



Certified Mail - Return Receipt Requested

July 19, 2022

George H. Cushman
Headquarters, Department of the Army
Office of the DCS, G-9
Army Environmental Office, Room 5C140
600 Army Pentagon
Washington, DC 20310-0600

**RE: DISAPPROVAL
2023 INTERIM NORTHERN AREA GROUNDWATER MONITORING PLAN
FORT WINGATE DEPOT ACTIVITY
MCKINLEY COUNTY, NEW MEXICO
EPA ID# NM6213820974
HWB-FWDA-22-001**

Dear Mr. Cushman,

The New Mexico Environment Department (NMED) is in receipt of the Fort Wingate Depot Activity (FWDA or Permittee) *2023 Interim Northern Area Groundwater Monitoring Plan (Plan)*, dated April 2022. NMED has reviewed the Report, and hereby issues this Disapproval with the following comments.

GENERAL COMMENTS

1. Objectives of the Plan

NMED Comment: Section 1.3 (Purpose), page 3 of 71, provides the objectives of the interim groundwater monitoring; however, it does not state the objectives of the plan itself, as described in Permit Section V.A.4. As a result, the Plan lacks the necessary details (e.g., proposed changes to the previous plans) required by the Permit; rather, it provides trivial details that appear to be irrelevant to the objectives of the Plan. For example, Section 2.2 (Previous Investigations) and its subsections (Section 2.2.1 through Section 2.2.27) provide approximately 20 pages of the description regarding previous investigations conducted at each SWMU and AOC. More than 30 percent of the text of the Plan discusses details

regarding previous investigations. Such details are unnecessary for the purpose of the plan. Although Section 7.0 (Sampling Changes from Previous Plan) briefly discusses proposed changes to the previous monitoring and sampling plan, it lacks details, and the discussion is not sufficient. The Permittee must present all proposed changes to the previous plan and provide the basis for each proposed change requested by the Permittee or required by NMED. Relevant correspondence must be referenced for all proposed changes required by NMED. Comment 32 of the NMED's July 27, 2020 *Disapproval* also states, "Table 5-2, Northern Area Groundwater Sampling Matrix, and the text of the Plan lack an explanation for the changes made to the Plan (e.g., inclusion or exclusion of new or existing wells and analytical suite). The revised Plan must include a section that summarizes all changes made to the previous sampling matrix. If the change was directed by NMED, provide a reference to the direction. If the change is proposed by the Permittee, provide a basis or the proposed change." This direction was not adequately followed. Revise the Plan to include more detail for the proposed changes from the previous plans and remove unnecessary information.

2. Proposed Changes to the Plan

NMED Comment: The following issues regarding the proposed changes were identified in the Plan. Resolve the issues in the revised Plan.

- a) The nitrite concentrations in groundwater samples collected from wells MW27, MW35, and MW59 may have been reported inaccurately. Propose to split the nitrite samples collected from the wells and use two different analytical laboratories to conduct nitrite analysis in the revised Plan, as appropriate.
- b) The Permittee recommended conducting additional groundwater sampling and analysis of herbicides for wells MW36S, BGMW13D, and BGMW07 in the May 6, 2022 letter. However, herbicide analysis was not proposed for wells MW36S and BGMW13D in the Plan. Propose to conduct herbicide analysis for these wells in the revised Plan.
- c) Propose to conduct pesticides analysis for the groundwater samples collected from wells TMW40S and TMW52, as required by Comment 53 of the NMED's January 25, 2022 *Disapproval*.
- d) Comment 38 of the NMED's January 25, 2022 *Disapproval* states, "[p]ropose to conduct TPH-DRO and TPH-GRO analyses for the groundwater samples collected from all new wells." Although it appears that this comment was addressed, the

discussion was not included in the Plan. Indicate where this comment was addressed in the revised Plan.

