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JUL 21 2020

Brian D. Knight, Chief
Environmental Division (Building 163)
U.S. Army White Sands Missile Range
White Sands Missile Range, NM 88002-5000

**RE: FOURTH DISAPPROVAL
REVISION 3 PHASE IV RCRA FACILITY INVESTIGATION WORK PLAN SWMU 65,
FORMER MAIN POST LANDFILL #3 AT SCRAP YARD
WHITE SANDS MISSILE RANGE, NEW MEXICO
EPA ID #NM 2750211235
HWB-WSMR-16-007**

Dear Mr. Knight:

The New Mexico Environment Department (NMED) has reviewed the U.S. Army White Sands Missile Range's (Permittee) *Revision 3 Phase IV RCRA Facility Investigation Work Plan SWMU 65, Former Main Post Landfill #3 at Scrap Yard (Work Plan)*, dated July 2019. Multiple technical inadequacies are identified in the Work Plan. NMED hereby issues this fourth Disapproval with the attached comments.

The Permittee must address all comments attached in this Disapproval and submit a revised Work Plan. The submittal must include a red-line strikeout version in electronic format showing where all revisions have been made to the Work Plan. The revised Work Plan must be accompanied with a response letter or table that details where all revisions have been made, cross-referencing NMED's numbered comments. The revised Work Plan must be submitted to NMED no later than **December 4, 2020**.

Mr. Knight
Rev. 3, Phase IV SWMU 65 RFI WP
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If you have any questions regarding this Disapproval, please contact Michiya Suzuki at (505) 476-6046.

Sincerely,

**Kevin
Pierard**

Digitally signed by
Kevin Pierard
Date: 2020.07.21
09:06:00 -06'00'

Kevin M. Pierard, Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
R. Murphy, NMED HWB
M. Suzuki, NMED HWB
B. Avalos, WSMR
L. King, EPA Region 6 (GLCRRRC)

File: WSMR 2020 and Reading
WSMR-16-007

Attachment

Comment 1

The Permittee's response to NMED's Disapproval Comment 2 states,

"WSMR disagrees with the NMED's assessment of the validity of the data collected and the collection procedures conducted during the Phase III RFI. The samples were collected in accordance with the NMED-approved Phase III RFI Work Plan (see response to NMED Comment 1). Appropriate analytical methods were used during all phases of the RFI. The reporting limits were generally as low as technically possible based on state-of-the-art equipment used at the time of the sampling and on sample-specific influences. The analytical results were reviewed and validated according to the requirements of the approved Phase III RFI Work Plan. All valid historical site information and data are useful for decision making. In addition, WSMR has addressed the NMED comments in reference to the Phase III RFI Report, and responses to comments provided in three NODs have been incorporated into the Phase IV RFI Work Plan. Therefore, the Phase III RFI field data will be used as a qualitative guide for future investigations."

The Permittee's response to NMED's Disapproval Comment 3 states, "[p]er the response to Comment 2, WSMR does not agree with the NMED's wholesale rejection of the Phase III RFI data. The valid historical site information and data should be useful for decision making. However, the Phase III RFI field data will be used as a qualitative guide for future investigations instead of in the decision-making process."

As stated in previous correspondence, NMED disagrees with WSMR's assessment of the data collected during the Phase III Investigation. NMED has provided detailed comments regarding this issue and does not accept the validity of the data for decision making. However, NMED agrees that the data may be used qualitatively but may not be used for risk assessments or decision-making regarding closure of the unit. No response required.

Comment 2

The Permittee's response to NMED's Disapproval Comment 7 states, "[t]he data generated from annual groundwater monitoring of the four monitoring wells (MW09, MW10, MW11, and MW12) as part of the SWMU 65 groundwater monitoring activities were collected properly and have undergone review and validation." The Permittee has failed to submit this data for review. It is the Permittee's responsibility to submit a groundwater monitoring report yearly to summarize the field activities that take place regarding monitoring and sampling of groundwater monitoring wells at the site. The Permittee has not submitted a technically substantive and approvable groundwater monitoring report for SWMU 65 and therefore, while the Permittee conducted review and validation of the data collected, NMED has not received this data. Until NMED receives and approves the groundwater monitoring report containing this data, the data cannot be used for decision-making. The Permittee must consistently collect groundwater data and submit the data to NMED for review or the data will not be used to make decisions regarding risk or site closure. NMED issued a *Disapproval of the 2016 Groundwater Periodic Monitoring Report, Main Post Landfill No. 3 (SWMU 65)* on May 22, 2018. The letter

