dithiane	100	ND
			1,4-Thioxane	100	ND
			BFB (Surrogate)		102%
			HD	100	ND
			L	100	ND

PQL= Practical Quantitation Limit

J= Detected above the method detection limit but below the PQL.

Result is an estimated value.

Note: Information provided was obtained and/or extrapolated from the *Final Site Specific Final Report, Holloman Air Force Base, New Mexico* (June 2005).



CLEARANCE REPORT

MB-FORM 41 Revision 10 July 2003

Report To: Larry Hudgins of Parsons, for PROJECT: Holloman Air Force Base
Phone/Fax: W: (704) 358-8240 F: (704) 358-8342
Govt Org/Poc: USACE (COE): Richard Byrd/Deb Walker

Sample #/Name MB040202-M01 DP6401
 Sample Matrix Soil Date Rec'd 5/26/2004 Sample Date 5/25/2004

Headspace Clearance #		Remarks				
<u>Extraction Number(s)</u>	<u>Batch Number</u>	<u>IOP Number</u>				
MB040202-M01	04052601	MT8				
<i>Analyte</i>		<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>
1,4-Dithiane		5/26/04	5/26/2004	200	ND	
1,4-Thioxane				200	ND	
BFB (Surrogate)					84%	
HD				200	ND	
L				400	ND	
MB040202-M01MS	04052601	MT8				
<i>Analyte</i>		<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>
1,4-Dithiane	MS	5/26/2004	5/26/2004	200	87%	
1,4-Thioxane				200	87%	
BFB (Surrogate)					96%	
HD				200	110%	
L				400	82%	
MB040202-M01MSD	04052601	MT8				
<i>Analyte</i>		<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>
1,4-Dithiane	MSD	5/26/2004	5/26/2004	200	88%	
1,4-Thioxane				200	89%	
BFB (Surrogate)					94%	
HD				200	109%	
L				400	79%	

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Lab Control Spike; LCSD = Lab Control Spike Duplicate; Dup = Duplicate; ND = Not Detected at or above the Practical Quantitation Limit (PQL); PQLs and sample results are ppb. MS/MSD and LCS/LCSD results are in % recovery. D = Sample was diluted. E = Estimated value; result above upper calibration level. J = Detected above the method detection limit but below the PQL. Result is an estimated value.



CLEARANCE REPORT

MB-FORM 41 Revision 10 July 2003

Report To: Larry Hudgins of Parsons, for PROJECT: Holloman Air Force Base
Phone/Fax: W: (704) 358-8240 F: (704) 358-8342
Govt Org/Poc: USACE (COE): Richard Byrd/Deb Walker

Sample #/Name MB040203-M01 DP6402
 Sample Matrix Soil Date Rec'd 5/26/2004 Sample Date 5/25/2004
 Headspace Clearance # Remarks

<u>Extraction Number(s)</u>	<u>Batch Number</u>	<u>IOP Number</u>				
MB040203-M01	04052601	MT8				
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>	
1,4-Dithiane	5/26/2004	5/26/2004	200	ND		
1,4-Thioxane			200	ND		
BFB (Surrogate)				92%		
HD			200	ND		
L			400	ND		

Sample #/Name MB040204-M01 04052601-LCS
 Sample Matrix Soil Date Rec'd 5/26/2004 Sample Date 5/26/2004
 Headspace Clearance # Remarks

<u>Extraction Number(s)</u>	<u>Batch Number</u>	<u>IOP Number</u>				
MB040204-M01LCS	04052601	MT8				
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>	
1,4-Dithiane	5/26/04	5/26/2004	200	71%		
1,4-Thioxane			200	71%		
BFB (Surrogate)				94%		
HD			200	87%		
L			400	62%		

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Lab Control Spike; LCSD = Lab Control Spike Duplicate; Dup = Duplicate; ND = Not Detected at or above the Practical Quantitation Limit (PQL); PQLs and sample results are ppb. MS/MSD and LCS/LCSD results are in % recovery. D = Sample was diluted. E = Estimated value; result above upper calibration level. J = Detected above the method detection limit but below the PQL. Result is an estimated value.