- e) Comment 49 of the NMED's January 25, 2022 *Disapproval* states, "[p]ropose to conduct SVOC analysis for the groundwater samples collected from all wells where TPH-DRO was detected." Propose to conduct semi-volatile organic compounds (SVOCs) analysis for all applicable wells and indicate where this comment was or is addressed in the revised Plan.
- f) Comment 54 of the NMED's January 25, 2022 *Disapproval* states, "propose to conduct chloride/sulfate analysis for the groundwater samples collected from all pertinent wells where such evaluation is relevant and potentially feasible." Propose to conduct the analysis for all applicable wells and indicate where this comment was or is addressed in the revised Plan.
- g) Comment 17 of the NMED's July 1, 2020 *Disapproval* states, "propose to collect groundwater samples from wells TMW06, TMW07, TMW10, TMW21 and TMW46 for TPH-DRO analysis." Although it appears that this comment was addressed, the discussion was not included in the Plan. Indicate where this comment was or is addressed in the revised Plan.
- h) Comment 27 of the NMED's July 1, 2020 *Disapproval* states, "[p]ropose to collect groundwater samples from wells TMW06, TMW07, and TMW21 for TPH-GRO analysis." Although it appears that this comment was addressed, the discussion was not included in the Plan. Indicate where this comment was or is addressed in the revised Plan.
- i) Well MW27 appears to be the only well where 1,4-dioxane analysis was proposed in 2023. Provide a justification for the proposed change to the 1,4-dioxane analysis in the revised Plan.
- j) Comment 1 of the NMED's August 3, 2021 letter states, "[p]ropose to conduct PFAS analysis for the groundwater samples collected from the pertinent wells." Since this comment was not addressed, propose to conduct the analysis for all applicable wells and indicate where this comment was or is addressed in the revised Plan.

SPECIFIC COMMENTS

3. Section 1.5, Document Organization, lines 23-24, page 6 of 71

Permittee Statement: "Section 2 presents the available site history and general description of FWDA and summarizes previous groundwater investigations."

NMED Comment: Section 2.2 and its subsections present a summary of previous soil and groundwater investigations conducted in each SWMU and AOC in a chronological manner with the Permittee's recommendations made after the investigations and NMED's responses. Although Section 2.2 and its subsections were reviewed, the accuracy of the statements was not verified with actual references because the details were not relevant to the Plan. The pertinent sections must provide a general description of site history and previous groundwater investigations; however, the comprehensive description of site history and previous investigations discussed in the Plan is unnecessary. Remove irrelevant details from the revised Plan.

4. Section 2.1, General Facility Description, lines 35-37, page 7 of 71

Permittee Statement: "Figure 2-2 shows the locations of various buildings and SWMUs and AOCs throughout the Northern Area of the installation."

NMED Comment: Figure 2-2 was not included in the Plan. Include Figure 2-2 in the revised Plan.

5. Section 2.3, Semiannual RCRA Groundwater Monitoring Reports and Updated Groundwater Monitoring Plans - Ongoing, lines 15-17, page 28 of 71

Permittee Statement: "Detected concentrations of other anions (fluoride, sulfate, chloride, and phosphate) are associated with hard water and brackish groundwater conditions observed at FWDA."

NMED Comment: Since the evaluation of background groundwater conditions has not been approved, it is not appropriate to conclude that the detection of anions is a result of natural conditions. Remove the unsupported statement from the revised Plan.

6. Section 2.3, Semiannual RCRA Groundwater Monitoring Reports and Updated Groundwater Monitoring Plans - Ongoing, lines 29-31, page 28 of 71

Permittee Statement: "Toluene had two cleanup level exceedances and benzene has had one exceedance. Toluene and benzene may have been associated with previous fuel releases and are now detected at concentrations less than cleanup levels."

NMED Comment: 1,2-dichloroethane, carbon disulfide, 1,4-dioxane, toluene, and vinyl chloride are listed as volatile organic compounds (VOC) whose concentrations exceeded the applicable screening levels in the same section, lines 36-37, page 27 of 71. Since the statement indicates that benzene also exceeded the applicable screening level, resolve the discrepancy in the revised Plan.

