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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

January 2, 2014

Gerry Veara, Director
Public Works (Building 102)
U.S. Army Garrison White Sands
White Sands Missile Range, New Mexico 88002-5000

**RE: DISAPPROVAL
ACCELERATED CORRECTIVE ACTION COMPLETION REPORT
SWMU 89, FORMER ACID NEUTRALIZATION UNIT
AT HAZARDOUS WASTE STORAGE FACILITY, DECEMBER 2012
WHITE SANDS MISSILE RANGE, NEW MEXICO
EPA ID # NM2750211235
HWB-WSMR-12-008**

Dear Mr. Veara:

The New Mexico Environment Department (NMED) has completed its review of the U.S. Army White Sands Missile Range's (Permittee) *Accelerated Corrective Action Completion Report SWMU 89, Former Acid Neutralization Unit at Hazardous Waste Storage Facility* (Report), dated December 2012. NMED has reviewed the Report and hereby issues this Disapproval with the following comments.

Comment 1

In Section 2.4 (Soil Excavation) of the Report, the Permittee must provide an additional section that describes all of the soil confirmation sampling activities conducted at SWMU 89. The section must include the number of confirmation samples collected, sample locations, a description of how the samples were collected and how the sample locations were determined in the Closure Plan. In addition, provide three separate figures for the three excavation phases

depicting a plan view of each excavation boundary and soil confirmation sample locations at SWMU 89. Include the location of SWMU 89 and the hazardous waste storage facility in the figures in the Closure Plan.

Comment 2

In Section 2.4 (Soil Excavation), page 2-3, paragraph 1, the Permittee states that “the initial excavation limits were met as described in the work plan at approximately 21 feet by 21 feet by (3.5 feet deep at the south wall to 1 foot deep at the north wall).” However, the Permittee continued to excavate the site because ferrocyanide was detected in soils at the site. Include the final excavation dimensions in the Closure Plan.

Comment 3

In Section 2.4 (Soil Excavation), page 2-3, paragraph 2, the Permittee states that “as preparations were made for removal of the roll off containers, the soil in various areas of the excavation began to discolor. The bluish discoloration was due to the reactions of iron and cyanide in the soil when exposed to air creating ferrocyanide. These areas were excavated and periodically observed for discoloration.” Based on the analytical and waste characterization results for cyanide, the results exceed the NMED Residential Soil Screening Level (RSSL) of 46.9 milligrams per kilogram (mg/kg). It appears that the cyanide present at SWMU 89 may be a result of historical releases at the site. Address the following comments in the appropriate sections of the Closure Plan:

- a. Determine the source of the release and provide additional information about the ferrocyanide occurrence to include additional discussion about the reaction process, the timeframe (how many days) for the reaction to be visible in the excavation for each excavation phase, the locations and aerial extent of the discolored soil, and state if the occurrence was confined to one or more areas or was observed across the excavation site.
- b. It is not clear if all soils impacted by cyanide were removed from the site. The information presented in Table 3-1 (Soil Analytical Results) and Figure 3-1 (Excavation Dimensions and Confirmation Soil Sample Locations) do not define the locations of the soil confirmation samples and the Permittee does not state that all cyanide impacted soil was removed from the site. State whether all cyanide impacted soils were removed from the site and define the soil confirmation sample locations in Table 3-1.
- c. Include photographs depicting the discolored areas and highlight or circle areas of discoloration.

- d. Provide separate figures depicting the size and locations of the discolored areas for the second and third excavation activities. Include the soil confirmation sample locations in these figures.

Comment 4

In Section 2.5 (Site Restoration), page 2-3, the Permittee states that “Figure 2-3 shows the final as-built drawing of the site with the corrective action completed.” The reference to Figure 2-3 is incorrect. The correct reference is Figure 2-2 (Final As-Built). Provide the correct reference in the Closure Plan.