required the Permittee to submit a groundwater monitoring work plan no later than September 24, 2018. The Permittee has failed to comply with this requirement. The letter also required a revised Groundwater Monitoring Report to be submitted no later than December 10, 2018. The Permittee has failed to comply with this requirement. The Permittee has also failed to submit groundwater monitoring reports for the years 2017 and 2018. Failure to comply with the requirement to submit groundwater monitoring data may result in an enforcement action and will affect the Permittee's ability to close the site. Provide a schedule for the submission of the required documents in the response letter.

Comment 3

The Permittee's response to NMED's Disapproval Comment 10 states, "[t]he number and distribution of samples requested by the NMED fails to consider the results of previous investigations at the landfill. Forty soil samples were collected during the Phase II RFI from seven 30-foot soil borings and one background boring." The historic soil sampling locations were not located in or along known landfill trenches; therefore, this data is not useful for the purpose of determining leachate or hazardous constituent migration from the landfill cells. Once the geophysical survey is complete, the location of individual landfill cells will be identified, and soil borings must be installed in order to properly evaluate for the presence of contaminants.

The Permittee also states, "WSMR proposes to install and sample angled soil borings under each disposal cell at a frequency of one for every 100 linear feet of landfill disposal cell. If encountered in angle borings, the nature and depth of waste materials will be recorded; however, the purpose of these borings will be to evaluate the presence of disposal cell leachate, rather than to measure the thickness and depths of waste materials," and "[t]his number of soil borings (based on one soil boring for every 100 linear feet) is more than adequate to evaluate the migration of landfill leachate beneath each disposal cell."

NMED does not agree that the proposed number of soil borings is adequate to evaluate presence or absence of potential source of contamination. NMED's Disapproval Comment 10 states, "[t]he Permittee must install borings at each end and at 25-foot intervals for cells less than 300 feet long and if the lengths of the disposal cells are longer than 300 feet, on each end and at 40-foot intervals. The borings must be advanced down the center of each cell for the entire length of the cells." After additional consideration, installation of angled soil borings every 50 linear feet for landfill cells longer than 300 feet and every 25 linear feet for cells less than 300 feet long is allowed. This work must be done after the results of geophysical work confirm the dimensions of the landfill cells. The goal of the soil borings is to collect soil samples immediately adjacent to the landfill cells, without encountering waste, in order to determine the presence or absence of leachate and hazardous constituents. Revise the Work Plan accordingly.

Comment 4

The Permittee's response to NMED's Disapproval Comment 10 states, "[f]urther, as shown on Photos 1 through 5 (included as Attachment A to this response), there are active linear subsidence features throughout the landfill. Recent site visits indicate that the subsidence has increased, and the surface expression has become more exaggerated. Due to active subsidence at the site, staging a drill rig on the disposal cells is considered an unsafe condition." NMED agrees that the landfill appears to be unstable. The RCRA Facility Investigation (RFI) must propose study activities that would support evaluation of remedies including excavation of the landfill and the installation of a RCRA compliant landfill cap. Please revise the Work Plan to include such investigation activities.

Comment 5

The Permittee's response to NMED's Disapproval Comment 10 states, "[s]amples of the soil cover for geotechnical analysis will be collected using a hand-auger, and the proposed locations over landfill disposal cells will remain as shown on Figure 4." The proposed sampling method (hand-auger) is not the method described in Section 2.3.6 (Geotechnical Assessment of Landfill Cover Material). Regardless, it is not appropriate to collect samples for geotechnical analysis from the existing landfill covers (see Comment 10) and unnecessary for purposes of supporting remedy or closure alternatives. The Permittee may forgo collection of soil samples from the existing landfill covers. Revise the Work Plan accordingly.

