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DAIM-ODB

July 20, 2018

Mr. John Kieling
Chief, Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

RE: Final RCRA Facility Investigation Phase 2 Work Plan, Parcel 11 Army's Response to Comments, Disapproval Letter Dated December 6, 2016 HWB-FWDA-15-018, Fort Wingate Depot Activity, McKinley County, New Mexico.

Dear Mr. Kieling:

This letter presents our response to your comments presented in the Disapproval Letter dated December 6, 2016 regarding the Final RCRA Facility Investigation Phase 2 Work Plan, Parcel 11 for the Fort Wingate Depot Activity (FWDA) under RCRA Permit USEPA ID No. NM6213820974. The Work Plan has been revised to address each comment as described below and is being submitted under separate cover as *Final RCRA Facility Investigation Phase 2 Work Plan, Parcel 11, Revision 1.0*, July 20, 2018.

Copies of the disapproval letter and a copy of this response letter are included within Appendix A of the revised Work Plan. A redline-strikeout version of the Work Plan is included electronically with the submittal.

NMED Comment 1: Required Tasks Not Addressed in Work Plan

NMED's Comment:

The Work Plan is missing a variety of tasks that the Permittee agreed to undertake in previous correspondence. The following table outlines the tasks that are missing.

Location	Task	Permittee Proposed Phase
SWMU 37	Remove soil from floor drain and sump	Future RCRA Phase
SWMU 40	Remove misc. scrap and debris from storage yard west of and around Building 10.	Future RCRA Phase
SWMU 40	Resample 1140DISPOSAL-SB25-01D for PCBs	N/A
SWMU 40	Remove 2000-gallon underground storage tank east of Building 14	Future RCRA Phase
SWMU 40	Investigation Work Plan to identify metallic anomalies found during geophysical investigation at Building 29.	Future RCRA Phase
SWMU 40	Remove residual coal from Structure 57 within Parcel 7	Future RCRA Phase

SWMU 45	Remove underground piping and valve box and complete investigation	Future RCRA Phase - Corrective Measures
AOC 52	Remove coal ash from road bed.	Future RCRA Phase - Corrective Measures
AOC 75	Remove PCB contaminated soils.	Future RCRA Phase - Corrective Measures

While the tasks listed above are not required within this Work Plan, they are required to be completed prior to achievement of Corrective Action Complete status. The Permittee has listed two of these sites incorrectly on page 1-3 of the Work Plan as "The Army recommended no further action." Either include these tasks in the Work Plan or provide a section in all future work plans and reports that details required future work. This will help ensure that delays are not encountered when the Permittee ultimately applies for Corrective Action Complete status for these sites.

Army Response:

The Army acknowledges the tasks identified in the table as required future actions. These tasks will be incorporated into a separate Permittee-Initiated Interim Measures Work Plan which will be submitted to the stakeholders. The Work Plan has been revised to indicate that future RCRA corrective measures will occur for AOC 75 and SWMU 37.

Revised Text pg 1-3:

This work plan addresses all of the above SWMUs and AOCs with the exception of the following:

- 1. SWMU 5 – Building 5. The Army recommended continued groundwater monitoring under the site wide monitoring program.*
- 2. AOC 48 – Building 34. The Army recommended no further action.*
- 3. AOC 75 – Site Transformer. The Army recommended removal of soil contaminated with polychlorinated biphenyls (PCBs). This will be a future RCRA corrective measures phase.*
- 4. SWMU 37. The Army recommended removal of soil from floor drain and sump. This will be a future RCRA corrective measures phase.*
- 5. AOC 51. The Army will be conducting corrective measures associated with the former UST and ancillary piping at a later date.*

NMED Comment 2: Section 3.0, Fenced Storage Yard, p 3-1

Permittee's Statement:

"The RFI Report for Parcel 11 recommended additional characterization activities within SWMU 3 - Fenced Storage Yard (also known as the DRMO Area) for diesel range organics (DRO) and benzo(a)pyrene. However, SSLs for both compounds were revised subsequent to the completion of RFI investigation activities, based on the NMED Risk Assessment Guidance for Site Investigations and Remediation (NMED, 2012b). The SSL for DRO was increased from 520 milligrams per kilogram (mg/kg) to 1,000 mg/kg. The highest level of DRO detected at the site was 951 mg/kg. Therefore, no additional sampling for DRO will be conducted."

