



State of New Mexico
ENVIRONMENT DEPARTMENT



Hazardous Waste Bureau

SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6313
Phone (505) 476-6000 Fax (505) 476-6030
www.env.nm.gov

BUTCH TONGATE
Cabinet Secretary

J. C. BORREGO
Deputy Secretary

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

May 19, 2017

Mark Patterson
FWDA, BRAC Coordinator
P.O. Box 93
Ravenna, OH 44266

Steve Smith
USACE
CESWF-PER-DD
819 Taylor Street, Room 3B06
Fort Worth, TX 76102

**RE: DISAPPROVAL
GROUNDWATER PERIODIC MONITORING REPORT
JANUARY THROUGH JUNE 2015
FORT WINGATE DEPOT ACTIVITY
MCKINLEY COUNTY, NEW MEXICO
EPA ID# NM6213820974
HWB-FWDA-17-002**

Dear Messrs. Patterson and Smith:

The New Mexico Environment Department (NMED) is in receipt of the Fort Wingate Depot Activity's (Permittee) *Final Groundwater Periodic Monitoring Report January through June 2015* (Report), dated October, 2015. NMED has reviewed and hereby issues this Disapproval. The Permittee must address the following comments.

GENERAL COMMENTS

1. Inaccuracies/Discrepancies

NMED Comment: The Report contains multiple inaccuracies/discrepancies. Some of them are listed as follows:

- a **Table 4-1, Northern Area Groundwater Elevations (Wells Screened in Alluvial Sediments):** The depth to water (DTW) and elevation data for TMW-22 for the March 2015 gauging event are missing from Table 4-1.
- b **Table 4-1, Northern Area Groundwater Elevations (Wells Screened in Alluvial Sediments) & Figure 4-2, (March 2015 Northern Area Alluvial Groundwater Contour Map):** The elevation for BGMW01 on March 2015 is recorded as 6673.73 in Table 4-1, while its value is shown as 6673.71 in Figure 4-2.
- c **Section 5.1.1, Water Quality Parameters, lines 34-35, page 5-1:** The Permittee states, “[t]he formula used for the calculation and the Eh values are presented in Table 5-1.” However, the formula to convert ORP to Eh is missing from Table 5-1.
- d **Section 5.1.3, Explosive Compounds, lines 44-45, page 5-2:** The Permittee states, “[4]-Nitrotoluene (40 J ug/L at alluvial monitoring well TMW04); detected in samples from one alluvial and one bedrock monitoring well.” The compound was detected in groundwater samples collected from two alluvial and no bedrock monitoring wells according to Table 5-3.
- e **Section 5.1.3, Explosive Compounds, lines 4-5, page 5-3:** The Permittee states, “[n]itrobenzene (2.6 J ug/L at alluvial monitoring well TMW40S); detected in samples from two alluvial and no bedrock monitoring wells.” The compound was detected in groundwater samples collected from two alluvial and one bedrock monitoring well (TMW30) according to Table 5-3.
- f **Section 5.1.4, Perchlorate, lines 29-30, page 5-3:** The Permittee states, “[p]erchlorate was detected in groundwater samples from 25 alluvial monitoring wells in the Northern Area with concentrations ranging from 0.0083 J to 670 ug/L.” The lowest concentration of the compound was detected at 0.0073 J ug/L in the groundwater sample obtained from the monitoring well MW03 according to Table 5-4.
- g **Section 5.1.4, Perchlorate, lines 30-31, page 5-3:** The Permittee states, “[p]erchlorate was detected in groundwater samples from 11 bedrock wells with concentrations ranging from 0.02 J to 1,400 ug/L.” The lowest concentration of the compound was detected at 0.0060 J ug/L in the groundwater sample collected from the bedrock well TMW38 according to Table 5-4.
- h **Table 5-4, Summary of Perchlorate Analytical Detections:** The perchlorate concentration in TMW04 is recorded as 0.32 ug/L (April 2015) in Table 5-4, while its value is shown as 0.35 ug/L in Figure 5-3.
- i **Figure 5-3, Spring 2015 Northern Area Explosives and Perchlorate Concentrations in Alluvial Groundwater:** There’s a typographical error in the description of TMW45 in Figure 5-3.