Comment 6

The Permittee's response to NMED's Disapproval Comment 11 states, "[t]he Main Post Landfill #3 is located in a remote area of the installation. Other than engineered soil cap design, landfill gas collection and control are not planned as part of landfill cap construction. The cap design will allow for dissipation of generated gases, including methane." The landfill is a RCRA Hazardous Waste Management Unit and any landfill cap design must comply with the requirements 40 CFR 264 Subpart N for Landfills (as design standards may be updated) and must, at a minimum, meet the requirement of a RCRA Subtitle C cover, regardless of its remote location. Acknowledge the requirement in the response letter.

NMED's Disapproval Comment 11 states, "[i]f the planned landfill cover addresses potential gas generation directly from the landfill cells, soil gas borings located within two feet of each identified disposal cell will not be necessary. However, unless the Permittee commits to address gas generation as part of the future landfill cover construction, the additional soil gas borings are necessary." Five soil gas borings are proposed, and the locations are shown in Figure 4. However, since the location of landfill cells is not identified at this time, the boring locations shown in Figure 4 may be irrelevant to soil gas generation (e.g., too far from disposal cells). Since the proposed geophysical survey will likely confirm precise cell locations, the soil gas boring locations must be adjusted based on the survey results. Propose to install one soil gas boring for each cell less than 300 linear feet and two soil gas borings for each cell longer than

300 linear feet in length. Revise the Work Plan accordingly. If excavation is evaluated to be more appropriate (see Comment 4), installation of soil gas borings will not be necessary.

Comment 7

In Section 1.1 (Objectives and Scope) the Permittee states, “[d]ata collected for SWMU 65 closure will be used to demonstrate compliance with the performance closure standards described in Title 40 of the Code of Federal Regulations, Sections 264.111 and 264.310, and the WSMR RCRA Permit, Appendix 3 (Clean Up Levels) (NMED, 2009).” Data collected during this investigation will be presented in an investigation report that will describe the activities conducted during the field work and present data collected during the activities. The investigation report outline is presented in RCRA Permit Appendix 7.3 (Investigation Report). The Permittee will be required to submit a revised Closure Plan for SWMU 65 after the landfill cells are delineated and the site investigation is completed and approved. Acknowledge the requirement in the response letter.

Comment 8

The Permittee references several times in the Work Plan “validated laboratory analytical data” regarding the collection and use of data collected during the planned field investigation. The Permittee must ensure that the methods used to collect the soil samples are appropriate. Soil collection methodology and methodology for determining sample locations must be specified. Laboratory validations is not a substitute for this. Laboratory data validation will not compensate for improper or biased sample collection. No response required.

Comment 9

In Section 2.3.4 (Surface Geophysical Survey) the Permittee states, “[t]he survey will consist of electromagnetic conductivity methods to delineate the horizontal extent of fill material and position borings to be drilled to assess depth and thickness of waste materials in disposal trenches throughout the landfill. Figure 4 shows the area to be surveyed.” According to Figure 4, northern extent of the proposed geophysical survey area is limited by the SWMU 65 boundary. However, Section 2.1.5.3 (Data Gaps) states that the northern boundary of SWMU 65 has not been confirmed. If disposal cells that extend beyond the northern boundary of SWMU 65 are identified, the survey area must also be extended further to the north beyond the SWMU boundary, to delineate all potential cells. Include the provision in the revised Work Plan.

Comment 10

It appears that the purpose of collecting geotechnical samples as proposed in Section 2.3.6 (Geotechnical Assessment of Landfill Cover Material) is to determine the properties of the existing landfill “cover” to determine its suitability as a cover. However, since the Permittee allowed vegetation to grow and penetrate through the soils placed as cover for the landfill trenches and subsidence has occurred, the landfill cover has been compromised. In Section 2.3.4 (Surface Geophysical Survey), the Permittee states, “[o]ver the years, a large amount of

vegetation has established on the landfill surface including large mesquite and creosote trees and shrubs (see Appendix H photo log).” The Permittee is required to install a RCRA Subtitle C landfill cover, as noted by NMED in the August 20, 2011 Disapproval for the Closure Plan; therefore, the collection of geotechnical samples is irrelevant. Remove proposed geotechnical sampling from the revised Work Plan.