NMED's Comment:

While the SSL for DRO has increased, the concentration of DRO below the surface may exceed the concentration of the surface sample, as well as the revised SSL. Propose to collect one sample from approximately two feet (ft) below ground surface (bgs) from each of the two locations where DRO was detected above the SSL in 2009 (SS 1770 and SS243D) for ORO analysis in order to demonstrate that concentrations are not increasing with depth and that DRO concentrations do not exceed the current SSL.

Army Response:

The Work Plan has been revised to include additional sampling for DRO. The Work Plan was also revised to reflect the increase in the benzo(a)pyrene SSL, which in turn reduces the scope of investigation to define the extent to only two locations as identified in Table 3-1. Table 3-2 and Figure 3-1 were revised accordingly.

Revised Text pg 3-1: The SSL for DRO was increased from 520 milligrams per kilogram (mg/kg) to 1,000 mg/kg. The highest level of DRO detected at the site was 951 mg/kg. However, the concentration of DRO below the surface may exceed the NMED SSL. Therefore, one sample will be collected approximately 2.0 feet below ground surface (bgs) from each of the two sample locations (SS177D and SS243D) where DRO was detected above the SSL in 2009. The samples will be analyzed for DRO by EPA Method 8015 modified.

*The SSL for benzo(a)pyrene was revised multiple times since the RFI investigation activities, with the lowest SSL currently being 1,120 micrograms per kilogram (µg/kg) for direct contact (NMED, 2017a). **Table 3-1** lists the samples collected during the RFI which currently exceed the 2017 direct contact SSL for benzo(a)pyrene. All samples were collected as surface soil samples from a depth of approximately 6.0 to 12.0 inches bgs. **Table 3-1** also lists whether the lateral extent was defined.*

*In order to better define the vertical extent of benzo(a)pyrene contamination, one sample will be collected from the locations listed in **Table 3-1** at a depth of 1.5 to 2.0 feet. Samples will be analyzed for the full semi-volatile organic compound (SVOC) list as recommended in the RFI Report. Sample ID numbers for these samples will remain the same but will be labeled SB for soil boring (e.g., SB001D). For those locations where the lateral extent is not defined, surface samples (0.5 to 1.0 foot bgs) will be collected at a distance of 20.0 feet from the original sample location in the direction indicated in **Table 3-1**. The samples proposed for collection are listed in **Table 3-2** and shown on **Figure 3-1**.*

NMED Comment 3: Table 4-1, AOC 47: Summary of RFI Samples Collected with Levels Exceeding the SSL for DRO, p 4-1

NMED's Comment:

The Permittee has mixed up the data in the table. For both wells, the concentrations are reversed. Revise the Plan to ensure all presented data is accurate.

Army Response:

Table 4-1 on Page 4-1 has been revised. Revised Table pg 4-1:

Table 4-1 AOC 47: Summary of RFI Samples Collected with Levels Exceeding the SSL for DRO

Sample Identification Number	Detected Concentration (mg/kg)
1147SPIL-SB04-00D-SO	5,500
1147SPIL-SB04-03D-SO	2,600
1147SPIL-SB05-00D-SO	5,300
1147SPIL-SB05-03D-SO	4,300