- j Section 5.1.5, Volatile Organic Compounds, lines 9-10, page 5-4:** The Permittee states, “[a]cetone 4.9 J ug/L at bedrock monitoring well TMW18); detected in samples from four alluvial and one bedrock monitoring wells.” The compound was detected in groundwater samples collected from three alluvial wells and one bedrock monitoring well according to Table 5-5.
- k Section 5.1.6, Other Organic Compounds, lines 33-34, page 5-4:** The Permittee states, “[g]asoline range organics (GRO) (49 J ug/L at alluvial monitoring well MW18D); detected in samples from two alluvial and no bedrock monitoring wells.” However, the highest GRO concentration was detected at 71 ug/L in the groundwater sample obtained from alluvial monitoring well MW02 according to Table 5-6. Also, the GRO concentration in well MW18D was 54 J ug/L according to Table 5-6.
- l Section 5.1.6, Other Volatile Organic Compounds, lines 39-40, page 5-4:** The Permittee states, “[a]cetonaphthene (0.38 J ug/L at alluvial monitoring well TMW23); detected in samples from two alluvial and no bedrock monitoring wells.” The compound was detected in groundwater samples collected from one alluvial monitoring well MW23 and one bedrock monitoring well TMW31D according to Table 5-6. TMW23 is not listed as a sampling well for EPA Method 8270D in Table 2-1. Also, the compound name is misspelled (acenaphthene).
- m Section 5.1.6, Other Volatile Organic Compounds, lines 7-8, page 5-5:** The Permittee states, “[d]ibenzofuran (0.39 J ug/L at alluvial monitoring well TMW23); detected in samples from one alluvial and one bedrock monitoring wells.” The compound was detected in groundwater samples collected from alluvial monitoring well MW23 rather than TMW23 according to Table 5-6. TMW23 is not listed as a sampling well for EPA Method 8270D in Table 2-1.
- n Section 5.1.6, Other Volatile Organic Compounds, lines 11-12, page 5-5:** The Permittee states, “[f]luoranthene (0.36 J ug/L at bedrock monitoring well TMW31D); detected in samples from two alluvial and one bedrock monitoring wells.” The compound was detected in groundwater samples collected from one alluvial monitoring well and one bedrock monitoring well according to Table 5-6.
- o Section 5.1.6, Other Volatile Organic Compounds, lines 13-14, page 5-5:** The Permittee states, “[f]luorene (0.37 J ug/L at bedrock monitoring well TMW31D); detected in samples from two alluvial and one bedrock monitoring wells.” The compound was detected in groundwater samples collected from one alluvial well and one bedrock monitoring well according to Table 5-6.
- p Section 5.1.6, Other Volatile Organic Compounds, lines 15-16, page 5-5:** The Permittee states, “[n]-Nitrosodiphenylamine (0.73 J ug/L at bedrock monitoring well TMW31D); detected in samples from two alluvial and one bedrock monitoring wells.” The compound was detected in groundwater samples collected from one alluvial well and one bedrock monitoring well according to Table 5-6.

- q Section 5.1.6, Other Volatile Organic Compounds, lines 19-20, page 5-5:** The Permittee states, “[o]verall, petroleum hydrocarbons were detected in samples from five alluvial monitoring wells, with no detections in bedrock monitoring wells.” DRO was detected in groundwater samples collected from wells MW01, MW02, MW03, MW18D, MW20, MW22D, MW22S, TMW08, TMW33, TMW34, and TMW35 (11 alluvial monitoring wells). GRO was detected in groundwater samples collected from MW02, and MW18D (2 alluvial monitoring wells) according to Table 5-6.
- r Section 5.1.6, Other Volatile Organic Compounds, lines 29-31, page 5-5:** The Permittee states, “[t]he common plastic additive bis(2-ethylhexyl)phthalate may be present in a variety of laboratory and sampling equipment and was detected in samples from eight monitoring wells.” The compound was detected in groundwater samples collected from MW23, TMW07, TMW22, TMW41, TMW16, TMW18, TMW19, TMW36, and TMW37 (nine wells).
- s Section 5.1.6, Other Volatile Compounds, lines 42-44, page 5-5:** There are typographical errors (Table 5-6 instead of Table 5-5).

Ensure that all statements provided in the Report, as well as all future work plans and reports, are accurate. Revise the Report to resolve these issues.

SPECIFIC COMMENTS

2. Section 2.2, Groundwater Sampling, lines 21-25, page 2-2

NMED Comment: It appears that some wells were equipped with dedicated pumps and others were sampled by non-dedicated submersible pump or disposable bailers. Explain the variance in sampling technique and equipment for each well in the revised Report. Also, provide a table that describes the sampling technique and equipment (e.g. pumps, disposable or dedicated tubing) used for each well in the revised Report.