7. Section 3.4.4, Northern Area Alluvial Groundwater System, lines 28-31, page 35 of 71

Permittee Statement: "A video survey of Well 69 was performed in June 2019 to provide a visual observation of the interior of the well casing to assess possible deterioration and leaking. The video survey showed thick mineral deposits along the well casing, which made it difficult to assess the condition of the well casing."

NMED Comment: The Permittee submitted the June 15, 2022 *Final Work Plan to Abandon and Plug Artesian Wells #68 and #69*. The referenced work plan must be approved by the New Mexico Office of the State Engineer. The well abandonment report must be submitted to NMED within ninety (90) calendar days of completion of the field activities. No revision is required to the Plan.

8. Section 3.4.5, Northern Area Bedrock Groundwater System, lines 10-14, page 36 of 71

Permittee Statement: "The upper sandstone unit is evaluated by monitoring well TMW40D. The remaining bedrock monitoring wells are completed in the lower sandstone unit which is separated from the upper by a thick sequence of shale. A third water-bearing sandstone unit is assumed since groundwater from well BGMW08 was measured at 100 feet lower than those of other bedrock wells."

NMED Comment: The Permittee's May 6, 2022 *Final Northern Area Groundwater RCRA Facility Investigation Report, Army's Response to the New Mexico Environment Department Letter of Disapproval dated January 25, 2022* states, "[f]or consistency, the terminology 'Bedrock 1/upper bedrock aquifer was changed to the Bedrock Aquifer 1 (BR1), thru-out [and] BR1 is defined by thickness and laterally discontinuous water bearing zone without

sustainable water production.” The designation of the sandstone units must be consistent. Well TMW40D was screened in the BR2 that are equivalent to the lower sandstone unit according to the referenced report. Revise the statement for consistency and accuracy.

9. Section 3.5, Nature and Extent of Groundwater Contamination, lines 1-2, page 37 of 71

Permittee Statement: “Figure 3-1 and Figure 3-2 present the alluvial and bedrock groundwater elevations generated from the October 2019 water level measurement event.”

NMED Comment: Since the Plan proposes groundwater monitoring and sampling plans for year 2023, it is necessary to use the most recent data that were approved by NMED. The July through December 2020 groundwater monitoring report was approved by NMED on April 5, 2022; therefore, the data included in the 2020 report must be used. If the October 2019 data is sufficient for the purpose of this discussion, provide a justification for using the older data in the response letter.

10. Section 3.6, Fate and Transport of Contamination in Groundwater, lines 14-18, page 39 of 71

Permittee Statement: “Alluvial groundwater in the northern Administration Area and Workshop Area is present in a depression formed by the downward dip of largely impermeable claystone bedrock. Southeast of the Workshop Area, communication between the bedrock and alluvial aquifers create a direct pathway between both units. In the Northern Area, alluvium overlies claystone aquitards.”

NMED Comment: Although NMED agrees with the presence of claystone between the alluvial and bedrock aquifers at the site, the claystone layer is not impermeable. The site contaminants (e.g., nitrate) have migrated vertically from the alluvial to the bedrock aquifer. Revise the statement for accuracy.

11. Section 3.7, Exposure Pathways for Human and Ecological Receptor, lines 34 through 38, page 39 of 71 and lines 1 through 10, page 40 of 71

NMED Comment: Although the title of Section 3.7 indicates that discussion regarding exposure pathways for ecological receptor was provided, they were not provided in the text of Section 3.7. Include the discussion in the revised Plan or revise the title of Section 3.7.

12. Section 4.2, Groundwater Sampling, lines 3-5, page 42 of 71

Permittee Statement: “Low-flow purging and sampling is the preferred method at FWDA, in accordance with the NMED guidance document on low-flow sampling titled Use of Low-Flow and Other Non-Traditional Sampling Techniques for RCRA Compliant Groundwater Monitoring (NMED-HWB, 2001).”