Note:
mg/kg = milligram(s) per kilogram

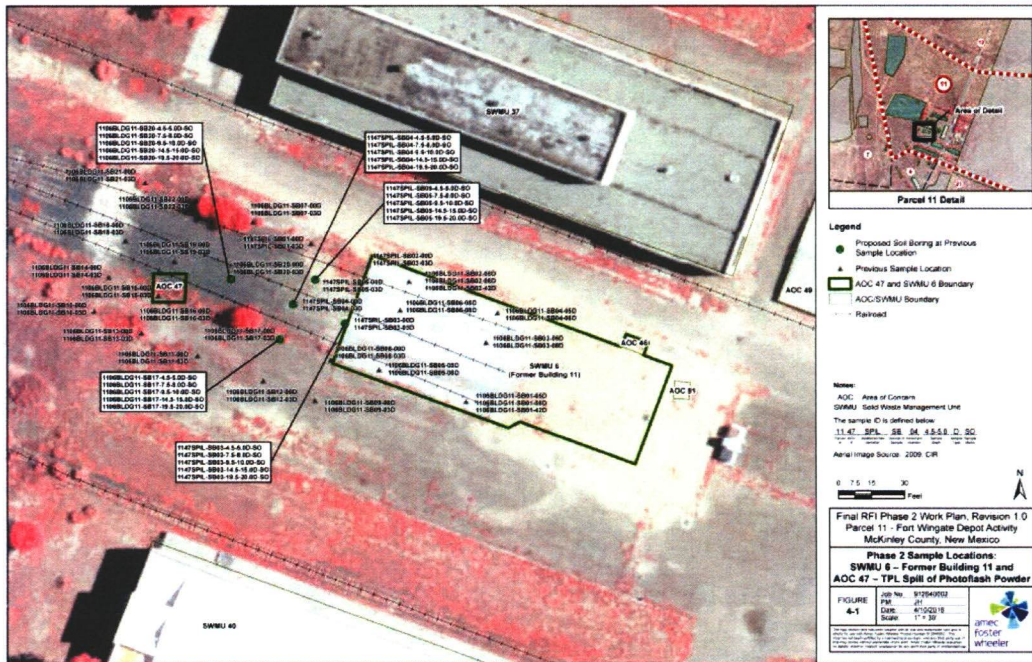
NMED Comment 4: Figure 4-1, Phase 2 Sample Locations SWMU 6 - Former Building 11 and AOC 47 TPL Spill and Photoflash Powder

NMED's Comment:

The figure is confusing because there are multiple wells with the same designations. SB-01 through SB-05 are each presented at two different locations. Revise the figure to distinguish the soil borings from one another. In addition, for future soil borings, refrain from naming nearby soil borings or wells with similar designations in order to avoid confusion.

Army Response:

The soil boring designations on Figure 4-1 have been expanded in order to distinguish one from the other. Revised Figure 4-1:



NMED Comment 5: Sections 6.0, SWMU 23-Building 7 and Building 8, p 6-1

Permittee Statement:

"The RFI Report recommended additional sampling at location SS009D at greater depths to define the vertical extent of DRO and lead results above the SSL. The DRO level detected was 660 mg/kg, which exceeded the previous SSL of 520 mg/kg. However, the revised SSL for DRO is 1,000 mg/kg, above the detected concentration. Therefore, the Army proposes to collect samples at the location of previous sample ID SS0090 for lead analysis only from depths of 1.5 to 2.0 ft and 2.5 to 3.0 ft bgs (sample ID 1123YARDSB09)."

NMED's Comment:

While the SSL for DRO has increased, the concentration of DRO below the surface may exceed the concentration of the surface sample, as well as the revised SSL. In addition to the lead analysis, include DRO analysis for the two samples to be collected at this location.

Army Response:

The Work Plan has been revised to include DRO analysis for the samples collected at this location.

Revised Text Pg 6-1: "The RFI Report recommended additional sampling at location SS009D at greater depths to define the vertical extent of DRO and lead results above the SSL. The DRO level detected was 660 mg/kg, which exceeded the previous SSL of 520 mg/kg. However, the revised SSL for DRO is 1,000 mg/kg, above the detected concentration. Although the SSL for DRO has been increased, the concentration of DRO below the surface may exceed the concentration of the surface sample and revised SSL. Therefore, the Army proposes to collect samples at the location of previous sample ID SS009D for lead and DRO analysis from depths of 1.5 to 2.0 feet and 2.5 to 3.0 feet bgs (sample ID 1123YARDSB09)."

