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Base Realignment and Closure Operations Branch

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

RE: Final Work Plan Inner Fence, Parcel 3, Revision 3.0 Army's Response to Letter of Disapproval HWB-FWDA-17-001 dated July 1, 2020, Fort Wingate Depot Activity, McKinley County, New Mexico. EPA#NM6213820974

Dear Mr. Maestas:

This letter is in reply to the New Mexico Environment Department (NMED) Letter of Disapproval dated July 1, 2020, reference number HWB-FWDA-17-001, Final Work Plan Inner Fence, Parcel 3, Revision 3.0. The following are Army's response to NMED comments detailing where each comment has been addressed in the revised Work Plan and cross referencing the numbered NMED comments.

General Comments:

Comment No. 1: Electronic Copy of the Cover/Response to Comment Letter

NMED Comment: Although two hard copies of the cover letter and response to comment (RTC) letter were included in the submittal, no electronic copy was submitted. Include an electronic copy of a cover and RTC letter in all future submittals where revisions are required. NMED has previously directed the Permittee to provide the RTC letter as an appendix to the revised document. Failure to follow NMED direction constitutes noncompliance and may result in an enforcement action.

Army Response: Concur. The Response to Comment (RTC) letter has been included as an appendix to the revised document as requested.

Comment No. 2: Use of Visual Sample Plan (VSP) Program for Incremental Sampling (IS) in Low-Density Munitions and Explosives of Concern (MEC) Areas

NMED Comment: Section 3.7.10, Soil Sampling of Low-Density MEC Areas, discusses the soil sampling for low-density areas. Incremental sampling (IS) methodology is proposed on grids that contain munitions and explosives of concern (MEC) that may be manually removed, as opposed to Hazardous Waste Management Unit (HWMU)/high density grids where mechanical means were used to remove the MEC. The underlying assumption is that there is a generally uniform spread of contamination in the low-density grids such that there would be an equal chance of finding a hot spot if random sampling were employed. However, as sampling locations are farther from disposal points (high-density areas), the probability of encountering a hotspot will likely diminish. As previously agreed by NMED, IS

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is an acceptable tool for sampling the low-density grids. The program Visual Sample Plan (VSP) was used to statistically determine how many of the IS grids would need to be sampled in order to show acceptable risk-based closure. VSP was used in the RCRA mode to determine the number of samples necessary to evaluate for presence/absence. While this is an unorthodox approach, it is acceptable. The following issues must be addressed in the revised Work Plan:

a. The Inner Fence Area is approximately 319 acres with 68 acres being expected to be classified as high-density. Typically, a buffer area is sampled around the high-density grids, to confirm no hot spots and to provide a step-out characterization. The Work Plan does not include any specifications for determining when specific item removal is not feasible and mechanical means must be used. As an example, there could be a high number of items within a grid, but the items are of sufficient size to allow hand removal. Clarify the parameters for determining a low-density grid in the revised Work Plan.
b. The sampling approach must be revised to include buffer zone grids immediately bounding the HWMU/high-density grids for biased sampling. Stepping out from the bounding grids, the random approach may be acceptable. Revise the Work Plan, to propose IS for each grid that abuts the HWMU/or high-density grids. For the remaining low-density grids, VSP may be used to determine the number of grids that require sampling.
c. It is understood that the number of grids estimated to be low-density grids is based on pre-field work assumptions. Clarify that the number of grids to be sampled will be re-evaluated upon the assessment of actual field conditions and anomaly reacquisition in the revised Work Plan.

Revise the Work Plan to address these issues.

Army Response:

a. Concur. The driving factor in determining "high density versus low-density" is related to safety and the ability of UXO technicians to identify single point anomalies for manual removal. Section 3.7.10 (first paragraph) has been revised as follows: "*In general, low-density grids and buffer area grids will exhibit anomaly densities that allow for single point anomaly identification (i.e., UXO technicians can identify distinct anomaly sources and safely excavate manually). If single point anomalies cannot be identified, then the grids will be considered high density and designated for mechanical removal and soil sampling of those areas is addressed in* ***Section 3.12.5***."
b. Concur. Section 3.7.10 has been retitled as follows: "Soil Sampling of Low-Density MEC Areas *and Buffer Areas*". The first paragraph of Section 3.7.10 has been revised as follows: "…in **Section 3.12.5**. *In response to the NMED Notice of Disapproval Letter (dated July 1, 2020), soil samples will additionally be collected from "buffer areas" immediately bounding the HWMU/high-density grids (i.e., sampling units), which are considered high biased sample locations. The final number of buffer area samples will be dependent upon field conditions; however, it is anticipated the that approximately 100 (or more) grids would be sampled in the buffer areas. Buffer area sampling using ISM will be conducted as described in* ***Section 3.7.10.2****. The approach for selecting low-density grids for sampling using VSP is described in* ***Section 3.7.10.1.***"
c. Concur. Section 3.7.10.1 has been revised as follows: "Final sample quantities will be based on the actual size of the low-density MEC area. *The number of grids to be*

