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

April 21, 2011

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

Dear Mr. Bearzi:

The purpose of this letter is to submit the Fort Wingate Depot Activity, (FWDA) Monitoring Well Installation and Abandonment Work Plan for calendar years 2011 and 2012. This work plan is a revision to the Monitoring Well Installation and Abandonment Proposal that was submitted to the New Mexico Environment Department (NMED) on December 15, 2011.

On February 18, 2011, NMED responded to the Army with a Notice of Disapproval (NOD). This NOD indentified ten comments, which are addressed in this Well Installation and Abandonment Work Plan. Specific responses to NMED comments are presented in this letter below.

The work plan will be sent to you by the U.S. Geological Survey, under separate cover. If you have questions or require further information, please call me at (330) 358-7312.

COMMENT 1

In Section 1.0 (Introduction), the Permittee does not discuss the rationale for the proposed well abandonments, but mentions it with respect to regulations. It is further discussed in Section 4.0 (Well Abandonment). The Permittee should consider including and discussing the reasons for well abandonment in Section 1.0.

RESPONSE TO COMMENT 1

Section 1.1 (Purpose and Scope) states that "this work will serve to further delineate groundwater contaminant plumes, establish background concentration levels, monitor potential off-site migration, and remove from service several dry monitoring wells."

Section 3.0 (Site Selection for Monitoring Wells) states that "proposed well locations were selected to address one of the following three objectives. The first objective is to monitor potential off-site migration of chemical constituents originating from former post activities. The second objective is to determine background concentrations of major and

trace metals. The third objective is to add sufficient spatial data to further define the RDX, nitrate and perchlorate groundwater plumes."

Section 3.1 (Sentinel Monitoring Wells) states that "two sites in the northwest portion of the post were selected to monitor potential off-site migration of chemical constituents in groundwater through the installation of two alluvial sentinel wells, MW23 and MW24".

Section 3.2 (Background Monitoring Wells) states that four "background monitoring wells will be installed in Phase 2 (summer of 2012) of this project. Four sites were selected to determine the background concentrations of major and trace metals in the groundwater through the installation of alluvial wells BGMW01, BGMW02, BGMW03, and BGMW04."

Section 3.3 through 3.5 state the objectives and purpose for monitoring wells associated with contaminant plumes.

COMMENT 2

The Permittee addresses four issues in this Proposal: background well installation, sentinel monitoring well installation, well installation to delineate ground water plumes, and well abandonment; but fails to discuss reasons for background and sentinel monitoring well installation in detail. For ease of review, organize the proposal so each issue is discussed in a separate section of the proposal. Also, references to the figures are not sequential. Revise the Proposal to address these issues.

RESPONSE TO COMMENT 2

Section 1.1 summarizes issues, while separate sections, 3.1 though 3.5 discuss specific issues. References to figure are in a sequential order.

COMMENT 3

In Section 3.0 (Well Locations and Specifications), page 3-1, second paragraph, the Permittee generally describes well installation and construction. The Permittee states, "[s]creens in the alluvium monitoring wells will be placed from 5 feet above the zone of saturation to 10 feet below the zone of saturation, if practical." Clarify if the Permittee meant screens will be placed from 5 feet above the zone of saturation to 10 feet below the water table. Describe the selection of screen length and placement and provide the rationale for the selection for different types of wells. This is likely dependent on the location and type of well to be installed (e.g. sentinel well, plume monitoring well). Please clarify and revise the Proposal.

RESPONSE TO COMMENT 3

Well installation construction specifications are discussed in Section 4 (Well Installation). Additional details were added to address this comment. Specifically, the screen placement was corrected and states that "[a]lluvial monitoring wells will be drilled approximately 10 ft below the water table. Alluvial monitoring well screens will be 20 ft long and the tops of the screens will be placed 5 to 10 ft above the zone of saturation if practical" and "[b]edrock monitoring wells will be drilled through the saturated thickness of the target bedrock unit. Screens for bedrock monitoring wells will be placed through the entire thickness of the saturated interval."

COMMENT 4

The description of proposed well construction lacks sufficient detail. Include a generalized well construction diagram and describe all aspects of well installation including surveying, development, logging and sampling, and the actions to be taken at proposed well locations where saturated conditions are not encountered. Revise the Proposal accordingly.

RESPONSE TO COMMENT 4

Well installation construction specifications are discussed in Section 4 (Well Installation). The additional detailed were added to address this comment. A generic well diagram is presented on page 20. Also, this section states that dry holes will be backfilled with bentonite.

COMMENT 5

Wells TMW43 and TMW47 are mislabeled in Figure 2 (Existing and Proposed Northern Area Monitoring Well Locations), and BGMW01 is mislabeled in Figure 3 (Proposed Background and Sentinel Well Locations). TMW48 appears to be mislabeled in Figure 5 (Proposed Perchlorate Plume Monitoring Well Locations) and might be TMW38. TMW48 is not listed in Table 1 (Well Installation Sequence) nor is it referred to in the text. Well TMW38 is listed in Table 1 as a perchlorate bedrock monitoring well, and is also discussed in the text of the Proposal. Section 3.0 (Well Locations and Specifications), page 3-1, last section, summarizes proposed monitoring wells, but does not reference Table 1. Make the appropriate corrections in the revised Proposal.

RESPONSE TO COMMENT 5

Corrections to mislabeled monitoring wells have be made. The table for the sequence that monitoring wells were to be installed was removed from the work plan.