CLEARANCE REPORT

MB-FORM 41 Revision 10 July 2003

Report To: Larry Hudgins of Parsons, for PROJECT: Holloman Air Force Base
Phone/Fax: W: (704) 358-8240 F: (704) 358-8342
Govt Org/Poc: USACE (COE): Richard Byrd/Deb Walker

Sample #/Name MB040205-M01 04052601-LCSD
Sample Matrix Soil **Date Rec'd** 5/26/2004 **Sample Date** 5/26/2004

Headspace Clearance #		Remarks			
<u>Extraction Number(s)</u>	<u>Batch Number</u>	<u>IOP Number</u>			
MB040205-M01LCSD	04052601	MT8			
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>
1,4-Dithiane	5/26/2004	5/26/2004	200	83%	
1,4-Thioxane			200	83%	
BFB (Surrogate)				96%	
HD			200	103%	
L			400	71%	

Sample #/Name MB040206-M01 04052601-MB
Sample Matrix Soil **Date Rec'd** 5/26/2004 **Sample Date** 5/26/2004

Headspace Clearance #		Remarks			
<u>Extraction Number(s)</u>	<u>Batch Number</u>	<u>IOP Number</u>			
MB040206-M01MB	04052601	MT8			
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>
1,4-Dithiane	5/26/2004	5/26/2004	200	ND	
1,4-Thioxane			200	ND	
BFB (Surrogate)				97%	
HD			200	ND	
L			400	ND	

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Lab Control Spike; LCSD = Lab Control Spike Duplicate; Dup = Duplicate; ND = Not Detected at or above the Practical Quantitation Limit (PQL); PQLs and sample results are ppb. MS/MSD and LCS/LCSD results are in % recovery. D = Sample was diluted. E = Estimated value; result above upper calibration level. J = Detected above the method detection limit but below the PQL. Result is an estimated value.



CLEARANCE REPORT

MB-FORM 41 Revision 10 July 2003

Report To: Larry Hudgins of Parsons, for PROJECT: Holloman Air Force Base

Phone/Fax: W: (704) 358-8240 F: (704) 358-8342

Govt Org/Poc: USACE (COE): Richard Byrd/Deb Walker

Sample #/Name MB040322-M01 DP6403

Sample Matrix Soil

Date Rec'd 6/29/2004 **Sample Date** 6/28/2004

Headspace Clearance #

Remarks

<i>Extraction Number(s)</i>	<i>Batch Number</i>	<i>IOP Number</i>				
MB040322-M01	04062903	MT8				
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>	
1,4-Dithiane	6/29/04	6/29/2004	100	53 J		
1,4-Thioxane			100	ND		
BFB (Surrogate)				79%		
HD			100	ND		
L			100	ND		
MB040322-M01HPLC	HPLC04090801	MT8				
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>	
Thiodiglycol	9/8/2004	9/9/2004	5	ND		
MB040322-M01HPLC-MS	HPLC04090801	MT8				
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>	
Thiodiglycol MS	9/8/2004	9/9/2004	5	83%		
MB040322-M01HPLC-MS	HPLC04090801	MT8				
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>	
Thiodiglycol MSD	9/8/2004	9/9/2004	5	83%		
MB040322-M01MS	04062903	MT8				
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>	
1,4-Dithiane MS	6/29/2004	6/29/2004	100	100%		
1,4-Thioxane			100	98%		
BFB (Surrogate)				94%		
HD			100	105%		
L			100	58%		
MB040322-M01MSD	04062903	MT8				
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>	
1,4-Dithiane MSD	6/29/2004	6/29/2004	100	102%		
1,4-Thioxane			100	100%		
BFB (Surrogate)				93%		
HD			100	107%		
L			100	62%		

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Lab Control Spike; LCSD = Lab Control Spike Duplicate; Dup = Duplicate; ND = Not Detected at or above the Practical Quantitation Limit (PQL); PQLs and sample results are ppb. MS/MSD and LCS/LCSD results are in % recovery. D = Sample was diluted. E = Estimated value; result above upper calibration level. J = Detected above the method detection limit but below the PQL. Result is an estimated value.