Comment 5

In Section 3.3 (Geochemical Evaluation of Soil Analytical Data), pages 3-2 and 3-3, and Figures 3-2 (Arsenic vs. Calcium) and 3-3 (Arsenic vs. As/Ca Ratios), the Permittee describes the evaluation and depicts the soil analytical data utilizing the background data from the August 2012 *Final Soil Background Study Report, Solid Waste Management Unit 80, Sewage Treatment Plant Sludge Waste Oil (WSMR-30), Solid Waste Management Units 12, 14, 16, 17, 21, and 22, Main Post Sites (WSMR-60, WSMR-33, WSMR-79, WSMR-73, WSMR-31, and WSMR-32), and Solid Waste Management Unit 140, Former LC-37 Paint Dump (WSMR-84)* (2012 Soil Background Study Report). However, the 2012 Soil Background Study Report cannot be referenced because it has not been approved by NMED, and therefore cannot be utilized for risk assessment in this Report. The Permittee can conduct a full statistical analysis using the *Final Background Soils RCRA Facility Investigation (RFI) Report for the Main Post* (2008 Final Background Soils RFI Report) which was approved with reservation on November 7, 2008 or wait for the approval of the 2012 Soil Background Study Report to conduct the evaluation for SWMU 89. Section 3.3 and Figures 3-2 and 3-3 must be revised to reflect the new information, if the Approval with Reservation is utilized for the evaluation of the soil analytical data in the Closure Plan.

Comment 6

In Section 4.2 (Recommendations), page 4-1, the Permittee recommends that “the four monitoring wells (TW1 through TW4) be appropriately plugged and abandoned. Subsequent to monitoring well abandonment and based on the results of the corrective action and groundwater investigation activities [at] SWMU 89 a petition should be submitted to NMED to obtain corrective action complete status without controls.” The Permittee has not completed all work required at SWMU 89 in order to petition for a corrective action complete status without controls. Waste remains in place after three phases of excavation, the cyanide source must be investigated, and the hazardous waste storage facility is still in operation. In addition, monitoring wells TW1 through TW4, must not be plugged and abandoned and must be maintained at the site until closure at SWMU 89 and the hazardous waste storage facility has been approved by NMED.

Comment 7

Figure 1-3 (Previous Investigations Summary Map) depicts soil borings and soil vapor survey locations from previous investigations. Increase the scale for Figure 1-3 and present the figure on an 11-inch by 17-inch paper and include the soil boring designations on the revised figure, which are referenced in the soil boring logs in Appendix A (Boring Logs) and include the map in the Closure Plan.

Comment 8

Figure 3-1 (Excavation Dimensions and Confirmation Soil Sample Locations) depicts the side views of the three excavation phases that occurred at SWMU 89. Each of the depictions includes a cross-section of the plan view of the excavation area. Provide separate figures for each phase of excavation in the Closure Plan. The figures must be to scale and include SWMU 89, the hazardous waste storage facility, the excavation area and the vertical profile cross-section of the excavation on each figure. Label all confirmation soil sample locations with the soil confirmation sample designations and ensure that the locations of the sidewall and floor soil confirmation samples are correct on the figures (*see* also Comments 1 and 3d).

Comment 9

Tables 2-1 (Waste Characterization Analytical Results) and 3-1 (Soil Analytical Results) summarize the analytical results for the waste characterization and soil confirmation samples. The Permittee utilizes the RSSLs from Table A-1 (NMED Soil Screening Levels) of the *2012 NMED Risk Assessment Guidance for Site Investigations and Remediation* to evaluate the analytical data from the investigation. However, the analytical data and RSSLs are reported in decimal notation rather than in scientific notation. Report all analytical results and RSSLs in the ordinary decimal notation up to four decimal places (e.g., 0.1234 milligrams per liter (mg/L)) and provide in scientific notation if greater than four (e.g., 4.5E-06 mg/L) in the Closure Plan and all future reports.

Comment 10

Table 2-1 (Waste Characterization Analytical Results) summarizes the analytical results for the excavated and backfilled soils. The following comments must be used to revise Table 2-1 and included in the Closure Plan:

- a. There were three excavation phases conducted at SWMU 89; however, it appears that only two are represented in Table 2-1. If 89EXSOIL1 is from the first excavation phase and 89EXSOIL2 is a combination of the second and third excavation phases, the Permittee must state as such in the notes section of Table 2-1.

- b. The reported sample depth for the waste characterization analytical data is misleading and must be removed from the table. It is more useful to define the excavation depth for each sample set. Define the excavation depth for each sample set in the notes section of Table 2-1. For example, soil from the waste characterization sample 89EXSOIL1 was excavated from 1 foot to 3.5 feet. The source of the backfill soils must also be defined.
- c. On pages 1 and 2, the NMED RSSL for thallium ($7.82E-01$ mg/kg) and arsenic (3.90 mg/kg) were exceeded by 89EXSOIL1 (thallium: 1.69 mg/kg) and 89EXSOIL2 (arsenic: 22.4 mg/kg) but were not highlighted. Highlight the analytical results and review Table 2-1 to ensure that all exceedances are highlighted as defined in the notes section.

