



DEPARTMENT OF THE ARMY  
FORT WINGATE DEPOT ACTIVITY  
P.O. BOX 268  
FORT WINGATE, NM 87316

October 11, 2012

Mr. John Kieling  
Chief, Hazardous Waste Bureau  
New Mexico Environment Department  
2905 Rodeo Park Drive East, Building 1  
Santa Fe, New Mexico 87505-6303

Dear Mr. Kieling:

The purpose of this letter is to submit the *Final Release Assessment Report Parcel 4A Revision 2.0*. The report was prepared for FWDA as required under RCRA Permit EPA ID No. NM6213820974. This revised report addresses comments presented to the Army in the New Mexico Environment Department (NMED) Notice of Disapproval (NOD) letter dated April 20, 2012 for the *Final Release Assessment Report, Parcel 4A, dated November 7, 2011*.

The following are Army responses to NMED comments.

AOC 75 - ELECTRICAL TRANSFORMERS

Comment 1:

According to historical figures Figure 3-1 and Figure 3-2 provided in the report, no transformers were located in Parcel 4A. The location of transformer I-25 is located just outside the boundary of Parcel 4A, in Parcel 2. Another transformer location (I-7.5) is depicted on these figures, it also is located in Parcel 2. Include transformers I-25 and I-7.5 in the future work plan for Parcel 2.

Response 1:

Transformer I-25 is located in AOC 29 which is in Parcels 4A and 2. The Army decided to include I-25 in the Parcel 4A RAR so that all issues within AOC 29 are addressed in one document and because Parcel 4A is ahead of Parcel 2 in the Permit schedule. This is the Army's overall strategy. Transformers I-7.5 and I-5 will be included in the future work plan for Parcel 2. Transformer I-25 will be referenced in the Parcel 2 work plan as being addressed under Parcel 4A. Text in section 3.0 of the report as well as Figure 3-2 will be revised accordingly.

AOC 29 – IGLOO BLOCK C

X-Ray Fluorescence (XRF) Sampling

Comment 2:

A portable XRF instrument was used to analyze 14 soil samples from igloos within Block C where previously detected lead concentrations ranged from 200 and 400 mg/kg. Six duplicate samples were submitted to a fixed laboratory for lead analysis by EPA Method 6010/7000. As stated in Section 2.3 Soil Investigation, page 2-6, first paragraph, "the XRF reading results did

not correlate well with the confirmation results.” Little information is given in the Report regarding the field procedures used to operate the XRF. Provide the details of the site specific field procedures used for operating the XRF instrument in the revised Report, including calibration logs and field notes.

**Response 2:**

An “XRF Calibration and Results Table” will be included at the end of Section 2.0 in the report, page 2-137. The addition of this table showing calibration along with results will be noted in the text where appropriate. The text on page 2-6 says “In-situ XRF readings are taken by placing the instrument directly on top of the soil with the instrument detecting 2 mm deep into the soil. The confirmation soil samples collected at a frequency of 20% were collected from a depth interval of 0 to 3 inches at the same location as the in-situ XRF reading.” This was the field procedure used to operate the XRF. Field procedures used for the XRF were also included in the *Sampling and Analysis Plan for Igloo Blocks A, C, and D, Parcels 24, 9, 4, and 22 (Work Plan)* dated May 24, 2010 where NMED provided an Approval with Direction letter dated August 2, 2010 located in Appendix A. Due to the inconsistent readings between the XRF and confirmation samples and the cost to prepare the XRF samples for better consistency with laboratory samples, the Army has decided not to use XRF samples in the future sampling events unless a more efficient preparation method is found. See the response to comment 4.