3. Section 5.1, Northern Area Analytical Results, lines 37-40, page 5-1

Permittee’s Statement: Values of Eh below approximately 400 mV in neutral pH waters indicate that perchlorate is susceptible to chemical degradation (Takeno, 2005). Values of Eh below approximately 300 mV in neutral pH waters indicate that nitrate and some nitrogen-based explosive compounds are susceptible to chemical degradation (Takeno, 2005).

NMED Comment: The reference (Takeno, 2005) does not fully support the Permittee’s statement defining degradability of nitrate and perchlorate. Eh-pH diagrams in the reference merely show dominant species by boundary. Either provide additional reference(s) to support the statement or remove the statement from the revised Report.

4. Section 5.1.6, Other Volatile Organic Compounds, lines 29-31, page 5-5

Permittee's Statement: The common plastic additive bis(2-ethylhexyl)phthalate may be present in a variety of laboratory and sampling equipment (including sample tubing, pump, bailer, and laboratory equipment) and was detected in samples from eight monitoring wells.

NMED Comment: Concentrations of bis(2-ethylhexyl)phthalate in TMW18 have been significantly higher than in any other monitoring well since 2014. The justification described in the Report is insufficient. Examine each step of the sampling procedure to verify if any discrepancies exist. See Comment 2.

5. Table 5-8, Summary of Total Metals Analytical Detections

NMED Comment: Chromium and lead have been consistently found in well FW35. The concentrations of chromium and lead exceeded the regulatory limits during the October 2014 sampling event. Provide a discussion of these exceedances in the revised Report.

6. Section 6.1, Summary, lines 20-21, page 6-1

Permittee's Statement: Groundwater contaminant plumes at FWDA appear to be limited to the Northern Area.

NMED Comment: Groundwater contamination has also been identified in the OB/OD area at FWDA. Remove the statement from the revised Report, as well as all future reports.

7. Section 6.2, Recommendations, lines 37-38, page 6-2

Permittee's Statement: Well TMW40S will be replaced by one or more alluvial aquifer monitoring wells proposed in the Supplemental RFI Work Plan.

NMED Comment: NMED does not agree with replacing TMW40S at this time. TMW40S should be monitored periodically based on the presence of nitrate, explosives, perchlorate, and heavy metals. TMW40S contains at least 2.0 feet of saturated well screen; thus, TMW40S should yield sufficient formation water if samplers return to the well several times after purging during the sampling event. Continue monitoring TMW40S in future sampling events.

8. Section 6.2, Recommendations, lines 1-2, page 6-3

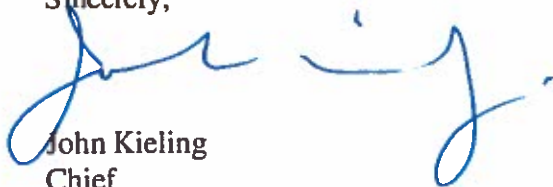
Permittee's Statement: Perform additional investigation of the bedrock aquifer perchlorate plume to define the northern boundary of the plume. The perchlorate plume boundaries will be investigated as part of the upcoming Supplemental RFI.

NMED Comment: The boundary of the bedrock perchlorate plume has not been defined in any direction. The nature and extent of the contamination must be investigated by installing additional bedrock monitoring wells. The locations of the wells must be proposed in the Supplemental RFI Plan as described in Section 6.2, Recommendations.

The Permittee must submit a revised Groundwater Periodic Monitoring Report that addresses all comments contained in this Disapproval. In addition, the Permittee must include a response letter that cross-references where NMED's numbered comments were addressed. The Permittee must also submit an electronic redline-strikeout version of the revised Report showing **all** changes that have been made to the Report. The revised Report must be submitted no later than **October 31, 2017**.

Should you have any questions, please contact Ben Wear of my staff at (505) 476-6041.

Sincerely,



John Kieling
Chief
Hazardous Waste Bureau
New Mexico Environment Department

cc: D. Cobrain, NMED HWB
B. Wear, NMED HWB
M. Suzuki, NMED HWB
C. Hendrickson, U.S. EPA Region 6
L. Rodgers, Navajo Nation
S. Begay-Platero, Navajo Nation
M. Harrington, Pueblo of Zuni
C. Seoutewa, Southwest Region BIA
R. Duwyenie, Navajo BIA
J. Wilson, BIA
B. Howerton, BIA
R. White, BIA
C. Esler, Sundance Consulting, Inc.

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