CLEARANCE REPORT

MB-FORM 41 Revision 10 July 2003

Report To: Larry Hudgins of Parsons, for PROJECT: Holloman Air Force Base
Phone/Fax: W: (704) 358-8240 F: (704) 358-8342
Govt Org/Poc: USACE (COE): Richard Byrd/Deb Walker

Sample #/Name	MB040335-M01	04062903-LCS				
Sample Matrix	Soil		Date Rec'd	6/29/2004	Sample Date	6/29/2004
Headspace Clearance #			Remarks			
<u>Extraction Number(s)</u>	<u>Batch Number</u>	<u>IOP Number</u>				
MB040335-M01LCS	04062903	MT8				
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>	
1,4-Dithiane	6/29/2004	6/29/2004	100	105%		
1,4-Thioxane			100	102%		
BFB (Surrogate)				93%		
HD			100	108%		
L			100	80%		

Sample #/Name	MB040336-M01	04062903-LCSD				
Sample Matrix	Soil		Date Rec'd	6/29/2004	Sample Date	6/29/2004
Headspace Clearance #			Remarks			
<u>Extraction Number(s)</u>	<u>Batch Number</u>	<u>IOP Number</u>				
MB040336-M01LCSD	04062903	MT8				
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>	
1,4-Dithiane	6/29/2004	6/29/2004	100	108%		
1,4-Thioxane			100	104%		
BFB (Surrogate)				94%		
HD			100	111%		
L			100	86%		

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Lab Control Spike; LCSD = Lab Control Spike Duplicate; Dup = Duplicate; ND = Not Detected at or above the Practical Quantitation Limit (PQL); PQLs and sample results are ppb. MS/MSD and LCS/LCSD results are in % recovery. D = Sample was diluted. E = Estimated value; result above upper calibration level. J = Detected above the method detection limit but below the PQL. Result is an estimated value.



CLEARANCE REPORT

MB-FORM 41 Revision 10 July 2003

Report To: Larry Hudgins of Parsons, for PROJECT: Holloman Air Force Base
Phone/Fax: W: (704) 358-8240 F: (704) 358-8342
Govt Org/Poc: USACE (COE): Richard Byrd/Deb Walker

Sample #/Name MB040337-M01 04062903-MB
Sample Matrix Soil **Date Rec'd** 6/29/2004 **Sample Date** 6/29/2004

Headspace Clearance #

Remarks

<u>Extraction Number(s)</u>	<u>Batch Number</u>	<u>IOP Number</u>
MB040337-M01MB	04062903	MT8

<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>
1,4-Dithiane	6/29/2004	6/29/2004	100	ND	
1,4-Thioxane			100	ND	
BFB (Surrogate)				100%	
HD			100	ND	
L			100	ND	

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Lab Control Spike; LCSD = Lab Control Spike Duplicate; Dup = Duplicate; ND = Not Detected at or above the Practical Quantitation Limit (PQL); PQLs and sample results are ppb. MS/MSD and LCS/LCSD results are in % recovery. D = Sample was diluted. E = Estimated value; result above upper calibration level. J = Detected above the method detection limit but below the PQL. Result is an estimated value.



CLEARANCE REPORT

MB-FORM 41 Revision 10 July 2003

Report To: Larry Hudgins of Parsons, for PROJECT: Holloman Air Force Base
Phone/Fax: W: (704) 358-8240 F: (704) 358-8342
Govt Org/Poc: USACE (COE): Richard Byrd/Deb Walker

Sample #/Name MB040380-M01 DP6404

Sample Matrix Soil

Date Rec'd 7/2/2004 Sample Date 7/1/2004

Headspace Clearance #

Remarks Fax to site (505) 479-4005

<u>Extraction Number(s)</u>	<u>Batch Number</u>	<u>IOP Number</u>				
MB040380-M01	04070201	MT8				
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>	
1,4-Dithiane	7/02/04	7/2/2004	100	ND		
1,4-Thioxane			100	ND		
BFB (Surrogate)				89%		
HD			100	ND		
L			100	ND		
MB040380-M01MS	04070201	MT8				
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>	
1,4-Dithiane MS	7/2/2004	7/2/2004	100	96%		
1,4-Thioxane			100	93%		
BFB (Surrogate)				84%		
HD			100	95%		
L			100	41%		
MB040380-M01MSD	04070201	MT8				
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>	
1,4-Dithiane MSD	7/2/2004	7/2/2004	100	97%		
1,4-Thioxane			100	94%		
BFB (Surrogate)				86%		
HD			100	97%		
L			100	46%		