**Comment 3:**

It is difficult to compare previous sampling results, XRF sampling results and laboratory confirmation sample results as presented in Table 3, Consolidated Sampling Results. An additional simplified table for easily comparing XRF and laboratory confirmation data must be added to the Revised Report as well as future comparing XRF and laboratory confirmation sampling. An excerpt from an example of a table is included below:

	6/1/08	9/29/10	9/29/10	10/2/10
	SS	XRF-L	XRF-R	Conf SS
C-1103	329	ND	308	170
C-1105	1290	62.3	704	NS
C-1109	405	35.9	41.7	NS
C-1115	422	66.3	ND	NS
C-1117	226	15.1	208	broken
C-1118	201	113	122	NS
C-1122	252	23.6	106	220
C-1124	273	18	609	NS
C-1126	233	158	182	NS
C-1128	474	29.7	172	NS
C-1129	232	34.5	212	150
dup	267	NS	NS	NS
C-1132	241	178	225	360
C-1133	256	262	181	90
C-1552	212	10.9	64.8	NS

SS = discrete soil sample sent to laboratory

Conf SS = discreet soil sample for confirmation of XRF readings sent to laboratory

XRF-L = in situ soil reading taken in field from left side of drain

XRF-R = in situ soil reading taken in field from right side of drain

reading over soil screening level

**Response 3:**

The Army has been using the table formats in this report in numerous documents for the past several years and the stakeholders and regulators have been accepting the format in previous submittals. The Army requests reconsideration by NMED in order to maintain consistency and control cost. The Army will increase the size of the tables for better viewing and will add more footnotes further explaining the sample names. The result of 422 mg/kg on sample C-1115 presented in the table by NMED is the result of the duplicate sample. The field sample is 145 mg/kg. The difference in the two concentrations is likely due to the natural variability in metals concentrations in soil.

**Comment 4:**

In Section 2.3, Soil Investigation, page 2-1, first paragraph the Permittee states “[t]he field portable XRF instrument was valuable as a screening tool to allow decision making in the field regarding the need for additional soil removal.” According to the lack of correlation between in-situ XRF results and laboratory confirmation data this statement is not accurate. Revise this statement in the revised Report.

**Response 4:**

The quote is found on page 2-6 not 2-1. Text changed to “The field portable XRF instrument was used as a screening tool only to guide decision making in the field regarding the need for additional soil removal.” The explanation describing the variance in in-situ XRF direct reading samples to confirmation laboratory samples due to heterogeneity of the soil is still included. Text also changed in last paragraph of section 2.7, page 2-7 to read: “The XRF was used on Parcel 4A on a trial basis to determine 1) if it could produce comparable results to laboratory analysis and 2) to save time and cost to the Army. The Army elected to use the in-situ method of XRF sampling on Parcel 4A. However, the results are not consistent with the laboratory results. In order to obtain more comparable results between the XRF and lab results, additional preparation (intrusive mode) of the soil sample is required which in turn adds cost making it more costly than the laboratory samples. Therefore, the Army will discontinue using the XRF unless a more efficient preparation method is found.”

**Comment 5:**

In Section 2.7 Army's Recommendations, page 2-7, last paragraph the Permittee states “for future use of the XRF the Army recommends operation in intrusive mode instead of in-situ mode where the soil sample would need to be collected, prepared, and put in the sample cup prior to XRF screening. [t]he confirmation sample should be a split of the homogenized sample material.” NMED concurs with this recommendation. To determine the accuracy of this approach with statistical validity the Permittee must collect confirmation samples for fixed laboratory analysis at a 50% frequency (one lab confirmation sample for every two XRF samples) during the next two sampling events where XRF is used.

**Response 5:**

See the response for Comments 2 and 4.

Comment 6:

Figure 2-3 "FWDA Igloo" lacks pertinent information to make it useful in interpreting data presented in the Report. Revise Figure 2-3 to correctly depict the size and shape of the igloos and the locations of the drains, sample locations (right and left), door(s), driveway, nearest revetments and all other significant features. If more than one igloo configuration was encountered at the 2010 sampling locations, additional figures, incorporating elements described above, must be included to depict each configuration. The revised Figure(s) must include a scale and North arrow.

