



DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF, G-9
600 ARMY PENTAGON
WASHINGTON, DC 20310-0600

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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 Groundwater Periodic Monitoring Report, January through June 2020, Disapproval HWB-FWDA-21-001, Army's Responses, Fort Wingate Depot Activity, McKinley County, New Mexico. EPA# NM6213820974

Dear Mr. Maestas:

This letter provides responses to the comments issued in the Disapproval Letter, Final Groundwater Periodic Monitoring Report, January through June 2020, from the New Mexico Department (NMED), dated July 15, 2021, HWB-FWDA-21-001. In addition to the comment response provided in this letter, two (2) hard copies and one (1) electronic (CD) copy of the revised Report is enclosed for your review and consideration. The electronic transmittal includes a redline-strikeout version of the above-mentioned report, showing where all revisions to the report were made.

COMMENTS

1. **NMED Comment:** The Report contains inaccuracies and discrepancies. Examples are listed as follows:

- a. **Section 5.2.4, Volatile Organic Compounds, lines 29-32, page 5-3:** The Permittee states, "groundwater contamination from volatile organic compounds (VOCs) at concentrations above groundwater screening values is limited to a small number of shallow alluvial monitoring wells (TMW33, TMW35, TMW08, MW20, MW18D, MW01) in the Administration Area." However, According to Table 5-5, Summary of VOC Analytical Results, the VOC concentrations in the groundwater samples collected from wells TMW35, TMW08, MW20, and MW01 did not exceed the applicable screening levels. Resolve the discrepancy in the revised Report.

Permittee Response: Concur: Wells TMW35, TMW08, MW20 and MW01 were removed. The sentence in Section 5.2.4, Page 5-3, Lines 29-31 now reads:

"Groundwater contamination from volatile organic compounds (VOCs) at concentrations above groundwater screening values is limited to two shallow alluvial monitoring wells (TMW33 and MW18D) in the Administration Area."

- b. **Section 5.3, Variances from the Work Plan, lines 25-26, page 5-5:** The Permittee states, "All analytical and data quality methods and procedures for the October 2019 sampling event were performed in accordance with the QSM

(DoD/DoE, 2019)." This Report summarizes the sampling event conducted in April 2020. Correct the typographical error in the revised Report.

Permittee Response: Concur: the typographical error was changed from "October 2019" to "April 2020" in Section 5.3, Page 5-5, Line 27.

- c. **Section 6.0, Summary, lines 28-29, page 6-1:** The Permittee states, "nitrate, perchlorate, explosives, TPH-DRO, one VOC, and metals were detected in groundwater samples at concentrations above the selected groundwater screening values." However, Section 5.2.5, Other Organic Compounds, lines 18-19, page 5-4, states, "one SVOC was detected above the respective screening level during this reporting period; bis(2-Ethylhexyl) phthalate was detected at 41 µg/L in monitoring well TMW07." The exceedance of the SVOC screening level is not included in the statement. Resolve the discrepancy in the revised Report.

Permittee Response: Concur: the statement was revised to include the SVOC detection, and now reads in Section 6.0, Page 6-1, Lines 28-29

"Nitrate, perchlorate, explosives, TPH-DRO, one VOC, one SVOC, and metals were detected in groundwater samples at concentrations above the selected groundwater screening values."

- d. **Figure 4-1, Northern Area Alluvial Groundwater Contour Map-January 2020 and Figure 4-2, Northern Area Alluvial Groundwater Contour Map-April 2020:** Although Table 4-1, Northern Area Groundwater Elevations, page 10 of 38, appropriately retains well TMW02 as an alluvial well, Figures 4-1 and 4-2, which present alluvial groundwater contour maps, do not depict well TMW02. Revise the figures to Include well TMW02 in the revised Report.

Permittee Response: Comment Noted. The Well TMW02 has been added to alluvial groundwater contour Figures 4-1 and 4-2 and removed from the bedrock groundwater elevation Figures 4-3 and 4-4.

- e. **Figure 4-3, Northern Area Bedrock Groundwater Elevation Map - January 2020 and Figure 4-4, Northern Area Bedrock Groundwater Elevation Map - April 2020:** Although Table 4-1, Northern Area Groundwater Elevations, page 10 of 38, appropriately retains well TMW02 as an alluvial well, Figures 4-3 and 4-4, which present bedrock groundwater elevations, depict well TMW02. Since well TMW02 is screened in the alluvial aquifer, revise the figures to remove well TMW02.