sampled will be re-evaluated upon the assessment of actual field conditions and the final determination of the low density MEC area size."

Comment No. 3: Inclusion of Provision for Long-term Inspections and Clearance

NMED Comment: Anomaly reacquisition to a depth of one foot is not consistent with cleanup at MEC sites. Typically, MEC is removed to a depth of four feet using digital geophysical mapping. The overall goal of this removal action is unclear. As noted in previous reviews of this Work Plan, as 100% removal of munitions of MEC cannot be guaranteed, along with the fact that several areas of the parcel with slopes greater than 35% are not being investigated, there is potential for items to resurface and/or resurface and roll down slopes. As such, a provision for long term inspections and clearance must be discussed along with land use controls on this parcel in the Work Plan.

Army Response: Concur. The work plan does not limit the MEC cleanup to 1-foot below ground surface. As stated in the first paragraph of Section 3.1, the MEC removal will be completed to the depth of detection, except in areas that are too steep to safely work as shown on Figure 1-2 of the work plan. Therefore, the overall goal of the removal action is to reduce the amount of MEC within the Inner Fence Area by conducting a MEC removal to depth of detection in all accessible portions of the site. A new sentence has been added to Section 3.1 as follows: "*The overall goal of the subsurface MEC RA is to reduce the amount of MEC at the Inner Fence to depth of detection (excluding in areas that are too steep to safely work)*." Detection technology, MEC types, and approximate detection depths are also described in the fourth paragraph of Section 3.1.

Section 1.2.1.5 (Section IV.E Annual Inspections and Removal) has been revised as follows: "This WP does not contain the annual inspection and removal details as these will be provided by the Army at a later date. *However, in accordance with the RCRA Permit (Section IV.E), the Army will conduct annual inspections of the Kickout Area (which includes the Inner Fence Area) and remove all observed military munitions after the initial removal of military munitions is complete. Currently the military munitions removal actions of the Inner Fence are not complete. Once the removal actions are complete, the inspections and removals will be conducted in accordance with an NMED-approved WP."*

Specific Comments:

Comment No. 4: Permittee's Response to NMED's Disapproval Comment 2, dated November 7, 2019

Permittee Statement: "Incremental soil sampling will be conducted in accordance with the Interstate Technology and Regulatory Council (ITRC) incremental soil sampling guidance (ITRC 2012, including January 2020 Clarifications, or most current)."

NMED Comment: The Permittee must provide accurate descriptions of the procedures to be implemented in the field; references to guidance, QAPPs, or SOPs are not acceptable as an alternative. In addition, the Permittee did not propose to follow the procedures of incremental sampling and analytical method described in both the ITRC guidance and EPA Method 8330B. NMED's December 17, 2019 letter titled Additional Information Related to The August 16, 2019 Proposal to Reset Enforceable Schedule and Resolve Programmatic

issues clearly states, "therefore, ISM sampling can only be used at FWDA as described above and EPA Method 8330B and the ITRC Incremental Sampling Methodology must be strictly adhered to, including triplicate sampling." The Permittee did not follow NMED direction. Failure to follow NMED direction constitutes noncompliance and may result in an enforcement action.

Both the ITRC guidance and EPA Method 8330B specify that a minimum of three replicate samples at a minimum must be collected and analyzed in order to quantify the uncertainty associated with the result. In the section titled Duplicate and Triplicate Samples, p 3-21, it appears that the Permittee has confused the required triplicate sampling with the QA/QC requirement for field duplicates. This is not appropriate.