NMED Comment: According to Table 4-1 (Northern Area Groundwater Purge Method), many wells are not purged using the low-flow method even though it is the preferred method. Presumably, the wells do not produce enough water to use the low-flow method; however, the wells that are purged with high-volume capacity pumps (MW23, MW24, TMW16, TMW18, TMW19, TMW36, and TMW37) may be appropriate for the low-flow purge method. Evaluate the potential for use of the low-flow method for the wells where high-volume capacity pumps are currently used and provide a discussion in the revised Plan.

13. Section 4.2.2.1, Traditional Low-Flow and ZIST Low-Flow Dedicated Pumps, lines 28-29, page 46 of 71, and Section 4.2.4, Alternative Groundwater Purging and Sampling Procedures, line 40, page 47 of 71

Permittee Statements: “All measurements will be obtained using a field-parameter monitoring instrument with a transparent flow-through cell that prevents air bubble entrapment in the cell.”

and,

“Prior to purging, an additional DO measurement with a downhole probe will be collected on all wells without a dedicated pump.”

NMED Comment: The data for water quality parameters other than dissolved oxygen (DO) appear to be collected by a flow-through cell rather than a downhole probe. Comment 2 of the NMED’s July 6, 2021 letter states, “NMED agrees that in-situ DO measurement using downhole probes is more effective and accurate. Propose to use downhole probes for water quality measurements, where applicable, in future groundwater monitoring plan update.” Propose to use downhole probes for the measurement of all water quality parameters, where applicable, or explain why DO is the only water quality parameter measured using a downhole probe in the revised Plan.

14. Section 4.2.4.1, Disposable Bailers, lines 30-32, page 48 of 71

Permittee Statement: “To filter groundwater samples for dissolved metals and/or perchlorates analysis, use a hand pump filter or run water through a peristaltic pump with dedicated tubing and in-line filter or use a clean disposable syringe and filter.”

NMED Comment: Three different filtering methods are proposed for collection of dissolved metals and/or perchlorate analysis. Explain the criteria/conditions dictating which particular filtering method is selected in the revised Plan. In addition, explain which method is used for each well in the revised Plan.

15. Section 5.1, Interim Groundwater Monitoring Analytical Program, lines 30-32, page 56 of 71

Permittee Statement: “USACE is currently evaluating options to achieve lower LOQs for the remaining few compounds using enhanced analytical procedures as documented in a NMED approval letter dated May 21, 2019 (NMED, 2019b).”

NMED Comment: The April 13, 2022 email from Mr. Ben Wear of NMED to Mr. George Cushman of FWDA states, “submit a formal report, which details the data you have collected and includes all information provided by the analytical laboratories, to NMED for review no later than **July 29, 2022.**” Although this information is not required to be included in the Plan, the Permittee must submit the required document no later than **July 29, 2022.** This comment serves as a reminder.

16. Section 5.2, Monitoring Location and Frequency, lines 13-15, page 58 of 71

Permittee Statement: “Once additional bedrock aquifer background monitoring wells are installed, interim monitoring will be conducted to collect additional data to support background evaluations.”

NMED Comment: It is not clear whether the Permittee will propose to install more bedrock background monitoring wells for the purpose of collecting additional data to support background evaluations. Provide a clarification in the response letter. If additional background monitoring wells are necessary to support background evaluations, propose to submit a work plan to install these wells in the revised Plan.

17. Section 5.2.1, Northern Area Alluvial Groundwater Monitoring Design, Explosives Plume, lines 35-36, page 58 of 71 and lines 1-2, page 59 of 71

Permittee Statement: "To monitor suspected [explosive compounds] releases from SWMU 27 (Building 528 Complex), wells TMW01, TMW31S, and TMW41 are designated for explosives analysis even though they are hydraulically upgradient of SWMU 1."

NMED Comment: According to Table 5-2 (Northern Area Groundwater Sampling Matrix), explosive compounds analysis was not proposed for wells TMW01, TMW31S, and TMW41. Revise Table 5-2 to propose explosive compounds analysis for the wells in the revised Plan.