Response 6:

The Army uses Figure 2-3 as a simplified drawing to show typical sampling locations at the igloo drains. All of the igloos on FWDA have an identical design with respect to the floor drains. "Typical" will be added to the title to relay this is a typical scenario for all igloos. In addition a note will be added saying there will be minor variations on driveways, apron configuration, and terrain for each igloo. The Army performs biased sampling in the low spots in the drainage paths leading away from the igloo. Igloo design drawings were submitted in Appendix B of the March 2009 Release Assessment Report (RAR) which was approved by NMED July 22, 2009. Sheet A-15-62 in Appendix B shows the typical igloo design with the drains. A figure similar to Figure 2-3 was submitted to NMED in the March 2009 Release Assessment Report. It can be found in Appendix D which is the Sampling and Analysis Plan. The May 24, 2010 Sampling and Analysis Plan, which was approved by NMED on August 10, 2010, referenced the March 2009 Report. The Army has been using simplified drawings to show typical sampling schemes at igloos in approved RFI Work Plans for Parcels 22 and 6 submitted previously to Parcel 4A. The Army proposes continuing the use of the simplified drawings showing the typical sampling scheme at the igloos based on stakeholder familiarity with the figures and previous NMED approvals.

Multi-Increment (MI) Sampling

Comment 7:

The figures included in the Report do not provide the MI grids in relation to the nearest igloo(s) for reference, the individual MI grid layouts or the sample locations within the grid layouts. Revise Figure 2-4 "FWDA Revetment Y-C1111" to depict and identify the igloo closest to the MI sampling areas, grid layout within each MI sampling area including individual grid cells and sample location within each cell. The grid layout for MI sample #3 must show the sample location within each cell for the sample and the duplicate. The revised figure must also include a scale and North arrow.

Response 7:

The Army uses Figure 2-4 as a simplified drawing to show typical MI sampling areas at the revetment. "Typical" will be added to the title to relay this is a typical scenario for revetments. The Army locates 30 subsamples evenly distributed throughout each sample unit. A figure similar to Figure 2-4 was submitted to NMED in the March 2009 Release Assessment Report. It can be found in Appendix D which is the Sampling and Analysis Plan. The May 24, 2010 Sampling and Analysis Plan, which was approved by NMED on August 10, 2010, referenced the March 2009 Report. The Army has been using simplified drawings to show typical sampling schemes at igloos in approved RFI Work Plans for Parcels 22 and 6 submitted previously to Parcel 4A. Thus, the revetments are shown in the same manner. The Army proposes

continuing the use of the simplified drawings showing the typical sampling scheme based on stakeholder familiarity with the figures and previous NMED approvals.

Comment 8:

In Section 2.2, Site Reconnaissance Findings, page 2-2, top of page, the Permittee states “[t]he Sampling and Analysis Plan (SAP) described the general sample collection procedures, packaging, shipping, and chain-of-custody requirements, decontamination procedures, and had tables and figures depicting proposed sample locations.” The SAP provides more detail on the sampling procedures than is included in the Report. A report must contain an account of all field activities as executed in the field rather than refer to the associated work plan. The Report does not give a descriptive account of the sample collection procedures as implemented in the field. Include this event specific information including detail of the MI sampling procedure and how systematic random pattern sampling locations were determined in the revised Report.

Response 8:

The *Sampling and Analysis Plan for Igloo Blocks A, C, and D, Parcels 24, 9, 4, and 22 (Work Plan)* dated May 24, 2010 was approved by NMED by an Approval with Direction letter dated August 2, 2010. NMED has required the Army to refer to the Work Plans in the preparation of RFI Reports and not restate work plan text in the reports. As required by NMED, the Army does document any deviations (and NMED coordination) to the work plans in the report. The Army prefers to maintain the current process.

Comment 9:

Photographs 2-1, 2-2, and 2-3 document in-situ XRF sampling activities. No photographs are included in the Report for MI sampling activities, in the revised Report, include photos of MI sampling activities. If no photographs were taken of MI sampling activities state as such and include photographs of sampling activities in future reports.

Response 9:

The photographs from the initial *Release Assessment Report for Parcel 4A Igloo Block C, Final* dated March 27, 2009 will be added to the report.

Comment 10:

Table 1 “Parcel 4-AOC 29 (Igloo Block C)-June 2008 Sampling Results Exceeding Standards”, page 2-14, is missing the June 2008 results that exceeded standards for C-1115, which was 422 mg/kg. Revise Table 1 to include all June 2008 sampling results that exceeded standards.