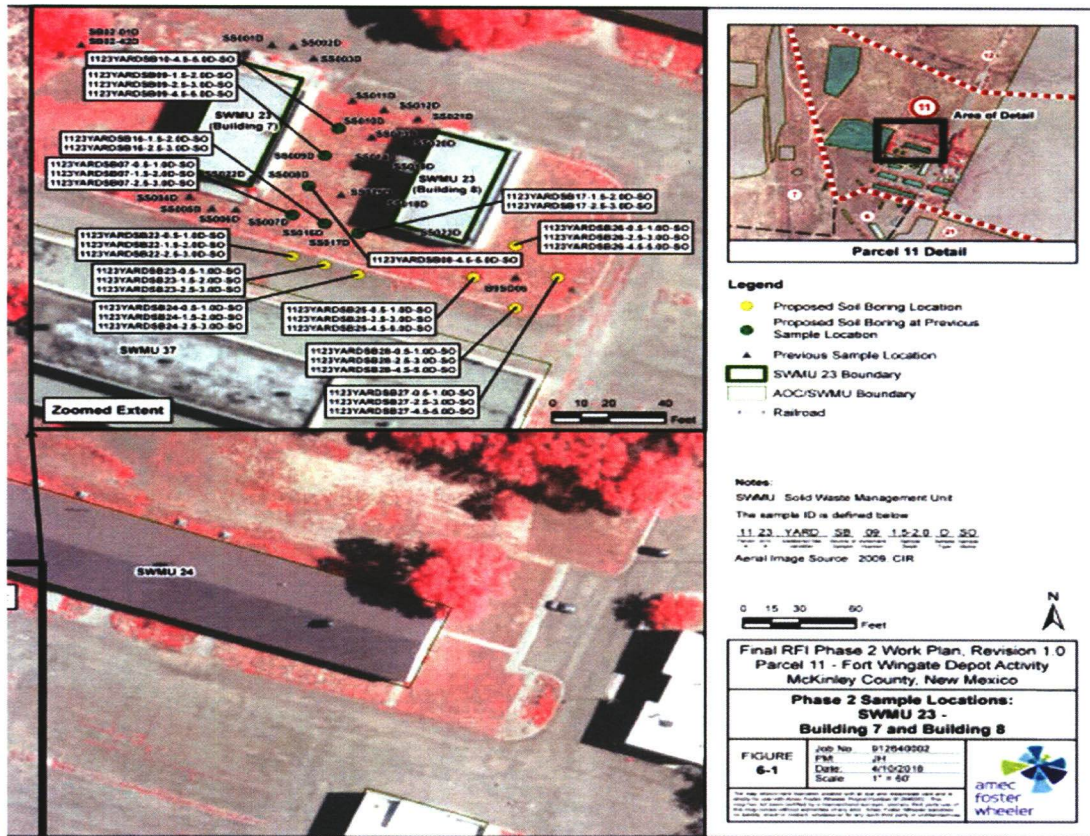
NMED Comment 6: Figure 6-1, Phase 2 Sample Locations SWMU 23 Building 7 and Building 8

NMED's Comment:

The inset map on this figure does not contain a scale. A scale must be provided for inset maps on this and all other figures with insets for all work plans and reports. Revise the figure accordingly.

Army Response:

A scale has been added to the Figure 6-1 inset map.



6-5

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NMED Comment 7: Section 7.0, SWMU 24 -Building 15, p 7-1

Permittee's Statement:

"The RFI Report noted that DRO concentration in a previous soil sample (sample ID SB28-02D) exceeded the SSL. However, the SSL for DRO has subsequently been raised to 1,000 mg/kg. Therefore, the reported DRO concentration of 770 mg/kg does not exceed the SSL and no additional sampling is planned at this location."

NMED's Comment:

While the SSL for DRO has increased, the concentration of DRO below the surface may exceed the concentration of the sample collected at two feet (ft) below ground surface (bgs), as well as the revised SSL. Propose to collect an additional sample for DRO analysis at approximately two ft bgs.

Army Response:

The Work Plan has been revised to include sample collection and analysis for DRO.

Revised text pg 7-1: "The RFI Report noted that a DRO concentration in a previous soil sample (sample ID SB28-02D) exceeded the SSL. However, the SSL for DRO has subsequently been raised to 1,000 mg/kg. Although the SSL for DRO has been increased, the concentration of DRO below the surface may exceed the concentration of the surface sample and revised SSL. Therefore, the Army proposes to collect an additional sample at the location of previous sample ID SB28-02D for DRO analysis from depths of 1.5 to 2.0 feet (sample ID 1124BLDG15-SB28-1.5-2.0D-SO)."

NMED Comment 8: Section 8.4, Former Building 29, p 8-2

Permittee's Statement:

"The vertical and horizontal extent of lead contamination has not been defined. Samples will be collected at the same locations at a depth of 1.5 to 2 ft. The eastern extent is defined by the road. Additional samples will be collected 25 ft to the north, west, and south of SSO 190 and to the north and south of SS021D from depths of 0.5 to 1.0 ft and 1.5 to 2.0 ft. All samples will be analyzed for lead."

