**NEW MEXICO**
**ENVIRONMENT DEPARTMENT**

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**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**



January 6, 2020

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

**RE: APPROVAL WITH MODIFICATIONS**
**REVISION 2 CLOSURE REPORT FOR SWMU 82, FORMER SEWAGE TREATMENT PLANT PERCOLATION DITCHES**
**WHITE SANDS MISSILE RANGE, NEW MEXICO**
**EPA ID #NM 2750211235**
**HWB-WSMR-18-006**

Dear Mr. Knight:

The New Mexico Environment Department (NMED) has received the U.S. Army White Sands Missile Range (the Permittee) *Revision 2 Closure Report for SWMU 82, Former Sewage Treatment Plant Percolation Ditches* (Closure Report), dated September 2019. NMED has reviewed the Closure Report and hereby issues this Approval with Modifications. The Permittee must address the following comments.

**Comment 1**

In Section 2.2.3 (Hydrogeology), page 2-3, the Permittee states, "[a]t this velocity, contamination at the site would be expected to travel less than 1 foot per year in the area downgradient of the contaminant plume. Movement of contaminants in the aquifer may also occur in the vertical direction; however, it is estimated that due to geological stratification, hydraulic conductivity values in the vertical direction range from 10 to 1,000 times lower than the horizontal hydraulic conductivity values (Risser, 1988)." The Permittee has collected adequate data over the years to determine if the groundwater velocity that "would be expected" is the actual groundwater velocity based on the site-specific data collected. Regardless, the extent of contamination clearly indicates that the groundwater velocity is

greater than one foot per year. In the Post-Closure Care Plan discuss the groundwater velocity based on current, site-specific data. Include the measurements and discuss how the velocity was calculated; include references and discussion for the constant values used in the calculations.

**Comment 2**

In Section 2.4.2 (Environmental Fate and Transport) first paragraph, the Permittee states that, "[g]roundwater contamination at the SWMU 82 site is expected to remain within the vicinity of the current monitoring network and dissipate or degrade by natural processes over time. The primary mechanisms for the reduction in groundwater contaminant concentrations are advection, dispersion, and sorption to clay minerals (MEVATEC, 2000)." The analytical data collected from the groundwater monitoring network demonstrates that the Permittee has not defined the extent of the cyanide plume. The Permittee discusses this later in the Closure Report; therefore, this statement in misleading. Furthermore, in the third paragraph of the same section, the Permittee states, "[g]roundwater monitoring data from the 2000 to 2017 monitoring periods indicate that the groundwater cyanide plume has changed shape over time." It is not clear what the purpose of this statement is; the extent of the groundwater cyanide plume is not defined and the shape of the plume does not provide meaningful insight. The statement quoted above must be considered in the Post-Closure Care Plan.

**Comment 3**

In Section 2.4.3 (Data Gaps) the Permittee states, "[i]f additional data gaps are identified, they should be addressed under post closure monitoring during the implementation of post-closure care activities." The Permittee points out additional data gaps in this Closure Report (i.e., in Section 3.3.2 Groundwater Analytical Results). The Permittee must ensure that contradictory statements are not presented in documents.

**Comment 4**

In Section 3.3.3 (Natural Attenuation Evaluation) the Permittee states, "Figure 8 presents the cyanide concentration over time for three leading edge monitoring wells (MPL32, MPL17, MPL31) and one monitoring well (MPL07) located approximately 1,500 to 2,000 ft upgradient. These are the same locations presented in Figure 7 that were used to illustrate nitrate trends over time. Unlike the flat to gradually downward trends for nitrate at these four locations, the concentrations of cyanide appear to be flat to gradually increasing. The long-term trend for cyanide at MPL07 is more clearly seen to be increasing over time." Data from these wells represent an additional data gap that must be addressed in the Post-Closure Care Plan. These wells represent some of the farthest downgradient wells in the well network and additional wells must be installed. See also Comment 5 and Comment 9.