Response 10:

The result of 422 mg/kg is from a duplicate sample from C-1115. Duplicates are not reported in the data tables. Duplicates are only for QC/data validation purposes. The primary field sample result was reported. See response to Comment 20a for disposition of soil.

Comment 11:

Table 3 "Parcel 4-AOC 29 Igloo Block C-Consolidated sampling Results – June 2008, September 2010, and October 2010", page 2-86, only includes results for lead. In the revised Report, change the title of the table to indicate that only the results for lead are included in the table.

Response 11:

The title of Table 3 will be changed to reflect that it contains only lead results.

Comment 12:

A table of 2010 sampling results for explosives was not included in the report. Include a table for 2010 sampling results for explosives in the revised Report.

Response 12:

The Army did not sample for explosives in Parcel 4A in 2010 because only trace amounts (well below the SSLs) were detected as reported in the March 2009 RAR approved by NMED. The Army recommended testing only for lead in the May 24, 2010 Sampling and Analysis Plan approved by NMED.

Comment 13:

Reviewing and comparing data presented in the tables is difficult due to their containing a large volume of information which is presented in small font sizes. Use larger font for the tables, and 11" x 17" paper if necessary, in the revised Report and all future submittals to NMED.

Response 13:

Data tables will be presented on 11"x17" paper where necessary.

Comment 14:

The table numbers for most of the tables are located where the middle punch of the 3-ring binder has punched them out, making identification of the tables difficult. For example, all pages of Table 2 "Parcel 4-AOC 29 (Igloo Block C) Sampling Results – June 2008", page 2-15, have the "2", identifying the table number, punched out to accommodate the middle ring of the binder. In future documents take care to ensure that table identifiers are not obscured or removed in the document binding process.

Response 14:

Concur. The tables where this occurred will be printed in a manner to correct this.

Field Quality Assurance/Quality Control (QA/QC)

Comment 15:

In Section 2.5.3, Discrete Laboratory Confirmation Soil Sample Results From Soil Analyzed With XRF, page 2-5, first paragraph the Permittee states "[s]ix confirmation samples from soil

analyzed with the XRF were collected and submitted for laboratory analyses. One Sample, 4029C-1117SS-L-XRFC-SO, was accidentally broken in the laboratory; therefore, the requested analyses could not be performed." The broken vial resulted in a reduced number of confirmation sample results which was not indicated in previous sections of the Report where confirmation samples were discussed (i.e.: Section 1.0, Introduction, page 1-2, First paragraph and Section 2.3, Soil Investigation, page 2-2, sixth paragraph.) To eliminate redundancy and inconsistency, remove the references to QA/QC from Sections 1.0 and 2.3 in the revised Report. It is appropriate to only discuss data quality issues in the pertinent QA/QC section(s) of a document unless a significant data quality issue has occurred that would affect the ability to achieve project objectives or support project conclusions and recommendations.

Response 15:

The text "One sample, 4029C-1117SS-L-XRFC-SO, was accidentally broken in the laboratory; therefore, the requested analyses could not be performed" from section 2.5.3 will be removed in order to be consistent with the other sections.

Comment 16:

In Section 2.3, Soil Investigation, page 2-2, second to last paragraph the Permittee states "[t]o confirm sampling equipment had been properly decontaminated, equipment blanks were collected by pouring laboratory-grade de-ionized water over the decontaminated sampling probe into laboratory-provided sampling containers. The equipment blanks were preserved, as required, and analyzed for 8 RCRA metals." According to the Chain of Custody forms included with the laboratory reports only one equipment rinsate was submitted to the laboratory. The use of the plural form of "equipment blanks" indicates that more than one equipment rinsate sample was collected. Revise the text in the revised Report accordingly.

Response 16:

The text in Section 2.3, page 2-2, second to last paragraph will be changed to reflect one equipment blank collected.