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Lab Control Spike; LCSD = Lab Control Spike Duplicate; Dup = Duplicate; ND = Not Detected at or above the Practical Quantitation Limit (PQL); PQLs and sample results are ppb. MS/MSD and LCS/LCSD results are in % recovery. D = Sample was diluted. E = Estimated value; result above upper calibration level. J = Detected above the method detection limit but below the PQL. Result is an estimated value.



CLEARANCE REPORT

MB-FORM 41 Revision 10 July 2003

Report To: Larry Hudgins of Parsons, for PROJECT: Holloman Air Force Base
Phone/Fax: W: (704) 358-8240 F: (704) 358-8342
Govt Org/Poc: USACE (COE): Richard Byrd/Deb Walker

Sample #/Name	MB040390-M01	04070201-LCS			
Sample Matrix	Soil		Date Rec'd	7/2/2004	Sample Date 7/2/2004
Headspace Clearance #			Remarks		
<u>Extraction Number(s)</u>	<u>Batch Number</u>	<u>IOP Number</u>			
MB040390-M01LCS	04070201	MT8			
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>
1,4-Dithiane	7/2/2004	7/2/2004	100	93%	
1,4-Thioxane			100	91%	
BFB (Surrogate)				92%	
HD			100	92%	
L			100	47%	

Sample #/Name	MB040391-M01	04070201-LCSD			
Sample Matrix	Soil		Date Rec'd	7/2/2004	Sample Date 7/2/2004
Headspace Clearance #			Remarks		
<u>Extraction Number(s)</u>	<u>Batch Number</u>	<u>IOP Number</u>			
MB040391-M01LCSD	04070201	MT8			
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>
1,4-Dithiane	7/2/2004	7/2/2004	100	98%	
1,4-Thioxane			100	97%	
BFB (Surrogate)				92%	
HD			100	98%	
L			100	59%	

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Lab Control Spike; LCSD = Lab Control Spike Duplicate; Dup = Duplicate; ND = Not Detected at or above the Practical Quantitation Limit (PQL); PQLs and sample results are ppb. MS/MSD and LCS/LCSD results are in % recovery. D = Sample was diluted. E = Estimated value; result above upper calibration level. J = Detected above the method detection limit but below the PQL. Result is an estimated value.



CLEARANCE REPORT

MB-FORM 41 Revision 10 July 2003

Report To: Larry Hudgins of Parsons, for PROJECT: Holloman Air Force Base
Phone/Fax: W: (704) 358-8240 F: (704) 358-8342
Govt Org/Poc: USACE (COE): Richard Byrd/Deb Walker

Sample #/Name MB040392-M01 04070201-MB
Sample Matrix Soil **Date Rec'd** 7/2/2004 **Sample Date** 7/2/2004
Headspace Clearance # **Remarks**

<u>Extraction Number(s)</u>	<u>Batch Number</u>	<u>IOP Number</u>			
MB040392-M01MB	04070201	MT8			
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>
1,4-Dithiane	7/2/2004	7/2/2004	100	ND	
1,4-Thioxane			100	ND	
BFB (Surrogate)				103%	
HD			100	ND	
L			100	ND	

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Lab Control Spike; LCSD = Lab Control Spike Duplicate; Dup = Duplicate; ND = Not Detected at or above the Practical Quantitation Limit (PQL); PQLs and sample results are ppb. MS/MSD and LCS/LCSD results are in % recovery. D = Sample was diluted. E = Estimated value; result above upper calibration level. J = Detected above the method detection limit but below the PQL. Result is an estimated value.



