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James C. Kenney
Cabinet Secretary

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January 30, 2020

Mark Patterson
BRAC Environmental Coordinator
Fort Wingate Depot Activity
13497 Elton Road
Lima, OH 44452

**RE: DISAPPROVAL
FINAL GROUNDWATER PERIODIC MONITORING REPORT
JULY THROUGH DECEMBER 2018
FORT WINGATE DEPOT ACTIVITY
MCKINLEY COUNTY, NEW MEXICO
EPA ID# NM6213820974
HWB-FWDA-19-004**

Dear Mr. Patterson:

The New Mexico Environment Department (NMED) is in receipt of the Fort Wingate Depot Activity (Permittee) *Final Groundwater Periodic Monitoring Report July through December 2018* (Report), dated November 2019. NMED has reviewed the Report and hereby issues this Disapproval. The Permittee must address the following comments.

GENERAL COMMENT

1. Inaccuracies/Discrepancies

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

- a. **Figure 5-3, Northern Area Explosives Concentrations in Alluvial Groundwater, October 2018:** The RDX concentration in the groundwater sample collected from well TMW04 is recorded as 220 J ug/L. Although the RDX concentration exceeds the screening level of 9.7 ug/L, the location of the well is depicted outside of the 9.7 ug/L contour line. The well should have been depicted within the contour line. Correct the discrepancy in the revised Report.

- b. **Figure 5-7, Northern Area VOC Concentrations in Alluvial Groundwater, October 2018 and Table 5-5, Summary of Volatile Organic Compound Analytical Results:** The acetone concentrations in the groundwater sample collected from wells were positively detected according to Appendix D, Attachment 2, *TestAmerica Laboratory Data Output*. For example, the acetone concentrations in the groundwater samples collected from wells MW18D and TMW46 are recorded as 1.2 J ug/L and 1.5 J ug/L, respectively in the data output. However, these detections were not recorded in the figure or the table. List all detections recorded in the laboratory data output on the tables and figures. Correct the discrepancy or provide an explanation for why these detections are disqualified and not recorded in the revised Report.

These types of errors result in extended review times for NMED. The Permittee must review all documents for accuracy prior to submittal to NMED.

SPECIFIC COMMENTS

2. **Executive Summary, lines 2-8, page ES-1, and Section 1.0, Introduction, lines 2-8, page 1-1**

Permittee Statement: "This Groundwater Periodic Monitoring Report (GPMR) documents groundwater monitoring activities conducted at Fort Wingate Depot Activity (FWDA) from July 2018 through December 2018 in accordance with Interim Facility-wide Ground Water Monitoring Plan, Version 2, Fort Wingate Depot Activity, Gallup, New Mexico (TerranearPMC, LLC, 2008) and subsequent monitoring program guidance as captured in Final 2017 Interim Facility-wide Groundwater Monitoring Plan, Version 10, Revision 1, Fort Wingate Depot Activity, McKinley County, New Mexico (GMP; Sundance Consulting, Inc. [Sundance], 2018b)."

NMED Comment: The last submitted Interim Facility-wide Groundwater Monitoring Plan (Version 10) was an update to the 2017 groundwater monitoring and sampling activity. The Permit requires revision and update of the Interim Plan annually to propose changes to the monitoring plan and submission of the plan for NMED review and approval. The Permittee failed to provide 2018 and 2019 updates and may be subject to an enforcement action. The Permittee must provide the 2020 update in accordance with Permit Section V.A.4.

3. Executive Summary, lines 19-23, page ES-1

Permittee Statement: "Depth to water was measured at 67 monitoring wells and 10 piezometers during the July and October 2018 events. The groundwater sampling event for the reporting period was performed from October 8, 2018 to October 19, 2018. The groundwater samples were analyzed for targeted constituents in accordance with the GMP (Sundance, 2018b) and as listed in Table 2-2 of this GPMR."

NMED Comment: Table 2-1, *Well Construction Details*, lists the construction details of 67 wells; however, no information is provided for the piezometers. Include the construction details for the piezometers in the table in future groundwater monitoring reports. Additionally, Table 2-2, *October 2018 Groundwater Sample Matrix*, lists 66 wells rather than 67 wells. Resolve the discrepancy in a response letter and revise the table as necessary.

4. Executive Summary, lines 33-35, page ES-1

Permittee Statement: "The Army will resume groundwater monitoring activities within Parcel 3 once replacement wells and additional Parcel 3 background wells have been installed following the completion of Parcel 3 hazardous operations."

NMED Comment: The work plan to install the replacement and background wells within Parcel 3 was submitted on December 20, 2018 and **NMED is currently waiting to receive the payment for review**. However, there are potentially more than 30 existing groundwater monitoring wells in Parcel 3 that can be sampled. There is no justification for why these two proposed wells must be installed prior to the preparation of the groundwater monitoring plan for Parcel 3. Failure to conduct work required by NMED constitutes non-compliance and may be subject to an enforcement action.