Comment 17:

It does not appear that an equipment rinsate sample was collected during the MI re-sampling event as proposed in the approved SAP. Chain of Custody forms indicate one equipment rinsate blank was collected with the XRF confirmation samples but an equipment rinsate blank was not collected with the MI samples. An equipment rinsate is an important Quality Assurance/Quality Control (QA/QC) method used to determine whether or not contamination in samples is indicative of conditions at the site or from improperly decontaminated equipment. If contamination related to field activities had existed a determination of the validity of the data would not have been possible and a re-sampling of the site may have been necessary. Provide a description of the QA/QC samples collected in the field and any deviations from the SAP in the Revised Report. The Permittee is advised to collect all QA/QC samples proposed in future work plans. The results for aluminum, calcium, iron, barium, manganese, and zinc were not listed on the tables in the Report. It was difficult to find the results for these metals in the Level 4 laboratory data package. A Level 2 laboratory data package is sufficient and preferred for inclusion in Reports.

Response 17:

The Work Plan does specify a rinsate for the MI samples. However, it looks like the rinsate sample associated with the four Parcel 4A MI samples was not taken due to a field oversight. The data is still considered usable since all MI results for Revetment Y-C1111 were below NMED SSLs. The samples in Parcel 4 were only tested for 8 RCRA metals which do not include aluminum, calcium, iron, manganese, and zinc. Barium is one of the 8 RCRA metals and is included in the data. Both the Parcel 21 and Parcel 4 MI samples were run in the same sample delivery group at the lab. Therefore, the Parcel 21 data is included in the 280-7848-1 data package with the Parcel 4 data and the Parcel 21 samples were run for TAL metals which would include all of those additional analytes. All of the information in the 280-7848-1 laboratory data package is linked to its corresponding section within the report by clicking on the appropriate line in the Table of Contents. (i.e., click on "Metals" Data under "Inorganic Sample Data" and it takes you to the MI results for the Parcel 4 and Parcel 21 samples) In any SOW, USACE requires a minimum equivalent to a "level 3" data package report deliverable from the laboratory for data review/validation purposes. There isn't anything current that relates to the old EPA terminology concerning levels. The closest is the Staged Electronic Data Deliverable (SEDD) stages where a "level 3" equivalent to a SEDD stage 3 would include but is not limited to: cover letter with case narrative with Project Chemist sign-off; analytical results (with surrogates if applicable); analytical batch QA/QC results (blanks, LCS's, etc.); client-specific matrix QC (spikes, MSDs, and/or duplicates); statement of data qualification; and field chain-of-custody. The "level 3" (stage 3) builds on "levels 1 and 2" (stages 1 and 2) and adds additional measurement data to allow for independent recalculation of reported results. The purpose of the "level 3" equivalent report deliverable allows for proper data review/validation to ensure that the data is usable.

Laboratory QA/QC

Comment 18:

- a.) In Appendix B (September and October 2010 Sampling Information & Laboratory Data), Section 4.2.3 Laboratory Control Sample Evaluation, page B-10, last paragraph The Permittee states "[t]he grinding LCSs associated with prep batch 280-35412 recovered below QC control limits for most of the explosive compounds. The samples associated with this batch, 2172B530BCSS-M1-SO and 2172B530BCSS-M2-SO, were qualified with a "UJ" flag for all explosive compounds if analytes were not detected, indicating a possible false negative, and the RL is estimated. If analytes were detected in these samples, the data were qualified with a "J-" flag indicating the data are estimated and are potentially biased low. All of the samples were non-detect for explosive compounds and were qualified with a "UJ" flag. All other LCS (sample batch) recoveries were within acceptance criteria." All analytical results for explosives for MI-1 & MI-2 samples were non-detect and were qualified in accordance with the DoD QSM with a UJ, indicating a possible false negative result for explosives for the MI-1 and MI-2 sampled. The Permittee must address the issue of biased analytical results and propose corrective actions in the revised Report.
  
- b.) In Appendix B (September and October 2010 Sampling Information & Laboratory Data), Section 4.2.4 Matrix Spike/Matrix Spike Duplicate Evaluation, page B-37, last bullet the Permittee states "*[t]he 7470A MS/MSD analyses associated with prep batch 280-35161 were performed on sample P4RINS-1 (rinsate sample). Mercury recovered outside the QC limits. The acceptable LCS analysis data indicated that the analytical system was operating within control and no corrective action was necessary. The associated analyte*



*in the parent sample was "J" flagged as estimated in accordance with the DoD QSM."*  
There is no mention in the Report on whether this would bias the sample results high or low for mercury. The details of the QA/QC evaluations and their implications for sample data validation must be discussed in the revised Report.