Permittee Response: Comment Noted: Per NMED's request, Well TMW02 was removed from the bedrock groundwater elevation figures 4-3 and 4-4 and was added to alluvial groundwater contour Figures 4-1 and 4-2.

- f. **Table 4-1, Northern Area Groundwater Elevations, page 25 of 38:** According to Table 4-1, the groundwater elevation in well TMW54 is recorded as 6,664.28 feet as measured in April 2020. Since the ground surface elevation and total depth of the well are recorded as 6,708.77 feet and 40.0 feet, respectively, the elevation of the total depth of the well is 6,668.77 feet, which is 4.49 feet higher than the measured groundwater elevation of 6,664.28 feet. Provide an explanation for the discrepancy in the response letter or correct the error.

Permittee Response: Comment Noted. The well was resurveyed on January 29, 2021, to fix an initial survey error of the monument, and there was a construction modification that did not take into account an additional 1.4' of depth. Tables 2-1

and 4-1 have been revised to reflect the correct survey height and TD of 41.4’.

g. **Table 5-6, Summary of TPH and SVOC Analytical Results, page 8 of 10:**

According to Table 5-6, the TPH-GRO concentration in the groundwater sample collected from TMW30 on April 24, 2020 is recorded as < 10 µg/L. However, according to Table 2-2, Northern Area Groundwater Sampling Matrix, TPH-GRO is not included in the analytical suite required for well TMW30. Explain why well TMW30 was sampled for TPH-GRO in April 2020 or correct the typographical error in the revised Report.

Permittee Response: The Well TMW30 was not supposed to be sampled for TPH-GRO, but an error on printing the chain of custody (COC) in the field resulted in a box ‘checked’ for TPH-GRO, and the field staff believed the COC was correct and added the sample bottles for that analyte. Future events will include additional verification of pre-printed COCs versus sample requirements to ensure accuracy.

The error was added to the variances Section 5.3, Page 5-5, Lines 24-26 and states:

“Monitoring Well TMW30 was sampled for TPH-GRO, and although the result was non-detect, this well was not supposed to be sampled for TPH-GRO. An error on the COC form led the field team to collect the extra sample.”

2. **NMED Comment:** A hard copy of the Report contains multiple pages where fonts were distorted and illegible. While the electronic copy of the Report does not have this issue, the Permittee must ensure that all future submittals, both hard copy and electronic, are legible.

Permittee Response: Concur: All future submittals (hardcopy and electronic) will get a complete visual inspection from cover to cover to ensure legibility.

3. **NMED Comment:** The Permittee provided large quantities of data with no indication where to locate a specific sample within a specific analytical laboratory report. NMED previously provided comments to the Permittee on multiple occasions regarding this issue. For example, NMED's November 7, 2018 Disapproval Final Permittee-initiated Interim Measures Report Parcel 6, Revision 1 (Disapproval) states:

For every document that includes analytical data, provide a link for each specific sample to a specific lab report filename (if multiple files are provided) or to a page number in the appendix where the specific lab report can be found (if multiple lab reports are combined into one large file). For Appendices C and F, the lab reports are indexed by lab report number. The Permittee must provide a link to the lab report number for each analyte. For Appendix J, no indexing is provided, and multiple laboratory reports are combined. The Permittee must either provide indexing for each report and indicate which particular report contains a particular sample or provide specific page numbers for each sample ID that indicates where the sample can be found in the lab reports. This information can be provided either in a new table or in the analytical data electronic database.

In addition, although Section 2.3, Data Management Validation, lines 31-32, page 2-3, states, "results were subjected to 100% Level II and 10% Level III validation using the ADR software", the laboratory reports included in Appendix D-2, EMAX Electronic Data Deliverables, appear to be level IV reports (e.g., inclusion of chromatograms). The

Permittee has previously been directed to not submit level IV analytical laboratory reports. NMED's November 7, 2018 Disapproval also states:

The Report includes Level IV reports from the analytical laboratories. This has resulted in over 18,000 pages of laboratory reports for this Report. These reports are unneeded and cumbersome. NMED requests that only Level II analytical laboratory reports be included in all submittals. Revise the Report by removing Level IV analytical reports and including Level II analytical reports.