The ITRC guidance states, "three replicate samples (i.e., the initial ISM sample plus two additional samples) should be considered the minimum. In some cases, more replicates may be necessary to reduce data variability and/or to calculate a 95% UCL of the mean that is closer to the actual mean of the DU." The ITRC Guidance goes on to include, "[w]hen sampling in a systematic random sampling pattern, the increments for an ISM replicate sample are generally collected along the same approximate directional lines established through the DU for the initial ISM sample. Increment locations for ISM replicate samples differ from each other by the selection of different random starting locations on the first line/row of the DU and continuing to sample at this different random interval throughout the DU for each replicate (see Figure 5-5). Thus, the increments for ISM replicates must not be collected from the same locations or collocated with those used for the initial ISM sample. When using the random sampling within grid pattern, replicates are constructed from increments taken from different, randomly selected locations within each gridded area. With simple random sampling, three sets of random locations across the DU are selected and increments collected for each set are used to create the replicates. Replicate ISM samples should be submitted to the laboratory as "blind" samples, meaning the laboratory does not know they are replicate samples of the initial ISM samples."

EPA Method 8330B clearly states, "to establish the sampling uncertainty for estimating mean concentrations of energetic material residues, triplicate multi-increment samples should be collected for each type of activity under investigation. To avoid collecting co-located samples and to be random, each replicate of multi-increment samples should be collected starting at different corners of the decision unit or different random start locations within the same starting corner."

The Permittee is required to implement soil sampling and analysis that conforms to the ITRC Guidance and EPA Method 8330B, as previously directed, including the collection of triplicate samples for each decision unit. The Permittee must provide descriptions of the proposed methods instead of references to guidance, QAPPs, or SOPs. Revise the Work Plan accordingly.

Army Response: Concur. Section 3.7.10 (second paragraph) has been revised as follows: “Incremental soil sampling will be conducted in accordance with the Interstate Technology and Regulatory Council (ITRC) incremental soil sampling guidance (ITRC 2012, including January 2020 Clarifications, or most current) *and USEPA Method 8330B. All incremental soil sampling procedures are listed in* ***Section 3.7.10.2*** *of this WP.”*

Section 3.7.10.2 (subsection now titled Replicate Samples) has been revised to remove references to duplicate and triplicate samples. Additionally, the 10 percent replicate sampling frequency has been removed.

As indicated in the first paragraph of Section 3.7.10.2, the incremental samples will be collected using a systematic random sampling pattern. A graphic has been added to Section 3.7.10.2 to clearly show the planned systematic random sampling pattern that will be utilized.

Comment No. 5: Section 3.1, Overall Approach to Munition Response Activities, lines 36-40, page 3-1

Permittee Statement: "In general, the depth of detection utilizing handheld detectors is 11 times the diameter of that item. Expected MEC types and approximate geophysical detection depths are shown in Table 3-1. UXO teams will survey each grid using a combination of handheld ferrous and non-ferrous (e.g., White's XLT or equivalent) metal detectors to obtain complete coverage."

NMED Comment: The Work Plan does not specify the width of the transects that will be followed. Typically, the transects within each grid are three to four feet apart. This allows for a swing range of 1.5 to two feet. The greater the swing range is set, the higher the instrument comes off the ground, and the lower the sensitivity to see an item at depth. Table 3-1 describes items with typical depth of detection using handheld devices. Most of the items are within the top 12 inches. The limitation is due to the sensitivity of the instrument, speed of walking the transect, and width of the transect. If a larger transect width was employed, it is likely MEC below the top 12 inches would not be detected using the hand-held magnetometers. Clarify the width of the transects that will be used within each grid in the revised Work Plan.

Army Response: Concur. The third paragraph of Section 3.7.9 states that control lanes will be approximately 5 feet in width. The fourth paragraph of Section 3.1 has been revised to clarify as follows: "…Table 3-1. UXO teams will survey *individual sweep lanes approximately 5 feet wide (or closer when needed based on terrain and vegetation) within* each grid using a combination of handheld ferrous and non-ferrous (e.g., White's XLT or equivalent) metal detectors to obtain complete coverage *(i.e., sufficient to detect MEC to the expected detection depths shown in **Table 3-1**).*"

Comment No. 6: Section 3.7.10.2, Incremental Soil Sampling Procedures, Soil Sample Analyses, lines 11-38, page 3-19

NMED Comment: The Permittee proposes to exclude analyses of perchlorate, SVOCs, PCBs, cyanide, nitrate, dioxins and furans for the soil samples collected from the low-density MEC areas since no exceedances were historically found in the soil samples collected from the HWMU/HWMU-like areas. Soils in the HWMU/HWMU-like areas are generally more likely contaminated than those in the low-density MEC areas. It is reasonable to assume that these constituents are less likely to be present above the applicable screening levels in soil samples collected from the low-density MEC areas. Therefore, exclusion of these analyses is hereby approved for low-density MEC areas in the Inner Fence Area, not to include the buffer zone.