**Comment 5**

Since the extent of the groundwater cyanide plume has not been defined, the Permittee must propose to install additional wells in the Post-Closure Care Plan. Wells must be installed

downgradient of wells MPL-31, MPL-17, and MPL-32. Additionally, wells must be installed downgradient of wells SMW-2, SMW-4, and MPL-15 and upgradient of well MPL-29. The Post-Closure Care Plan must also include a provision to install additional wells, if the installation of the wells proposed in the Post-Closure Care Plan do not define the extent of the plume and the Post-Closure Care Plan must provide for the installation of additional wells, if the additional wells do not define the extent of the plume.

**Comment 6**

In Section 3.3.3 (Natural Attenuation Evaluation) the Permittee states, "...it appears that natural attenuation of cyanide at the site is largely occurring by dispersion and dilution. One possible explanation for this is that the organic content of the aquifer may be too low to support the microbial assemblage necessary to biodegrade cyanide at an appreciable rate. Another possible explanation is that the cyanide concentrations are too low to support a shift in the native microbial assemblage toward an assemblage with a greater capability to biodegrade cyanide. Continued monitoring of the plume will be necessary to better evaluate whether the leading edge of the cyanide plume (at concentrations above 0.2 mg/L) has stabilized, or whether it will continue to migrate downgradient." The Post-Closure Care Plan must propose reevaluation of the cyanide plume every three years to include a report submitted to NMED for review.

**Comment 7**

In Section 4.2 (Recommendations) the Permittee states, "[i]t is recommended that the site status be changed to closure complete from the closure required status listed in the WSMR RCRA Permit based on the information presented in this Closure Report. WSMR requests written concurrence from the NMED that site closure is complete for SWMU 82, Former STP Percolation Ditches." The activities that were not completed as part of closure must be completed as part of Post-Closure activities.

**Comment 8**

In Section 4.2 (Recommendations) the Permittee states, "[i]t is recommended that groundwater monitoring be implemented at the site under post-closure care until groundwater contamination decreases below New Mexico WQCC standards or until the NMED approves termination of the monitoring program." NMED concurs that groundwater monitoring and groundwater monitoring well installations must continue under Post-Closure activities and termination of groundwater monitoring must be approved by NMED. Failure to provide groundwater monitoring data in a timely manner will be considered a RCRA Permit violation.

**Comment 9**

In Section 4.2 (Recommendations) the Permittee states,

"It is also recommended that groundwater monitoring wells be installed at the following locations as part of the post-closure care:

• One interface monitoring well approximately 1,500 feet southeast of MPL32 to define the downgradient extent of groundwater cyanide concentrations above the New Mexico WQCC standard of 0.2 mg/L.

• A set of nested monitoring wells approximately 1,200 feet north-northeast of the MPL10/MP-24 cluster at depths similar to MPL10 and MPL24 to further evaluate cyanide concentrations to the north and west of the MPL10 nested wells."

NMED concurs that additional wells must be installed. The second set of proposed wells was supposed to be installed as part of closure activities. The Permittee must also install more than one well downgradient of wells MPL-31, MPL-17, and MPL-32. See also Comment 5.

**Comment 10**
The Permittee must submit a Closure Certification (40 CFR § 264.115) and a Survey Plat (40 CFR § 264.116).

**Comment 11**
The Permittee must submit a Post-Closure Care Plan for SWMU 82, Former Sewage Treatment Plant Percolation Ditches in accordance with 40 CFR § 264.117 and § 264.118. This submittal will be a Class 3 Permit Modification and will be incorporated into the RCRA Permit. The Permittee must also follow the public notice requirements in 40 CFR § 270.42(c).

This approval with modifications is based on the information presented in the document as it relates to the objectives of the work identified by NMED at the time of review. Approval of this document does not constitute agreement with all information or every statement presented in the document.

The Closure Certification and the Survey Plat must be submitted to NMED no later than **February 17, 2020.**

The Permittee must submit the Post-Closure Care Plan to NMED no later than **March 17, 2020.**

If you have any questions regarding this correspondence, please contact Kristen Van Horn at (505) 476-6046.

Sincerely,

Dave Cobrain
Acting Chief
Hazardous Waste Bureau

cc: K. Van Horn, NMED HWB
B. Knight, WSMR
J. Smith, WSMR
B. Avalos, WSMR
L. King, EPA

File: WSMR 2020 and Reading
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