Remove all of the Level IV analytical reports from the revised Report and replace them with Level II analytical reports. Once the Level II reports are provided, the Permittee must provide a link for each specific sample to a specific laboratory report per the quoted comment. This is a requirement for all data submitted in all reports. Provide a table including, or revise the data tables to include, this information in the revised Report.

Permittee Response: Please note that although NMED only requires level II data analysis, the Army and USACE regulations/policy require that we use Level III and Level IV data. Considerable effort is made to manually remove the excess pages, but the current laboratory included chromatograms in their level II data. The Army has now manually removed these chromatograms pages as well, and is working with the lab to streamline this process going forward. A Table of Contents listing all the wells with links to the relevant lab report and a page listing is now provided in the beginning of Appendix D-2.

4. **Permittee Statement:** "six were dry in April 2020 (FW35, MW18S, and MW22S from the existing wells, and TMW54, TMW56, and TMWG0 from the 32 new wells). These wells were considered dry since the measured water level was less than six inches from the bottom of the well screen."

NMED Comment: According to Table 4-1, Northern Area Groundwater Elevations, page 25 of 38, the groundwater elevation in well TMW56 is recorded as 6,657.28 feet during the April 2020 measurement. Since the ground surface elevation and total depth of the well are recorded as 6,705.44 feet and 50.0 feet, respectively, the elevation of the total depth is calculated as 6,655.44 feet, which indicates the presence of 1.84 feet of water in the well. Provide an explanation for why this well is considered "dry" when the data indicate that more than six inches (1.84 feet) of water was present. Revise all relevant sections, tables, and figures of the Report, as appropriate.

Permittee Response: Please note that Well TMW56 did have 1.85' of water during gauging, but once the well was purged for sampling the water did not recharge during the remainder of the field event. The purge log for TMW56 in Appendix B reflects the lack of water for sampling and the determination of "dry". To better reflect the reasoning of calling the well dry, the statement was revised to be more accurate in Section ES, Page ES-1, Lines 25-26 to state:

"These wells were considered dry, since the measured water level was less than six inches from the bottom of the well screen or the well failed to recharge after purging."

5. **Permittee Statement:** "NMED approved a Groundwater Supplemental RCRA Facility Investigation (RFI) to further assess the groundwater plumes at FWDA. Work completed during the RFI included the installation of 32 new wells in 2019 (24 screened in the alluvial groundwater unit and eight (8) screened in bedrock) throughout the Northern Area to further assess contaminant plumes and further characterize groundwater flow in the alluvial and bedrock formations."

NMED Comment: NMED approved the work plan for the investigation; clarify that the approval was for the work plan. The Permittee failed to submit the Groundwater Supplemental RFI Report to NMED on the required date of February 8, 2019. The report is over two years past due and subject to enforcement action. Data provided from the wells installed for the RFI are not considered valid until the Groundwater Supplemental RFI Report has been reviewed and approved by NMED.

Permittee Response: The RFI report is now ready and will be submitted to NMED in the next 2 weeks. The Army apologizes for the delay; however, it was necessary to properly prepare the document for NMED review.

6. **Permittee Statement:** "The GWMP has been revised annually and submitted to NMED from 2009 through 2018."

NMED Comment: The groundwater monitoring plans are required to be updated annually in accordance with the Permit Section V.A.4, but were not updated annually. For example, the 2018 update was not submitted. The most recent groundwater monitoring plan was submitted in April 2020. Accordingly, the statement is not accurate. Correct the statement for accuracy in the revised Report.

Permittee Response: Comment Noted. The statement was revised in Section 3.0, Page 3-1, Lines 14-15 to state:

"The GWMP is required to be revised annually and submitted to NMED."

7. **Permittee Statements:** "As directed in an NMED Disapproval Letter dated August 7, 2017, water-level elevation contours were not prepared for the bedrock wells (NMED, 2017}." and "The 32 new monitoring wells installed in 2019, of which eight are bedrock wells."

NMED Comment: In addition to the eight bedrock wells installed in 2019, four bedrock wells (BGMW07 through BGMW10) were installed in 2018. With these new wells, there may be an adequate number of data points to prepare water-level elevation contours for the bedrock aquifer. Evaluate whether there are a sufficient number of data points to prepare water-level contours for the bedrock aquifer and present groundwater contour maps for the bedrock aquifer in future groundwater periodic monitoring reports, as appropriate. No revision required. The Permittee is reminded that data provided from the wells installed for the RFI are not considered valid until the Groundwater Supplemental RFI Report has been reviewed and approved by NMED.