**Response 18a:**

The laboratory quality control summary report reviewed data quality from Parcel 4A and a separate project on Parcel 21. The samples in question were for explosives, which were not run on Parcel 4A samples, and apply to Parcel 21 samples that were run in the same sample delivery group. Parcel 21 was addressed in the NMED letter dated March 20, 2012.

**Response 18b:**

Mercury is not a primary constituent of concern at the igloos. Text will be revised on page B-37 of the QCSR that the sample results may be biased low for mercury due to the MS recovery for mercury being below the QC limits.

**Lead at Igloos**

**Comment 19:**

- a.) In Section 2.5.4 XRF readings from Igloo Drain Pipes, page 2-5, first paragraph the Permittee states "XRF readings taken on drain pipes indicate the presence of lead-based paint with significant lead concentrations which may be the source of lead contamination in the soil. There are no formal XRF readings for the drain pipes since these were not included in the SAP approved by NMED. Informally, however, one drain pipe read 7.1 mg/cm<sup>2</sup> for lead. The units do not directly correlate 41 to mg/kg, but any reading above 1.0 mg/cm<sup>2</sup> is considered by definition to be lead-based paint." In the Revised Report the Permittee must discuss whether lead-based paint was used on drain pipes at some or all of the other igloos in Igloo Block C. If so, there is a potential for future contamination from the lead paint in the drains of other igloos in Igloo Block C. Propose a method for determining the future impact of lead-based paint present in Igloo Block C.
- b.) Lead-based paint may not be the sole cause of lead contamination at the drains. It is possible the source of the lead from the drain pipes may be from sources on the interior of the igloos (e.g.: leaded gasoline exhaust residues from the forklifts and other machinery used inside the igloos.) The igloo interiors must be tested for lead and other compounds. In the revised Report discuss sampling of the interior of the igloos.

**Response 19a:**

The Army will be removing the drain pipes from the igloo walls and plugging the holes in an upcoming permittee initiated interim measure per Permit section VII.G.3.

**Response 19b:**

Please refer to Army letters dated March 3, 2011 and September 2, 2011 regarding the sampling of igloo interiors.

Future Work

Comment 20:

- a.) In the Executive Summary, page ES-1, last paragraph the Permittee states "[t]he Army recommends soil removal from under both drains at C-1105, C-1109, and C-1128 based on initial June 2008 data and September 2010 XRF readings over the NMED soil screening criteria for lead or arsenic." In the revised Report explain why C-1115 is not being considered for soil removal when it meets the same criteria as C-1109 or recommend soil removal at igloo C-1115.
- b.) In the Executive Summary, page ES-1, bottom of the page the Permittee states "[t]he Army proposes removing a few inches of soil from each of these igloo drain outfalls, estimated to be approximately ¼ cubic yard..." In the Revised Report the Permittee must clarify if this is approximately ¼ cubic yard per drain outfall or approximately ¼ cubic yard for all proposed soil removal.

Response 20a:

The 422 mg/kg result was from a duplicate sample. The sample of record had a reading of 145 mg/kg which is the basis for the reason not to include C-1115 in the soil removal. Soil will be removed below drains at Igloo C-1115 as part of a current contract.

Response 20b:

The Army plans to remove about ¼ cubic yard of soil from each drain outfall where soil concentrations exceeds the SSLs. Confirmation samples will be taken for lead. Text will be revised in the Executive Summary and section 2.7.

If you have questions or require further information, please call me at (330) 358-7312.

Sincerely,



Mark Patterson  
BRAC Environmental Coordinator

Enclosures

CF:

Shannon Duran, NMED, HWB  
Chuck Hendrickson, U.S, EPA Region 6  
Micki Gonzales, Fort Wingate  
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Mike Kipp, USAEC  
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