CLEARANCE REPORT

MB-FORM 41 Revision 10 July 2003

Report To: Larry Hudgins of Parsons, for PROJECT: Holloman Air Force Base
Phone/Fax: W: (704) 358-8240 F: (704) 358-8342
Govt Org/Poc: USACE (COE): Richard Byrd/Deb Walker

Sample #/Name MB040454-M01 DP6405

Sample Matrix Soil

Date Rec'd 7/9/2004

Sample Date 7/8/2004

Headspace Clearance #

Remarks

<u>Extraction Number(s)</u>	<u>Batch Number</u>	<u>IOP Number</u>				
MB040454-M01	04071201	MT8				
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>	
1,4-Dithiane	7/12/04	7/12/2004	100	ND		
1,4-Thioxane			100	ND		
BFB (Surrogate)				84%		
HD			100	ND		
L			100	94 BJ		
MB040454-M01MS	04071201	MT8				
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>	
1,4-Dithiane MS	7/12/2004	7/12/2004	100	90%		
1,4-Thioxane			100	87%		
BFB (Surrogate)				91%		
HD			100	91%		
L			100	73%		
MB040454-M01MSD	04071201	MT8				
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>	
1,4-Dithiane MSD	7/12/2004	7/12/2004	100	99%		
1,4-Thioxane			100	96%		
BFB (Surrogate)				89%		
HD			100	100%		
L			100	85%		

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Lab Control Spike; LCSD = Lab Control Spike Duplicate; Dup = Duplicate; ND = Not Detected at or above the Practical Quantitation Limit (PQL); PQLs and sample results are ppb. MS/MSD and LCS/LCSD results are in % recovery. D = Sample was diluted. E = Estimated value; result above upper calibration level. J = Detected above the method detection limit but below the PQL. Result is an estimated value.



CLEARANCE REPORT

MB-FORM 41 Revision 10 July 2003

Report To: Kate McCarthy of Parsons, for PROJECT: Holloman Air Force Base
Phone/Fax: W: (703) 591-7575 F: (703) 591-1305
Govt Org/Poc: USACE (COE): Richard Byrd/Deb Walker

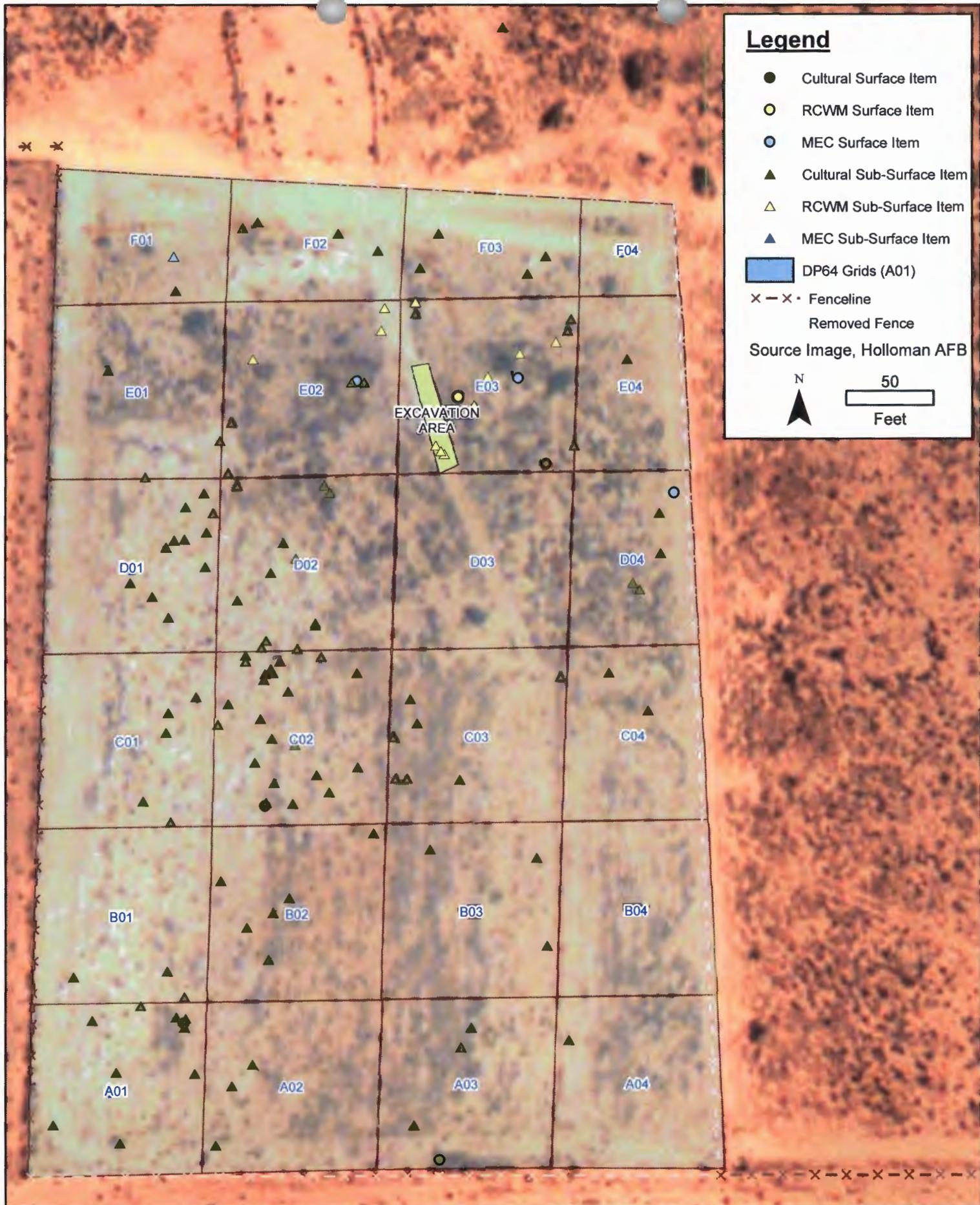
Sample #/Name MB040506-M01 DP6406
 Sample Matrix Soil Date Rec'd 7/16/2004 Sample Date 7/14/2004