NMED's Comment:

Migrating contamination may cross boundaries such as roads; therefore, the horizontal extent of contamination is not defined by the road. Propose to collect samples from a location approximately 25 ft east of SS021D from depths of 0.5 to 1.0 ft and 1.5 to 2.0 ft for lead analysis.

Army Response:

The Work Plan has been revised to include sample collection from approximately 25 ft east of SS021D.

Revised text pg 8-2: "The RFI samples SS019D and SS021D contain concentrations of lead and arsenic exceeding the SSL. The Army does not believe the arsenic concentrations at these locations are indicative of a release. The vertical and horizontal extent of lead contamination has not been defined. Additional samples will be collected at the same locations from approximately 25.0 feet to the north, west, and south of SS019D and to the north, south and east of SS021D from depths of 0.5 to 1.0 foot and 1.5 to 2.0 feet. All samples will be analyzed for lead."

NMED Comment 9: Section 8.5, Building 36 (Parcel 6), p 8-3

Permittee's Statement:

"RFI sample SS1760, collected beneath the floor drain of Building 36, had concentrations of arsenic, iron, and benzo(a)pyrene above the SSL. Based on the RFI report, horizontal extent of the release is defined by the building slab. A single sample will be collected at the same

location from a depth of 1.5 to 2 ft below the floor drain to define the vertical extent. The sample will be analyzed for SVOCs and arsenic."

NMED's Comment:

Contamination could migrate beyond the edges of the concrete slab; therefore, the slab cannot define the extent of contamination. Further, based on the figures presented in the Work Plan, the sole sample from this location was collected near the eastern edge of the slab. In addition to the deeper sample at SS 176D, the Permittee must collect samples north, south, east, and west of SS 176D from both 0 to 0.5 ft and 1.5 to 2 ft bgs. All samples must be analyzed for SVOCs, arsenic, and iron. The Permittee may utilize one of the proposed borings north of Building 36 for the northern step-out sample location. The other three step-out sample locations must be as close to the edge of the slab as possible.

Army Response:

The Work Plan has been revised to include collection of samples from the north, south, east and west of SS176D.

Revised text pg 8-3: "The RFI sample SS176D was collected beneath the floor drain of Building 36, and had concentrations of arsenic, iron, and benzo(a)pyrene above the SSL. Based on the RFI Report, horizontal extent of the release is defined by the building slab. A single sample will be collected at the same location as SS176D from a depth of 1.5 to 2.0 feet below the floor drain to define the vertical extent. Samples will also be collected from the north, south, east, and west of SS176D as close to the edge of the concrete slab as possible at a depth of 0.5 to 1.0 foot and 1.5 to 2.0 feet. The samples will be analyzed for SVOCs, arsenic, and iron."

NMED Comment 10: Section 8.6, Coal Tanks (Parcel 7), p 8-3

Permittee's Statement:

"The RFI report also lists several samples (SS163D, SS166D, and SS 1670) as exceeding the SSL for DRO contamination; however, only one of these samples (SS167D) exceeded the current SSL of 1,000 mg/kg. DRO analysis will be added to the sample collected for SVOCs at this location as described above, as well as the sample collected to the east to define the horizontal extent."

NMED's Comment:

While the SSL for DRO has increased, the concentration of DRO below the surface may exceed the concentration of the surface sample, as well as the revised SSL. Confirm that the DRO concentrations at locations SS163D and SS166D do not exceed the SSL by including DRO analysis for the samples proposed to be collected at these locations.

Army Response:

The Work Plan has been revised to include DRO analysis.

Revised text pp 8-3&8-4: The RFI Report also lists several samples (SS163D, SS166D, and SS167D) as exceeding the SSL for DRO contamination. Only one of these samples (SS167D) exceeded the current SSL of 1,000 mg/kg; however, the concentration of DRO below the surface at sample locations SS163D and SS166D may still exceed the concentration of the surface sample. The samples collected at the locations of samples SS163D, SS166D, and SS167D, at depths of 1.0 to 1.5, will be analyzed for DRO and SVOCs. The samples collected from sample location SS179D, at depths of 0.0 to 0.5 and 1.0 to 1.5, will also be analyzed for DRO and SVOCs to define the horizontal extent.