5. Executive Summary, lines 42-43, page ES-1, and line 1, page ES-2, Section 4.1.2, Northern Area Bedrock Groundwater System, lines 23-31, page 4-2, and Section 6.0, Summary, lines 14-16, page 6-1

Permittee Statements: "Potentiometric levels in the bedrock groundwater unit are slightly higher than in the alluvial groundwater unit and exist under hydraulically confined conditions in most of the northern area."

and,

"The groundwater potentiometric elevation in the bedrock groundwater unit is slightly higher than the groundwater elevation in the alluvial groundwater unit and is suspected to be under hydraulically confined conditions in most of the northern area. The confining unit for the bedrock groundwater unit is missing near monitoring wells TMW30 and TMW49.

These are the southern-most bedrock wells in the northern area and are located north of where the water bearing sandstone crops out. Soil logs from TMW30 (USACE, 2015) and TMW49 (USACE, 2012) do not indicate the presence of a definite claystone confining layer separating the unconsolidated alluvium from the water-bearing sandstone in bedrock. Alluvial and bedrock groundwater may potentially communicate in this vicinity.”

and,

“The groundwater elevation in the bedrock groundwater unit is slightly higher than in the alluvial groundwater unit and exists under hydraulically confined conditions under most of the northern area.”

NMED Comment: The number of nested wells that are co-located in both bedrock and alluvial aquifers appears to be insufficient to demonstrate the accuracy of the statements. There are only three nested wells (TMW31S/D, TMW39S/D, and TMW40S/D) at the site. The alluvial groundwater elevations were higher at wells TMW31S/D and TMW39S/D and lower at well TMW40S/D in April and October 2018. It is not clear how the Permittee can conclude that the elevation of bedrock groundwater is higher than that of alluvial groundwater in most locations. Provide the data and discussion that demonstrate the accuracy of the statement or revise the statements. Revise the Report accordingly.

6. Executive Summary, lines 24-26, page ES-2

Permittee Statement: “The nitrate plume in the alluvial groundwater unit appears to originate from the trinitrotoluene (TNT) Leaching Beds (solid waste management unit [SWMU] 1) and extends downgradient to the Administration Area.”

NMED Comment: NMED’s Disapproval Comment 6, dated June 14, 2019 directed the Permittee to provide a discussion regarding the potential for a more recent release from the Administration Area that affects nitrate levels in groundwater. However, the Permittee failed to provide the discussion. Provide the discussion in the revised Report.

7. Section 1.2, Hydrogeologic Setting, lines 37-38, page 1-2

Permittee Statement: “They [the San Andres limestone and Glorieta sandstone formations] are not exposed in FWDA and are not known to be contaminated by installation activities.”

NMED Comment: Water supply well 69 is currently used at the Facility. The well was screened within the referenced formations; therefore, the statement is somewhat misleading. Remove or revise the statement to acknowledge that the two formations underly the Facility and that well 69 extends into the Glorieta sandstone in the revised Report.

8. Section 1.2, Hydrogeologic Setting, lines 23-24, page 1-3

Permittee Statement: "The groundwater flow direction in the alluvium present in the northern portion of FWDA is predominantly southwest and west."

NMED Comment: Figure 4-1, *Northern Area Alluvial Groundwater Contour Map July 2018* and Figure 4-2, *Northern Area Alluvial Groundwater Contour Map October 2018*, indicate that the groundwater flow direction in the alluvium is predominantly southwest and west. However, groundwater leakage from well 69 may have been affecting the Facility's natural groundwater flow direction. According to the figures, the groundwater flow direction south of the Administration Area (e.g., areas around the TNT Leaching Beds) is north to northwest. Presumably, the natural alluvial groundwater flow direction is consistent with local topography toward the Rio Puerco; therefore, a northerly and northwesterly groundwater flow direction is more likely. The areas in the south of the Administration Areas may be less affected by the well 69 leakage and more representative of natural groundwater flow direction. The flow direction may significantly change once the leakage is repaired. Provide a discussion of this issue in the revised Report.

9. Section 4.1.1, Northern Area Alluvial Groundwater System, lines 8-10, page 4-2

Permittee Statement: "The steepest gradients were found in the southeast portions of the monitoring area, and the flattest gradients were found in the central portion of the monitoring area."

NMED Comment: The area where the flattest gradients were found coincides with the area where well 69 is located. The leak from well 69 likely affects alluvial groundwater flow direction and water quality. The mounding effect potentially affects migration of explosives and perchlorate toward the Administration Area. Provide a discussion of this issue in the revised Report.