Permittee Response: Comment Acknowledged: Future reports will include groundwater elevation contours for bedrock wells. The eight additional bedrock wells will not solve the issue of the unknown "inferred geologic structure/fault" that distorts the groundwater flow beneath the former TNT beds, but may help the overall picture.

8. **Permittee Statement:** "Measured ORP values (<~200 mV) indicate reducing conditions are present in groundwater in some areas of FWDA. Measured ORP values are offset from the actual potential (Eh) by approximately 200 mV."

NMED Comment: Provide a reference to the ORP to Eh conversion method. In addition, explain the purpose of converting ORP to Eh in the response letter.

Permittee Response: Concur: ORP is converted to Eh because field instruments cannot measure Eh directly, but can measure ORP as a proxy measure for Eh. A reference was added to the reference section and the formula was added to Table 5-1. In addition, the reference to the formula in Table 5-1 was added in the text Section 5-1, Page 5-1, Lines 31-32 to state:

"Measured ORP values are offset from the actual potential (Eh) by approximately 200 mV (YSI Environmental, 2005). The formula used for converting ORP to Eh is presented in Table 5-1."

9. **Permittee Statement:** "Note that monitoring Well TMW27 was sampled for nitrate/nitrite and, although the result was non-detect, this well was not supposed to be sampled for nitrate/nitrite, and thus is not shown in the figures, only in Table 5-2. This statement is also included in the Variances of the Work Plan, Section 5.4 of this PMR."

NMED Comment: The referenced section above is Section 5.3 rather than 5.4. Correct the typographical error. In addition, the nitrate and nitrite concentrations in the groundwater samples collected from well TMW27 must be included in Figure 5-1 because this additional data indicates the absence of nitrate west of well SMW01. Revise the figure to include the data collected from well TMW27 in the revised Report.

Permittee Response: Concur: The typographical error has been corrected. TMW27 nitrite/nitrate ND results were added to Figure 5-1. The statement in Section 5.3, Page 5-5, Lines 21-22 was revised to state:

"Monitoring Well TMW27, was sampled for nitrate/nitrite and although the result was non-detect, this well was not supposed to be sampled for nitrate/nitrite."

10. **Permittee Statement:** "Changes in RDX concentrations over time are plotted for wells TMW03, TMW04, TMW23, and TMW40S in Appendix F."

NMED Comment: According to Appendix F, RDX vs. Time Plots, the RDX concentrations in the samples collected from these wells fluctuate over time. Discuss the potential cause of the fluctuation in the response letter. The fluctuation of the RDX concentrations may correlate with changes in groundwater elevations. Include the groundwater elevations in the plots in future groundwater periodic monitoring reports, as appropriate.

Permittee Response: The Army has reviewed NMED's comment, and our review of the data reveals that there appears to be no overall trend of RDX concentrations. Groundwater elevations from 2014 to present were reviewed and the Army is unable to see any direct correlation between RDX concentrations and groundwater elevations over time; furthermore, any potential causes of RDX fluctuations are not immediately apparent and cannot be properly determined using available data. Groundwater elevations will be included in the plots in future groundwater periodic monitoring reports.

11. **Permittee Statement:** "Detections of 1,4-Dioxane were not identified from the analytical testing, although the screening level is slightly below the detection limit."

NMED Comment: Section 5.4, Data Quality Exceptions, pages 5-5 and 5-6, lists 42 data quality exception compounds where the Limit of Detection (LOD), or Limit of Quantitation (LOQ), or both, exceed the screening levels. However, 1,4-dioxane is not included in the list even though the screening level is below the detection limit. Include 1,4-dioxane in the list and revise all relevant sections of the Report (e.g., Table 3-1).

Permittee Response: Please note that 1,4-dioxane incorrectly listed the screening level as 0.46 µg/L, when it should have been 4.6 µg/L as Table 3-1 correctly shows. Table 5-7 has been updated to show the correct screening level of 4.6 µg/L and the text in Section 5.2.5, Page 5-4, Line 23 was revised to state:

"No detections of 1,4-Dioxane were detected during the sampling event."

12. **Permittee Statement:** "There are a total of 42 data quality exception compounds where the Limit of Detection (LOD), or Limit of Quantitation (LOQ), or both, exceed the screening level as shown in Table 3-1."