18. Section 5.2.1, Northern Area Alluvial Groundwater Monitoring Design, Metals Monitoring, lines 13-15, page 59 of 71

Permittee Statement: "Monitoring wells along the outside edges of the monitoring network are selected to provide data that could be used to monitor potential contaminant migration [for metals]."

NMED Comment: According to Table 5-2, metals analyses are proposed for groundwater samples collected from all monitoring wells. However, the statement indicates that metals analyses are only proposed for wells along the outside edges of the monitoring network. To clarify, metals analyses must be conducted for all wells unless the changes are proposed and approved by NMED. Remove the statement from the revised Plan.

19. Section 5.2.1, Northern Area Alluvial Groundwater Monitoring Design, Other Organics Monitoring, lines 21-25, page 59 of 71

Permittee Statement: "The points of release for the SVOCs in the Northern Area include SWMU 6 (Building 11, former Locomotive Shop) and SWMU 45 (Building 6 Gas Station). There are no groundwater SVOC plumes identified at FWDA; however, wells MW20, MW22D, TMW33, and TMW46 are designated to monitor suspected releases of petroleum fuels at SWMU 6 and known releases of fuels at SWMU 45 (Figure 3-8)."

NMED Comment: According to Table 5-2, SVOCs analysis was not proposed for wells MW20, MW22D, TMW33, and TMW46. Revise Table 5-2 to propose SVOCs analysis for the wells or explain the basis for excluding the analysis in the revised Plan. In addition, SVOCs may be detected as degradation products of explosive compounds. Propose to conduct SVOCs analysis for all wells designated for monitoring explosive compounds in the revised Plan.

20. Section 5.2.1, Northern Area Alluvial Groundwater Monitoring Design, Other Organics Monitoring, lines 29-30, page 59 of 71

Permittee Statement: “The GRO releases are monitored by wells MW01, MW02, MW03, MW18D, MW20, MW22D, and TMW33.”

NMED Comment: According to Table 5-2, total petroleum hydrocarbon gasoline range organics (TPH GRO) analysis was not proposed for well MW03. Revise Table 5-2 to propose TPH GRO analysis for well MW03 in the revised Plan.

21. Section 5.2.2, Northern Area Bedrock Groundwater Monitoring Design, Perchlorate Plume, lines 13-14, page 60 of 71

Permittee Statement: “To monitor the [perchlorate] plume boundary wells TMW32, TMW36, TMW38, TMW39D, and TMW40D are designated as downgradient wells.”

NMED Comment: According to Table 5-2, perchlorate analysis was not proposed for wells TMW36 and TMW38. Revise Table 5-2 to propose perchlorate analysis for the wells in the revised Plan.

22. Section 5.2.2, Northern Area Bedrock Groundwater Monitoring Design, Other Organic COPCs Monitoring, lines 20-21, page 60 of 71

Permittee Statement: “Suspected [SVOCs] releases will be monitored by wells TMW14A and TMW16 located downgradient in the western portion of the Workshop Area (Figure 3-13).”

NMED Comment: According to Table 5-2, SVOCs analysis was not proposed for wells TMW14A and TMW16. Revise Table 5-2 to propose SVOCs analysis for the wells in the revised Plan. In addition, SVOCs may be detected as degradation products of explosive compounds. Propose to conduct SVOCs analysis for all bedrock wells designated to monitor explosive compounds in the revised Plan.

23. Section 5.3.2, Analytical Data Quality Requirements, Sensitivity, DL [(Detection Limit)], lines 10-12, page 63 of 71

Permittee Statement: “A DL may be used as the lowest concentration for reliably reporting a detection of a specific analyte in a specific matrix with a specific method with 99% confidence.”

NMED Comment: Neither the Instrument Detection Limit (IDL), nor the Method Detection Limit (MDL), can be used as the lowest concentration to report detection/non-detection of an analyte. However, the reporting limit (RL), limit of detection (LOD), practical quantitation limit (PQL), or limit of quantitation (LOQ) may be used as the lowest concentration to report a detection/non-detection. Revise the statement for clarity.