Comment 11

Tables 2-2 (Monitoring Well Construction Details), 2-3 (Monitoring Well Development and Purge Water Quality Parameters), and 2-4 (Groundwater Elevation Data) summarize information from the investigation for monitoring wells TW-01, TW-02, TW-03, and TW-04. However, the monitoring well designations are not consistent with those from the Report. Revise the monitoring well names (e.g., TW-01) in Tables 2-2, 2-3, and 2-4 to be consistent with designations in the Report (e.g., TW1) and include the revised table in the Closure Plan.

Comment 12

Table 2-2 (Monitoring Well Construction Details) summarizes the survey data and well construction information for monitoring wells TW1 through TW4. Address the following comments in the Closure Plan for Table 2-2:

- a. The difference between the measurements for "Total Measured Well Depth (ft bgs)" and "Total Reported Well Depth (ft bgs)" are unclear. Explain the difference between these two measurements and define these measurements in the notes section of Table 2-2.
- b. Indicate which survey measurement is presented in Table 2-1 (e.g., NAD27 or NAD83).

Comment 13

In Table 2-3 (Monitoring Well Development and Purge Water Quality Parameters) the Permittee summarizes the well development and purge water quality parameters for TW1 through TW4. Address the following comments and revise Table 2-3 accordingly:

- a. The parameters for turbidity do not appear to be correct. The August 16, 2012 turbidity reading for TW4 is -0.8 nephelometric turbidity units (NTU). Provide additional information about the instrument used to collect the turbidity readings (e.g., type of instrument, accuracy, measuring range, calibration process, and resolution). Provide an

explanation for the negative turbidity reading at TW4.

- b. According to the field notes, the Permittee was unable to properly develop monitoring wells TW1 and TW3. Include a brief explanation in the notes section of the revised table and indicate when the last water quality parameters were collected and reported for TW1 and TW3 in the revised table.

Comment 14

Table 2-4 (Groundwater Elevation Data) summarizes the survey data and calculated potentiometric surface elevation for monitoring wells TW1 through TW4. Define "top of casing" and provide the potentiometric surface elevation calculation in the notes section of the revised table. In addition, ensure all measurements are defined with units in the Closure Plan.

Comment 15

Table 3-1 (Soil Analytical Results) summarizes the analytical results for the soil confirmation samples collected during the three phases of excavation. Address the following comments and revise Table 3-1 accordingly:

- a. Figure 3-1 (Excavation Dimensions and Confirmation Soil Sample Locations) and Table 3-1 do not clearly define the locations of the soil confirmation samples collected during the three phases of excavation. Include two additional rows in Table 3-1 to report the excavation phase and depth the soil confirmation sample was collected. Ensure the information from Table 3-1 corresponds to the three excavation phase figures referenced in Comments 1, 3d, and 8 above.
- b. Table 3-1 is missing the NMED RSSLs for 1,2-dibromoethane (0.5882 mg/kg) and 2-butanone (3.71E+04 mg/kg). Include the RSSLs in the Closure Plan and review all analytical data tables to verify that the correct information is reported in the revised table.
- c. Soil confirmation samples 89-NW and 89-NW2 report analytical results that exceed the RSSLs for Aroclor-1221 (1.49 mg/kg), Aroclor-1232 (1.49 mg/kg), and Aroclor-1254 (1.12 mg/kg), but are not highlighted in Table 3-1. Review Table 3-1 to ensure that all exceedances are highlighted as defined in the notes section.

Comment 16

Table 3-2 (Groundwater Analytical Results) summarizes the groundwater analytical results for TW1 through TW4. Address the following comments and revise Table 3-2 accordingly:

Comment 18

In Appendix D (Photographic Log), the Permittee provides photographs of the demolition, excavation, and backfilling activities at SWMU 89. Address the following comments for the Closure Plan:

- a. Photos 1 through 16 do not indicate which direction the camera is facing in the photograph. Provide directional information in the photographs to indicate which direction the photographs were taken.
- b. Photos 3 and 5 through 10 are of the concrete loading dock/evaporation tank. The Permittee provides descriptions for the subject in each photograph but it is not clear what the reviewer should be looking for. Provide arrows and text on the picture to identify the subject in the photograph.
- c. Provide a photograph of the soil in the evaporation tank after the loading dock was removed.
- d. Provide a photograph of the soil directly beneath the evaporation tank after the demolition and removal of the evaporation tank.
- e. The Report states that there were three phases of excavation. Provide a photograph of the third/final excavation at SWMU 89.
- f. Provide photographs of the second and third excavations after the ferrocyanide reaction occurred and highlight the areas of the observed reaction in the excavation area (*see* also Comment 3).
- g. Photos 1 through 10 appear to be out of sequence. Revise the photos to be in sequence with the demolition activities that took place at SWMU 89.
- h. Photo 16 depicts the well development of a monitoring well at SWMU 89. Provide the well designation for the monitoring well in the description for Photo 16.