COMMENT 6

In Section 3.2 (Background Wells), page 3-2, the Permittee states, "[f]our alluvial background wells (BGMW01, BGMW02, BGMW03, and BGMW04) are proposed for installation ... on [the] northwest side of FWDA, east and north of Igloo Block A (Figure 3)." These proposed well locations are west and north of Igloo Block A. Revise the text in the Proposal. Provide a description and rationale in the text to better explain Figure 3 (Proposed Background and Sentinel Well Locations). As discussed with NMED, BGMW01 and BGMW02 should be placed on the east side of FWDA to obtain results up gradient of historic operations. In general, provide stronger justification for all proposed new well locations, considering FWDA historic operations.

RESPONSE TO COMMENT 6

Figure 3 has been replaced by Figure 5. Two background monitoring wells have been moved to the north, up groundwater gradient from the installation (BGMW01 and 02). Two background monitoring wells remain in the same location as shown in the previous Figure, Figure 3 of the proposal (BGMW03 and 04). A justification for the location of these monitoring wells is provided in Section 3.2 (Background Monitoring Wells), which states "Historical records, site investigations, and groundwater flow patterns suggest that groundwater at these sites has not been affected by past post activities. Two background sites were chosen on the north side of the post where the groundwater hydraulic gradient has been interpolated to be higher than the impacted wells in the administration area. Two background sites were selected in the northwest portion of Ft. Wingate, to the east of Igloo Block A. The hydraulic gradient cannot be determined at this time...."

COMMENT 7

The Permittee includes Table 1 (Well Installation Sequence), on page 3-4, but does not include text discussing this table. Also, include the correct sequence of well installation. Per telephone call between the Permittee and NMED on January 5, 2010, the Permittee stated that sentinel monitoring wells would be installed first, yet they are listed as 14 and 15 in the table. Revise the table to correct the sequence of well installation and include estimated dates for the well installations.

In Table 1, there is an error in the notes column for sequence 16. Wells TMW42 and TMW43 are cited when it should be TMW 41 and TMW 42, as stated in the text following Table 1. Revise Table 1 to make the corrections and include map footnotes

RESPONSE TO COMMENT 7

Table 1 of the well installation and abandonment proposal was removed from this submittal. A simplified schedule is provided in Table 2 of this Well Installation and Abandonment Work Plan. Table 2 states that the sentinel wells and the monitoring wells associated with perchlorate will be installed in June of 2011. Background monitoring wells and monitoring wells associated with the nitrate and RDX will be installed in June of 2012. All figures have been updated.

COMMENT 8

Propose and describe initial sampling and analysis for all newly installed wells, including measurement of water levels and field water quality parameters. Revise the Proposal accordingly.

RESPONSE TO COMMENT 8

Section 5 (Groundwater Sampling) was added to this submittal to address comment 8.

COMMENT 9

In section 4.0 (Well Abandonment), page 4-1, the Permittee includes Table 2 (Proposed Monitoring Well Abandonment), but does not list OB/OD wells (such as CMW20 and CMW21) that are proposed to be abandoned. Include all wells that are proposed for abandonment, including proposed dates for well abandonment. The Permittee may state "to be determined" or "TBD" for *OB/OD* wells that will be addressed in *OB/OD* related Work Plans.

RESPONSE TO COMMENT 9

Section 6.0 (Well Abandonment) describes the reason for abandoning dry monitoring wells. This section also describes the methods and procedures to abandon monitoring wells. To address comment 9, the following paragraph was added.

"Up to ten monitoring wells associated with the Open Burn/Open Detonation (OB/OD) Area in the Parcel 3 will be abandoned in future efforts. These monitoring wells are either dry, buried, or too close to proposed ordnance clearing and digging operations to remain in place. Monitoring wells CMW06, CMW16, and CMW21 are buried beneath arroyo sediments and not useable, and FW38 and KWM13 are dry and not usable. Monitoring wells within the boundaries of the OB/OD Area will be damaged during ordnance clearing and digging operation. Therefore, abandonment of these wells will occur as clearing and digging operations progress. Parcel 3 work plans will be

submitted to NMED at a future date describing the abandonment process for monitoring well abandonments in Parcel 3."

COMMENT 10

Revise the maps in the Proposal to include groundwater elevations from the most recent Facility Wide Groundwater Periodic Monitoring Report. Groundwater elevations may be included on the figures depicting the proposed well locations. Include contaminant concentrations on Figure 4 (Proposed RDX and Nitrate Plume Monitoring Well Locations) and Figure 5 (Proposed Perchlorate Plume Monitoring Well Locations).

RESPONSE TO COMMENT 10

Figures were updated to show contaminant plumes for RDX (Figure 6), Nitrate (Figure 7), and Perchlorate (Figures 8 and 9). In addition, potentiometric surface contours were added to Figure 5 (Alluvial background wells) and Figure 9 (Perchlorate bedrock wells) to depict groundwater elevations and general hydraulic gradient.

Sincerely,

Mark Patterson

Mark Patterson
BRAC Environmental Coordinator

CF:	Media
Dave Cobrain, NMED, HWB	2 hard copies, 2 CDs included with Bearzi
Shannon Duran, NMED, HWB	See above
Christy Esler, Fort Wingate	1 hard copies, 2 CDs
Bill O'Donnell, ACSIM	1 CD
Mike Kipp, USAEC	1 CD
Sharlene Begay-Platero, Navajo Nation	1 Hard Copy, 7 CDs
Edward Wemytewa, Zuni Pueblo	1 Hard Copy, 8 CDs
Clayton Seoutewa BIA - Zuni	1 Hard Copy, 1 CD
Rose Duwyenie BIA Navajo Nation	1 Hard Copy, 2 CDs
Steve Smith, USACE – SWF	1 Hard Copy, 1 CD
David Henry, USACE – SPA	1 CD
Chuck Hendrickson – USEPA	1 Hard Copy, 1 CD

Pat Ryan - SAIC	1 CD
Lura Micki Gonzales - FWDA	1 Hard Copy, 2 CD
Mr Ben Burshia - BIA	1 CD