24. Section 7.0, Sampling Changes from Previous Plan, lines 7-10, page 66 of 71

Permittee Statement: "Starting in 2023, these wells [installed in 2019 and 2020] will only be sampled for analytes based upon neighboring wells and proximity towards known contaminant plumes and if they had any detections of other analytes during the initial four sampling events. The revised analytical program is listed in Table 5-2 with highlights pertaining to the changes for 2023."

NMED Comment: Since the data that supports the absence of analytes in the wells where analyses are proposed to be removed is not provided or discussed, the appropriateness of the proposed removal has not been demonstrated. The Permittee must evaluate the analytical data for each well where removal of the analyses is proposed and discuss its basis in the revised Plan (see Comment 1). For example, herbicides, PCB, and pesticides analyses conducted in wells BGMW11 and BGMW12 in 2022 are proposed to be removed according to Table 5-2 of the Plan. However, the basis for the proposed changes are not discussed in the Plan. The discussion must include (1) the detection/non-detection of analytes, (2) the exceedance of the screening levels, if any, (3) the presence of data quality exceptions, if any, and (4) the number of the sampling events used for the evaluation of proposed changes. The basis for all proposed changes must clearly be stated in the revised Plan. Note that the proposed changes are subject to NMED's approval and must not be implemented without an approval of the Plan.

25. Section 7.0, Sampling Changes from Previous Plan, lines 11-14, page 66 of 71

Permittee Statement: "Wells which have been non-detect for a given analyte group in four or more of the most recent sampling events (except for VOCs) are proposed for removal of that analytical group from the well, unless the well is in proximity to an existing plume for that analyte group. No changes are proposed for VOCs or metals analyses."

NMED Comment: The basis for the proposed changes in analytical suite in each well must be discussed in detail. For example, TPH diesel range organics (DRO) analysis was proposed to be removed from the analytical suite for well MW03 according to Table 5-2; however, all reported non-detect concentrations exceeded the applicable screening level in well MW03;

therefore, the data is considered as a data quality exception and the absence of TPH DRO in the samples collected from well MW03 has not been demonstrated. As such, TPH DRO analysis for MW03 must be continued in 2023. The proposed changes for each well must be discussed for NMED's evaluation and approval in the revised Plan.

26. Table 5-2, Northern Area Groundwater Sampling Matrix, pages T5-3; 1 through 7

NMED Comment: Some issues are identified in Table 5-2. Resolve the following issues in the revised Plan.

- a) Section 5.2.1 (Northern Area Alluvial Groundwater Monitoring Design, Nitrate and Nitrite Plume) states that all wells sampled for nitrate and nitrite will also be sampled for additional major anions to include chloride, fluoride, sulfate, phosphate, and bromide starting in 2021. Although Table 5-2 includes major anions as one of the analytical parameters, each analyte included in major anions is not identified in the table. Identify all analytes included in major anions (e.g., nitrate, nitrite, chloride, fluoride, sulfate, phosphate, and bromide) in the footnote of the revised Table 5-2.
- b) Although the revised 2022 Plan included pesticides analysis for multiple wells, Table 5-2 does not propose pesticides analysis for any well. Provide an explanation for the removal of pesticide analysis in 2023 in the revised Plan.

The Permittee must submit a revised Plan that addresses all comments contained in this letter. Two hard copies and an electronic version of the revised Plan must be submitted to the NMED. The Permittee must also include a redline-strikeout version in electronic format showing where all revisions to the Plan have been made. The revised Plan must be accompanied with a response letter that details where all revisions have been made, cross-referencing NMED's numbered comments. The revised Plan must be submitted to NMED no later than **September 7, 2022**.

Mr. Cushman
July 19, 2022
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Should you have any questions, please contact Michiya Suzuki of my staff at (505) 690-6930.

Sincerely,

Rick Shean

Digitally signed by Rick
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Rick Shean
Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
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