Headspace Clearance #	Remarks				
<u>Extraction Number(s)</u>	<u>Batch Number</u>	<u>IOP Number</u>			
MB040506-M01	04071601	MT8			
<i>Analyte</i>	<i>Extraction Date</i>	<i>Analysis Date</i>	<i>PQL</i>	<i>Result</i>	<i>Remarks</i>
1,4-Dithiane	7/16/04	7/16/2004	100	ND	
1,4-Thioxane			100	ND	
BFB (Surrogate)				102%	
HD			100	ND	
L			100	ND	

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Lab Control Spike; LCSD = Lab Control Spike Duplicate; Dup = Duplicate; ND = Not Detected at or above the Practical Quantitation Limit (PQL); PQLs and sample results are ppb. MS/MSD and LCS/LCSD results are in % recovery. D = Sample was diluted. E = Estimated value; result above upper calibration level. J = Detected above the method detection limit but below the PQL. Result is an estimated value.

Legend

- Cultural Surface Item
 - RCWM Surface Item
 - MEC Surface Item
 - ▲ Cultural Sub-Surface Item
 - △ RCWM Sub-Surface Item
 - ▲ MEC Sub-Surface Item
 - DP64 Grids (A01)
 - x - x - Fenceline
 - Removed Fence
- Source Image, Holloman AFB



ZAPATAENGINEERING P.A.