NMED Comment 11: Section 9.0, SWMU 45 -Building 6/Gas Station, AOC 46/Structure 65 - Former AST Located near Former and AOC SI/Structure 64 - Former UST at Former Building 11, p 9-1

Permittee's Statement:

"The RFI Report recommended using the results from soil borings drilled in AOC 46, which lies just west of AOC 51, to delineate the extent of influence associated with the UST and piping to the west and northwest. It was concluded that the vertical extent of influence to the west has been defined at about 15 ft in soil boring SB 10. The horizontal extent of influence has been defined by soil borings SB08, SB 10 and SB11. The RFI concluded that Corrective Measures would be implemented as future phase of work including the investigation to determine the presence of a UST and piping, removal methods, and samples (associated with the UST and piping). As such, no investigation activities were proposed as part of this work plan."

NMED's Comment:

SB 10 contained two samples that exceeded the SSL for DRO; therefore, SB10 does not define the horizontal extent of contamination. Propose a step-out sample to the east of SB10 in order to define the horizontal extent of contamination. Samples must be collected from 5, 10, 15, and 20 ft bgs and analyzed for DRO.

Army Response:

The Work Plan has been revised to include a soil boring with samples collected for DRO analysis. The text and Table 9-1 now each refer to DRO extended.

Revised text pg 9-1: "Based on comments received from NMED (2013a), the Army will install two soil borings in the footprint of AOC 46, Structure 65, which is the site of a former AST. Samples will be collected at 0.5 to 1.0 foot, 1.5 to 2.0 feet, 2.5 to 3.0 feet, and 3.5 to 4.0 feet bgs to be analyzed for DRO extended and SVOCs."

The RFI Report recommended using the results from soil borings drilled in AOC 46, which lies just west of AOC 51, to delineate the extent of influence associated with the UST and piping to the west and northwest. It was concluded that the vertical extent of influence to the west has been defined at about 15.0 feet in soil boring SB10. The horizontal extent of influence has been defined by soil borings SB08, SB10, and SB11. The RFI concluded that corrective measures would be implemented as future phase of work, including the investigation to determine the presence of a UST and piping, removal methods, and samples (associated with the UST and piping). Although the RFI concluded that the vertical and horizontal influence was defined by soil borings SB08, SB10, and SB11, an additional boring, SB16, will be performed east of SB10 as requested by NMED NOD (2016) Comment 11. Samples will be collected at approximately 5 feet, 10 feet, 15 feet, and 20 feet bgs and will be analyzed for DRO extended."

NMED Comment 12: Section 12.1, Conceptual Site Exposure Model, p 12-2

Permittee's Statement: "Vacant property (less than 2 acres) -These are relatively small sites with the potential to support future residential and construction worker use. They may also support future commercial/industrial use, but this use is not quantitatively evaluated because the residential assessment is protective of commercial/industrial exposure."

NMED's Comment:

It is assumed that this applies for both conceptual site exposure models 2 and 3. It is agreed that the residential and construction worker scenarios are protective of an industrial/commercial worker; however, for completeness, please ensure this statement is carried forward into the risk assessment reports once completed.

Army Response:

The CSM section was revised. The new section is Section 12.1.5 and begins on page 12-4. It clearly states that all three receptors will be evaluated for each AOC and SWMU.

NMED Comment 13: Section 12.1, Conceptual Site Exposure Model, p 12-2

Permittee's Statement:

"Property with remaining structures (buildings, paved areas, railroad tracks, etc.) -These sites vary in size and are most likely to support future commercial/industrial and construction worker use. Residential use is not likely because existing structures or other site conditions severely limit or preclude residential use. The remaining structures also preclude or severely limit the potential for cattle grazing."

NMED's Comment:

Clarify whether the end use of these properties is to remain under Army control or if the properties are to be transferred to another entity. By not evaluating the residential scenario, as well as the construction worker scenario, the land will require land use restrictions, limiting the future use of the property to industrial use only. If the Army wished to demonstrate clean closure with no restrictions, then it must be assumed that the future owner could demolish the buildings and use the land for other purposes (to include hypothetically residential use and/or grazing).

Army Response:

The properties are anticipated to be transferred to other entities and therefore future use by residential, construction worker, and commercial/industrial receptors will be evaluated at all properties. Discussion of the CSM is now in Section 12.1.5. The CSM figure, originally presented as Figure 12-1, was split into three separate CSMs to account for various AOC/SWMU sizes and site features, and each shows that all three receptors types will be evaluated. An overview map was also prepared to show which CSM applies to each AOC or SWMU as covered by the Phase 2 RFI Work Plan. The revised CSMs and overview map are presented as Figures 12-1 through 12-4.