Army Response: Concur. Section 3.7.10.2 (Soil Sample Analysis) has been revised to include a new last paragraph as follows: “Based on this assessment, each incremental sample soil sample *collected from the low-density MEC areas* will be submitted to Agricultural Priority Pollutants Laboratory, Inc. for chemical analysis for explosives (Method 8330B) and metals (Method 6020A).

In response to the NMED Notice of Disapproval Letter (dated July 1, 2020), soil samples will additionally be collected from buffer area grids immediately surrounding the HWMU and/or high-density grids. The buffer area grid samples will be sampled for VOCs (Method 8260B), target analyte list metals (Method 6010B/6020A/7471B), SVOCs (Method 8720D), explosives (Method 8330B), PCBs (Method 8082A), nitrate (Method 9056A), cyanide (Method 9014), dioxins/furans (Method 8290), and perchlorate (Method 6850).”

Comment No. 7: Human Health, Comparison with Background, lines 29-34, page 3-44, and lines 1-2, page 3-45

Permittee Statement: "Site metal concentrations will be compared with background concentrations for metals. Except for arsenic and antimony, background values are the 95 percent (%) Upper Tolerance Limits (UTLs) from the 2009 Background document (Shaw 2010). For antimony, the background value is the 95% UTL for soil unit 350ss based on the 2012 background study (USACE 2013). The New Mexico residential SSL for arsenic is 7.07 mg/kg; however, Fort Wingate has site-specific values for arsenic. In accordance with the December 18, 2013 NMED letter, if the arsenic background value of 5.6 mg/kg is exceeded then the result will be compared to the background study range of 0.2 - 11.2 mg/kg."

NMED Comment: As NMED have noted during reviews of the Permittee's previous reports, the use of discrete data to evaluate IS data is not appropriate. IS methodology is designed to reduce variances and small-scale variability. As such, IS data are more a reflection of the mean of a dataset rather than the UTL. Comparison of IS data to an Upper Confidence Limit (UCL) would be more appropriate than comparison to an UTL. Intuitively, comparison of a "mean" to an UTL seems conservative and likely to result in decision errors that result in stricter regulation. However, as the data are statistically incomparable, comparisons must be limited to a qualitative discussion. While some one-tailed statistical tests might be applied, the level of uncertainty would be high. Thus, NMED does not agree that discrete and IS data may be used for quantitative comparisons at this time. NMED recommends that the Permittee collect IS background data for comparison to the proposed IS data. The comparison of the discrete background data to site IS data may be used as a qualitative line of evidence but may not be used to eliminate an inorganic constituent as a potential constituent of concern (COPC) for risk assessment purposes. If IS background data are not collected, then all constituents with at least one detection must be retained as a COPC and assessed in the risk assessment. The position of the NMED remains unchanged; if IS are to be used, background IS must be conducted for quantitative comparison to site IS data. Revise the Work Plan accordingly.

Army Response: Concur. The applicability of comparing the existing FWDA site-specific background data set to ISM sample results has been previously discussed. To clarify, Section 3.7.11.1 (Soil Screening Levels) has been revised as follows: “…individual sample. *Incremental soil sample results are not typically compared to established inorganic background concentrations developed based on discrete soil samples to eliminate an inorganic constituent as a potential constituent of concern for risk assessment purposes.*

However, the Army and NMED have previously agreed that the FWDA site-specific background data study is acceptable for both discrete and ISM samples due the background study population size (i.e., >100 samples). Therefore, ISM sample results from the Inner Fence may be compared to the site-specific background concentrations (specifically the Upper Confidence Limits).”

If you have questions or require further information, please contact me at George.h.cushman.civ@mail.mil, 703-455-3234 (Temporary Home Office, preferred) or 703-608-2245 (Mobile).

Sincerely,

George H. Cushman IV

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Enclosures

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