1100 EDSEL WORTH AVENUE PHONE 704.938.8240
 CHARLOTTE, NC 28204 FAX 704.938.8342
 ZAPATA@ZAPENG.COM WWW.ZAPENG.COM

TRUST • INTEGRITY • QUALITY



U.S. ARMY ENGINEERING AND SUPPORT CENTER
 HUNTSVILLE, ALABAMA

Holloman Air Force Base, NM
 DP64 Grid Layout

PROJECT #: 2623

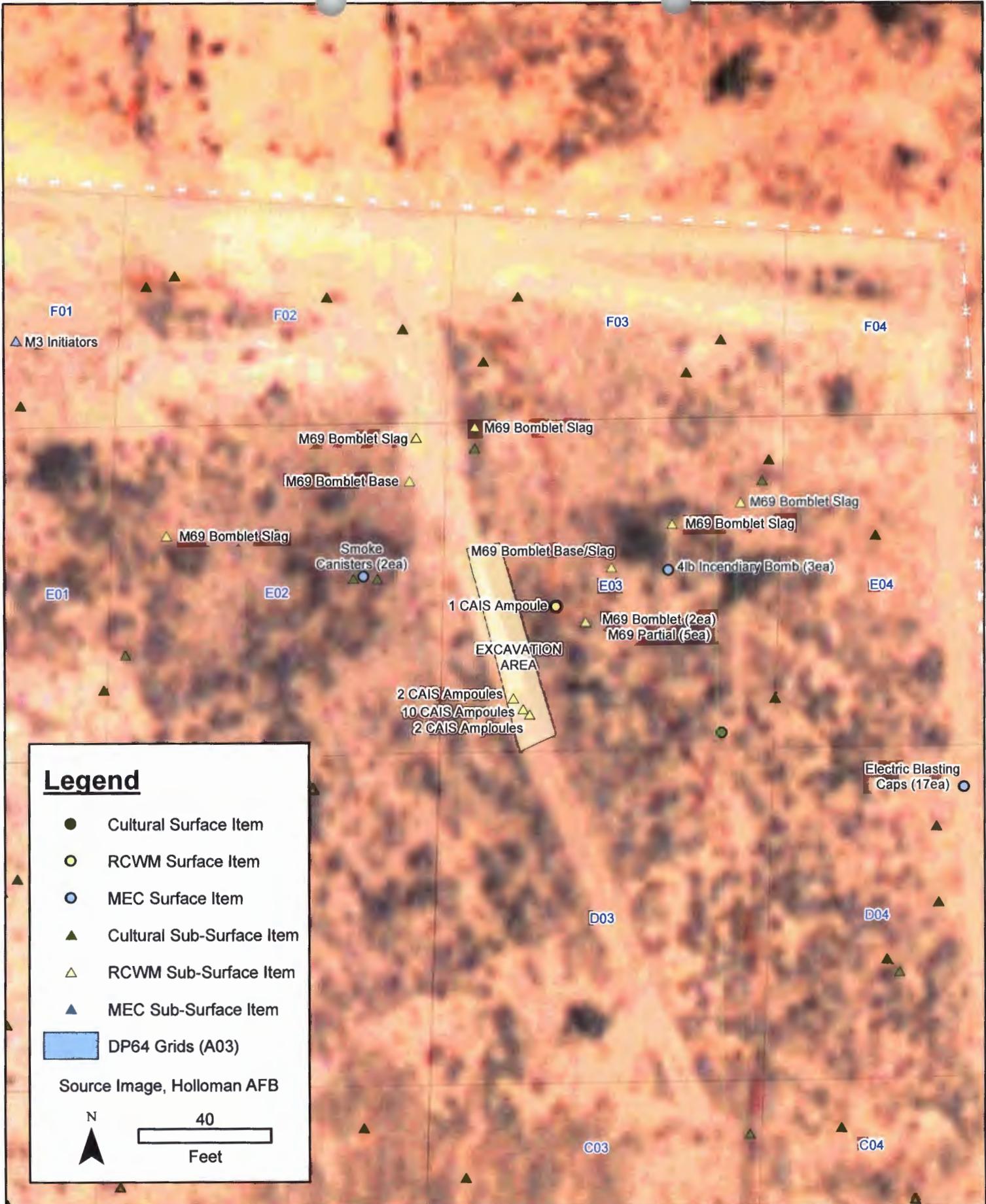
PAGE #: B-5

DATE: OCTOBER 2004

DRAWN BY: ATD

CHECKED BY: DRA

FIGURE: B-4

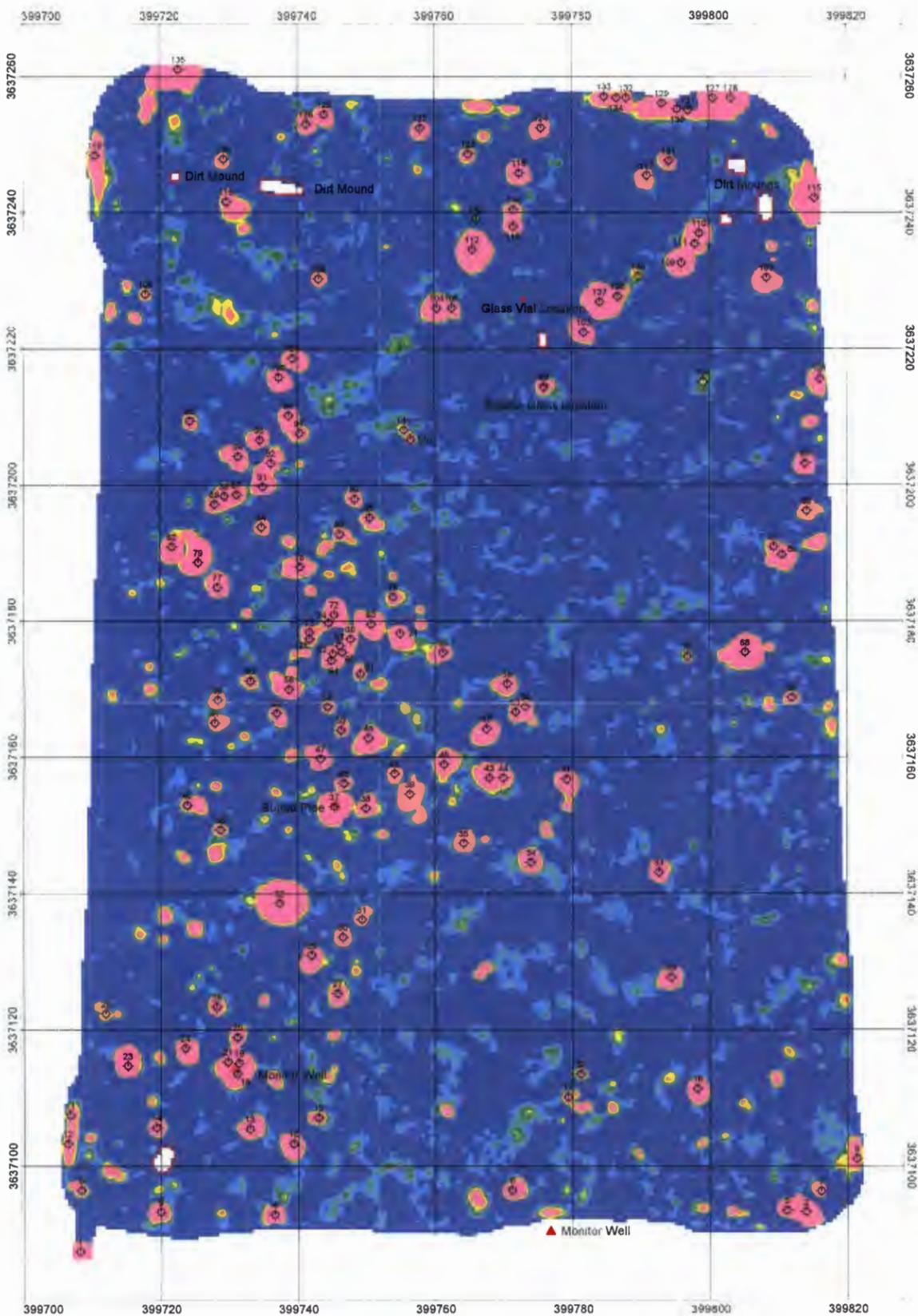


Legend

- Cultural Surface Item
- RCWM Surface Item
- MEC Surface Item
- ▲ Cultural Sub-Surface Item
- △ RCWM Sub-Surface Item
- ▲ MEC Sub-Surface Item
- DP64 Grids (A03)

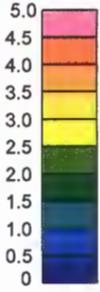
Source Image, Holloman AFB

N
 40
 Feet

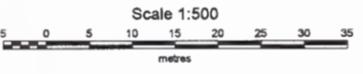


LEGEND

- ◊ Picked Target Location
- 78 Target ID
- ▲ Cultural Feature
- Data Gap
- ◆ Glass Location



mV
Bottom Coil
Filtered Data



	Blackhawk Geophysical & UXO Services Golden, Colorado
	MTADS EM61 Geophysical Survey Holloman AFB New Mexico
Figure No. 3 Project No. 0501-008 File No. 060804_grid PM: J.P. Date: 6/8/04	Zapata Engineering