Revised text that addresses the NMED's comment regarding the CSM for property with remaining structures is now in Section 12.1.5, bullet 3 on pg 12-5, and as presented below:

- 3. Property with remaining structures (buildings, paved areas, railroad tracks, etc.), Figures 12-3 and 12-4 – These sites vary in size and are most likely to support future commercial/industrial and construction worker use. Residential use is not likely based on the existing structures or other site conditions that severely limit or preclude residential use and cattle grazing. However, residential use will be evaluated for these properties to comply with the Permit requirements and to support unrestricted future land use by the Army or other future owner:*
 - SWMU 6/AOC 47 (Former Building 11 – Former Locomotive Shop/TPL spill of photoflash power west of Former Building 11)*
 - SWMU 23 (Building 7 – Paint/Carpenter Shop and Building 8 – Paint Shop and Paint Storage Warehouse)*
 - SWMU 24 (Building 15 – Garage and Storage Building)*
 - SWMU 40 (Buildings 12, 13, and 14, Former Building 29, and buildings or other structures within SWMU 40 that are located in Parcel 6)*
 - SWMU 45/AOC 46 (Building 6 – Gas Station/AST near Former Building 11)*
 - SWMU 50 (Structure 35 – Former UST No. 7 near Building 45)*
 - AOC 49 (Structure 38 – End Loading Dock and Structure 39 – Side Loading Dock)*
 - AOC 52 (Buildings 79 and 80 – Storage Vault)*
 - With the exception of AOC 52, these SWMUs and AOCs are within a cluster of buildings at FWDA that were historically used for maintenance and*

administration activities. The buildings are closely spaced and surrounded primarily by pavement or roadways with small landscaped areas. The buildings were not designed for residential use and are better suited for use as a future commercial/industrial business center – future residential receptors will be evaluated as indicated above.

- *AOC 52 is a small site composed of two small structures that are not suitable for residential use, but as indicated above, future residential receptors will be evaluated.*

NMED Comment 14: Section 12.1, Conceptual Site Exposure Model, p 12-3

Permittee's Statement:

"Where appropriate, AOCs and/or SWMUs may be grouped together to evaluate potential health hazards where future use is likely to encompass an area larger than a single AOC or SWMU, and where similar compound classes are a concern."

NMED's Comment:

Grouping will be evaluated and require acceptance on a site-specific basis once all data have been collected and an assessment of contamination can be conducted (which may include spatial evaluation, magnitude of contamination, constituents of potential concern, continuity of areas and use, and hot spots). Grouping of sites may or may not be deemed appropriate. Further, grouping of SWMUs/AOCs may not be done to mitigate hot spot analyses.

Army Response:

The Army currently plans to assess each AOC or SWMU individually, so the text regarding grouping was removed from the Work Plan.

The Army will seek NMED input if it determines that grouping would streamline the risk evaluation without diluting the effect of areas of elevated concentrations and without jeopardizing its ability to close and remove AOCs or SWMUs from the RCRA permit.

NMED Comment 15: Section 12.2, Cumulative Risk Evaluation, p 12-3

NMED's Comment:

Grouping will be evaluated and require acceptance on a site-specific basis once all data have been collected and an assessment of contamination can be conducted (which may include spatial evaluation, magnitude of contamination, constituents of potential concern, continuity of areas and use, and hot spots). Grouping of sites may or may not be deemed appropriate. Further, grouping of SWMUs/AOCs may not be done to mitigate hot spot analyses.

Army Response:

The Army currently plans to assess each AOC or SWMU individually, so the text regarding grouping was removed from the Work Plan.

The Army will seek NMED input if it determines that grouping would streamline the risk evaluation without diluting the effect of areas of elevated concentrations and without jeopardizing its ability to close and remove AOCs or SWMUs from the RCRA permit.