10. Section 4.1.2, Northern Area Bedrock Groundwater System, page 4-2

NMED Comment: The groundwater elevations in alluvial well TMW24 and bedrock well BGMW08 were recorded as 6,642.52 feet and 6,516.38 feet, respectively, during the October 2018 gauging event. The groundwater elevation in the bedrock well was more than 100 feet lower than that of the nearby alluvial well TMW24. The groundwater elevation in well BGMW08 is also notably lower than those of the rest of bedrock wells advanced in the Northern Area. Evaluate the cause of the lower groundwater elevation in well BGMW08 and provide an explanation in the revised Report. In addition, include the

discussion whether the groundwater in well BGMW08 originates from the same water bearing zone in comparison to the other bedrock wells. Since well BGMW08 was installed to evaluate background groundwater conditions, the groundwater extracted from well BGMW08 must originate from the same aquifer. Discuss the appropriateness of the use of well BGMW08 as a background groundwater monitoring well.

11. Section 5.2.4, Volatile Organic Compounds, page 5-5

NMED Comment: The highest concentrations of 2-hexanone and benzene were detected in groundwater samples collected from bedrock background groundwater monitoring well BGMW08 during the October 2018 groundwater sampling event. Additionally, according to Table 5-5, *Summary of Volatile Organic Compound Analytical Results*, carbon disulfide and toluene were also detected from well BGMW08. These detections may be associated with boring/well advancement activity. Continue to monitor for the presence of volatile organic compounds in groundwater samples collected from well BGMW08, evaluate the cause of the detections, and discuss the findings in future groundwater monitoring reports. If the detections are ongoing, BGMW08 cannot be used as a background well.

12. Section 5.2.5, Other Organic Compounds, lines 29-34, page 5-6

Permittee Statement: “MW23 is an alluvial well in the northwest corner of FWDA and has a dedicated Bennett pump installed. TMW31D is a bedrock well with a dedicated BESST pump in the workshop area. Detected concentrations of these analytes were similar in the two wells; however, field cross contamination between monitoring wells MW23 and TMW31D is not likely because no sampling equipment was shared between these wells.”

NMED Comment: The highest concentrations of 1,2,4-trichlorobenzene and 1,2-dichlorobenzene were detected in groundwater samples collected from well MW23 during the October 2018 groundwater sampling event. Additionally, according to Table 5-6, *Summary of Semi-volatile Organic Compounds and Total Petroleum Hydrocarbons Analytical Results*, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 2-methyl-naphthalene and naphthalene were also detected in well MW23. These organic compounds were previously not detected in well MW23. Continue to monitor for the presence of organic compounds in groundwater samples collected from well WM23. Evaluate whether the detections were caused by the activity associated with pump installation, cross-contamination, or migration of contaminants and discuss the findings in future groundwater monitoring reports.

13. Section 5.2.5, Other Organic Compounds, lines 30-32, page 5-7

Permittee Statement: "All detections of TPH-D during the October 2018 sampling event exceeded the screening level of 0.0167 mg/L. Similarly, all detections of TPH-G also exceeded the screening level of 10.1 µg/L. TPH detections are comingled with the 1,2-DCA plume."

NMED Comment: There are multiple groundwater samples that contain TPH-D and TPH-G concentrations that exceed the applicable screening levels. The extent of TPH contamination must be evaluated. Provide figures that depict iso-concentration contours for TPH-D and TPH-G in all future groundwater monitoring reports.

14. Section 5.6, New Findings, lines 1-7, page 5-11

Permittee Statement: "TMW03, TMW04, TMW23, and TMW40S are generally north and downgradient of the TNT Leaching Beds (SWMU 1). The concentration increase may be attributed to leaching of explosive compounds in soil due to seasonal precipitation and water from dust suppression infiltrating the open excavation at the TNT Leaching Beds (SWMU 1). Please note, increases (or decreases) in concentrations between two consecutive sampling events, as described here, do not establish a trend. Explosives concentrations in groundwater will continue to be monitored at FWDA."

NMED Comment: The operation associated with the TNT Leaching Beds soil excavation was complete in October 2019 and the concentrations of explosive compounds are expected to decrease gradually. The changes in RDX concentrations must be discussed in future groundwater monitoring reports. Provide plots that depict the concentrations of RDX over time for wells TMW03, TMW04, TMW23 and TMW40S in future groundwater monitoring reports.

15. Section 6.0, Summary, lines 19-20, page 6-1

Permittee Statement: "Six groundwater contaminant plumes have been identified within the Administration Area and the Workshop Area of FWDA."


NMED Comment: Comment 13 above requires the evaluation of two additional plumes associated with TPH-D and TPH-G in the alluvial aquifer. Accordingly, a total of eight groundwater contaminant plumes must be evaluated and discussed in future groundwater monitoring reports.

Mr. Patterson
January 30, 2020
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The Permittee must submit a revised Report that addresses all comments contained in this Disapproval. Two hard copies and an electronic version of the revised Report must be submitted to the NMED. The Permittee must also include a redline-strikeout version in electronic format showing where all revisions to the Report have been made. The revised Report must be accompanied with a response letter that details where all revisions have been made, cross-referencing NMED's numbered comments. The Revised Report must be submitted to NMED no later than **May 15, 2020**.

Should you have any questions, please contact Michiya Suzuki of my staff at (505) 476-6059.

Sincerely,



Kevin Pierard
Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
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File: FWDA 2020 and Reading, Groundwater