Comment 19

Appendix E (Survey Data) provides survey data for the monitoring wells and four survey points of the excavation boundary. However, this survey data does not provide any information about the survey point locations. Revise the survey data to identify the survey locations for the Pad Areas (e.g., northeast corner, southeast corner, northwest corner, southwest corner). In addition, identify the monitoring wells (i.e., TW1, TW2, TW3, and TW4) surveyed and label where the survey point was collected (e.g., directional location or highest/lowest point on PVC casing, top

- a. The analytical data was evaluated with the U.S. Environmental Protection Agency (EPA) Maximum Contaminant Levels (MCLs) and New Mexico Water Quality Control Commission (NMWQCC) standards. However, several of the screening levels reported for the analytes listed in Table 3-2 do not correspond with the EPA MCLs or NMWQCC standards and there appears to be standards missing for many of the analytes. For example, the NMWQCC standard for molybdenum is 1 mg/L but it is not reported in Table 3-2. Another example is the Permittee is reporting an EPA MCL of 200 micrograms per liter ($\mu\text{g/L}$) for 2-chlorotoluene (o-chlorotoluene), but there is not an EPA MCL for that analyte. Provide the correct screening levels for the EPA MCLs and NMWQCC standards in the revised Table 3-2. Ensure the correct information is presented in future reports.
- b. There is inconsistency with the units reported in the tables. The Permittee reports analytical data results in mg/L for all metals and cyanide and $\mu\text{g/L}$ for pesticides, polychlorinated biphenyls (PCBs), and herbicides. However, the analytical results for the volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) are reported using both $\mu\text{g/L}$ and mg/L. Report all VOC and SVOC analytical results as $\mu\text{g/L}$ for consistency in reviewing the revised Table 3-2.
- c. There is inconsistency with the font format of Table 3-2. Revise Table 3-2 so that all font sizes are the same. In addition, ensure all tables in the Closure Plan and all future work plans and reports have consistent formatting.

Comment 17

In Appendix C (Data Evaluation Reports and Laboratory Analytical Data Packages), the Permittee provides the data evaluation reports and laboratory analytical data Level IV packages. Appendix 5, Section 5.3.1.d (Laboratory Deliverables), page 41 of the December 2009 RCRA Permit states that “[t]he Permittee shall present summary tables of these data and Level II QA/QC results to NMED in the format described in Permit Appendix 7 (*Reporting Requirements*) of this Permit. The raw analytical data, including calibration curves, instrument calibration data, data calculation work sheets, and other laboratory support data for samples from this Project, shall be compiled and kept on file at the Facility for reference. The Permittee shall make the data available to NMED upon request.” In addition, the Permittee is not required to submit data evaluation reports unless NMED requests these reports. The Permittee is only required to submit Level II data packages and must submit Level II analytical laboratory data packages with all future reports.

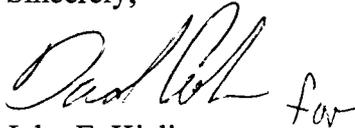
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January 2, 2014
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of steel lid, or ground elevation at directional corner of the concrete pad). Provide the additional survey information in the Closure Plan.

The Permittee must address all comments contained in this Disapproval and must incorporate these comments into a Closure Plan by **July 15, 2014** submitted in accordance with Table 8-1 (Closure Plan Submittal Schedule) of the December 2009 RCRA Permit. The Closure Plan must be prepared in the format for work plans in accordance with Appendix 7 (Reporting Requirements) of the December 2009 RCRA Permit.

If you have questions regarding this letter please contact Leona Tsinnajinnie of my staff at (505) 476-6057.

Sincerely,

A handwritten signature in black ink, appearing to read "John E. Kieling", with a small "for" written to the right of the signature.

John E. Kieling
Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
N. Dhawan, NMED HWB
K. Van Horn, NMED HWB
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