Comment 11

In Sections 2.3.7.1 (Surface Waste Pile Investigation), 2.3.7.2 (Lithologic Conditions Investigation), 2.3.7.3 (Landfill Soil Gas Boring Investigation), 2.3.7.4 (Former Scrap Yard Subsurface Investigation), and 2.3.7.5 (Disposal Cell Leachate Evaluation) the Permittee states, “[s]oil samples will be submitted to the laboratory for perchlorate, explosive compounds, PCBs, dioxins/furans, VOCs, SVOCs, TPH-GRO, TPH-DRO, TAL metals, hexavalent chromium, cyanide, and asbestos analyses.” In addition to the proposed analytical suite, include nitrate analysis in the revised Work Plan. Section 2.3.8 (Soil Analytical Methods) also must be revised to incorporate the change.

Comment 12

In Section 2.3.9.1 (Monitoring Well Installation Procedures), the Permittee states, “[t]he well will be installed in a borehole advanced using the air-rotary casing hammer (ARCH) drilling method. This method facilitates lithologic description of drill cuttings and allows for the observation of soil moisture content to identify groundwater zones.” The ARCH drilling method pulverizes soil cuttings and prevents the ability to observe details in soil cores such as presence or absence of fractures and exact locations of visual stains. Undisturbed soil cores characterize the subsurface conditions more accurately and such information can maximize the effectiveness of remediation, as necessary later on. Propose the use of split-barrel samplers to collect undisturbed soil cores at 2.5 feet intervals in accordance with Permit Appendix 5, Section 5.2.2.b.ii. Blow counts must be recorded during advancement of the sampling devices to gather geotechnical data in the revised Work Plan.

Comment 13

In Section 2.3.9.1 (Monitoring Well Installation Procedures), the Permittee states, “[n]o soil samples will be collected for laboratory analysis, with the exception of waste characterization.” Soil samples must be collected from the unsaturated zone where the highest PID reading is recorded, at the groundwater interface, and at the bottom of the boring. The analytical suite for the soil samples must be consistent with other soil samples (perchlorate, explosive compounds, PCBs, dioxins/furans, VOCs, SVOCs, TPH-GRO, TPH-DRO, TAL metals, hexavalent chromium, cyanide, asbestos, and nitrate analyses). Revise the Work Plan accordingly.

Comment 14

In Section 3.1 (Data Quality Objectives) the Permittee states, “[an input to determine whether the site is appropriate for closure and post-closure care] is validated laboratory analytical results from planned soil samples and comparisons to screening criteria in accordance with (1)

Risk Assessment Guidance for Site Investigations and Remediation, Appendix C, Tables C-1 through C-6, Tier 1 Toxicity Reference Values and Ecological Screening Levels and Tier 2 Toxicity Reference Values (NMED, 2017) and (2) EPA Regional Screening Levels for residential use scenario for hazard index equal 1.0 for non-carcinogens and 10⁻⁵ cancer risk level for carcinogens (EPA, 2017).” Note that the majority of soil samples will be collected below depth of ten feet bgs at the site. Therefore, soil screening levels that address potential for migration of contaminants from soil to groundwater are more appropriate for risk evaluation in most cases. Revise the Work Plan to include risk evaluation for migration of contaminants from soil to groundwater. In addition, the NMED guidance has been updated. Use the most recent NMED risk assessment guidance.

Comment 15

In Section 3.1 (Data Quality Objectives) the Permittee states, “[g]eophysical surveys will implement the appropriate technology to detect metal objects, non-metallic wastes, and debris to determine the location of disposal cells to better position soil borings and soil samples beneath waste materials, as well as to confirm landfill boundaries.” Clarify whether the surveys will determine both lateral and vertical extent of disposal cells. If the survey is not capable of determining vertical extent, explain how the depth of angled borings will be appropriately advanced to the bottom of cells in the revised Work Plan.

Comment 16

In Section 3.1 (Data Quality Objectives) the Permittee states, “[i]nput parameters for development of the HELP model will rely on current and previous investigation information and known source information and data.” The previous data collected during the Phase III Investigation and groundwater monitoring events must not be used for HELP model input because it evaluates appropriateness for closure (see Comments 1 and 2). This comment serves as a reminder; no response necessary.

Comment 17

In Section 4.3 (Investigation-derived Waste Plan) the Permittee states, “Table 14 summarizes the proposed schedule of project activities.” Table 14 (SWMU 65 Phase IV RFI Proposed Schedule of Activities) presents anticipated start dates which must be revised. Remove the dates from the revised table, as appropriate.