NMED Comment: It is impossible to demonstrate whether these 42 compounds and 1,4- dioxane are absent or present at concentrations above the applicable screening levels. NMED previously provided several comments intended to resolve this recurring issue.

Comment 12 of the NMED's Approval with Modifications Revised Final 2022 Interim Northern Area Groundwater Monitoring Plan, dated March 8, 2021, states, "the February 1, 2021 email from Mr. Wear of NMED to Mr. Cushman of FWDA provides a clarification and direction regarding the analytes where LOQ exceeds the applicable screening levels. The email requests specific information be provided for NMED's evaluation of this recurring issue. In the response letter, provide an anticipated date when the requested information will be submitted to NMED."

Specific direction to resolve this issue was already provided to the Permittee, and NMED will evaluate the requested information once submitted. No revision is required to the Report.

Permittee Response: Comment acknowledged: The Army is formalizing its research in a presentable format for NMED input. The research will show the number of labs that potentially can meet the screening levels for the compounds in question. The Army is also working on developing a strategy to utilize some of those labs. The Army is working on presenting a workable solution that is achievable and is accepted to both parties. We sincerely apologize for the delay.

13. **Permittee Statement:** "Three additional monitoring wells were installed in August 2020, and these three new wells will be analyzed for 1,4-dioxane for two consecutive monitoring events starting in April 2021."

NMED Comment: Samples collected from 32 groundwater monitoring wells installed in 2019 were exclusively analyzed for 1,4-dioxane in April and October 2020.

Comment 8 of the NMED's Disapproval Final Groundwater Periodic Monitoring Report July through December 2019, dated February 1, 2021, states, "the new wells should have been sampled for the full analytical suite. The Permittee was previously directed to analyze 1,4- dioxane using EPA Method 8270 Selective Ion Monitoring (SIM) in groundwater samples collected from wells where chlorinated solvents were previously detected. The Permittee failed to follow this direction. Whether or not chlorinated solvents are detected in 2021, 1,4-dioxane analysis must continue for wells where 1,4-dioxane was previously detected. Include the provision in the next groundwater monitoring plan update."

This direction applies to the three monitoring wells installed in August 2020; therefore, these wells must be sampled for the full analytical suite in 2021. Correct the statement in the revised Report.

Permittee Response: Concur: The three new wells will get sampled for the full analytical suite and the report was revised in Section 5.5, Page 5-7, Lines 13-17 to state:

“Three additional monitoring wells were installed in August 2020, and these three new wells will be analyzed for the full suite of analytical for four consecutive events, and 1,4 dioxane for two consecutive monitoring events starting in April 2021. Any well with a detection for 1,4 dioxane will continued to be monitored for 1,4-dioxane.”

14. **Permittee Statement:** "The collocated perchlorate and nitrate plumes appear to have a common source at the building 528 Complex (SWMU 27)."

NMED Comment: Although the perchlorate plume may have originated from the building 528 Complex (SWMU 27), the highest nitrate concentrations in alluvial and bedrock groundwater were found in the Workshop Area immediately downgradient of the TNT Leaching Beds (SWMU 1). The nitrate plume may have originated from the TNT Leaching Beds (SWMU 1) rather than the building 528 Complex (SWMU 27). Correct the statement for accuracy in the revised Report.

Permittee Response: Concur: The sentence was revised in Section 6.0, Page 6-1, Lines 35-37 to state:

“The nitrate bedrock plume may have originated from the former TNT Leaching Beds (SWMU 1), while the collocated perchlorate plume may have originated from the building 528 Complex (SWMU 27).”

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

Sincerely,



George H. Cushman IV
BRAC Environmental Coordinator
Fort Wingate Depot Activity
BRAC Operations Branch
Environmental Division

Enclosures

CF:

Dave Cobrain, NMED, HWB
Ben Wear NMED, HWB
Michiya Suzuki, NMED, HWB
Lucas McKinney, U.S. EPA Region 6
Ian Thomas, BRACD
Alan Soicher, USACE
Michael Falcone, USACE

Saqib Khan, USACE
David Becker, USACE
Alvin Whitehair, SW BIA
George Padilla, BIA, NRO
Sharlene Begay-Platero, Navajo Nation
Mark Harrington, Pueblo of Zuni
Admin Record, NM
Admin Record, Ohio