NMED Comment 16: Section 12.2, Cumulative Risk Evaluation, p 12-5

Permittee's Statement: *"Soil leaching to groundwater evaluation – At AOCs/SWMUs where there are no sufficient lines of evidence to eliminate this pathway, it will be evaluated using one of two approaches:*

- At AOCs/SWMUs where groundwater analytical results are available, groundwater data will be compared to the NMED tap water screening levels to evaluate the potential threat to groundwater quality.*
- At AOCs/SWMUs where no groundwater data are available, site-specific dilution attenuation factor (DAF)-based SSLs will be calculated and used to evaluate the potential threat to groundwater quality. We anticipate calculating SSLs based on a site-specific/site-wide DAF of 529 that has previously been submitted to NME and is expected to be approved."*

NMED's Comment: The soil leaching to groundwater pathway must be evaluated at all sites, regardless of whether groundwater data are present. The purpose of this evaluation is to assess the potential for soil contamination to leach to groundwater. Use of groundwater data is a useful line of evidence to discuss whether site contamination has leached to groundwater but it does not address on-going issues or future potential for contamination. In addition, the proposed DAF of 529 was not approved by NMED. In lieu of calculating a site-specific DAF, the Permittee may use a DAF of 20.

Army Response:

The soil-leaching-to-groundwater pathway will be evaluated at all sites using the soil analytical results. Text indicating the soil to groundwater pathway is potentially complete is provided in two sections of the revised work plan:

- Section 12.1.4.4, pg 11-4: "The NMED risk guidance (NMED, 2017a) requires that the potential for COPCs in shallow soil to leach to shallow groundwater, which is subsequently used as a potable water source, be evaluated if this exposure pathway is potentially complete for a site. Groundwater is known to be present below Parcel 11 and, therefore, this pathway will be considered potentially complete."*

- Section 12.1.5, pg 11-4: “The primary media of concern being addressed by this RFI Phase 2 Work Plan are surface and subsurface soils, and thus the cumulative risk evaluation will quantitatively address potential exposures through direct contact (including dermal contact, incidental ingestion, and inhalation of dust or particulates) and the soil leaching to groundwater pathways at each SWMU and AOC.”

Risk-based soil-leaching-to-groundwater SSLs based on a dilution attenuation factor of 20 will be used in the risk evaluation. The screening levels to be used are now in Section 12.1.2, pg 12-2, bullet 1b:

- b. Soil leaching to groundwater pathway – NMED publishes up to four SSLs for each analyte. Two of the four SSLs are based on risk-based values to which dilution attenuation factors (DAFs) of 1 and 20 have been applied. Two of the four SSLs are based on drinking water standards to which DAFs of 1 and 20 have been applied. Use of the SSLs is allowed by NMED based on a DAF of 20 as reasonably protective (NMED, 2017a; Section 4.4), and allows use of the least conservative SSL between the risk-based and drinking water based SSLs (NMED, 2017a; Section 4.9).

A lines-of-evidence discussion will be prepared when predicted cancer risks or noncancer hazards for the soil to groundwater pathway are greater than the NMED target risk thresholds, as now indicated in Section 12.1.6.3.2, pg 11-10, bullet 4:

4. Development of a qualitative discussion of additional lines of evidence relevant to the COPC for a given AOC or SWMU to describe why a potentially unacceptable cancer risk or noncancer hazard may not be a concern for either the direct contact or the soil to groundwater pathway. Examples of lines of evidence could include a review of the subsurface conditions, the physical and chemical properties of an analyte, frequency of detection, magnitude of exceedances, visual evidence of contamination, concentration trends, and statements about historical use or sources of an analyte at FWDA.

NMED Comment 17: Section 12.2, Cumulative Risk Evaluation, p 12-5

Permittee’s Statement: “Note that evaluation of the beef ingestion pathway will use a 95% upper confidence limit (UCL) instead of the maximum concentration because cattle don’t typically stand in one location to graze for extended periods.”

NMED’s Comment: The use of the 95% upper confidence limit (UCL) for the beef ingestion pathway is deemed reasonable. While the first step in the risk screen is to use the maximum detected concentration, the guidance does allow refinement using the 95% UCL. However, the risks calculated using the UCL must still be added to those risks based on the maximum detection for all other complete pathways.

Please also note, for several of the areas, the distribution of contamination may be limited to localized areas within the SWMU/AOC. In these cases, a qualitative assessment may be

appropriate. For example, and as noted in Section 12.1 of the work plan, contamination in Igloo Blocks is limited to the doorways, entrance areas and aprons; contamination is not wide-spread across the Block. A spatial assessment of these data (amount of area contaminated versus size of the SWMU) would likely result in the beef pathway being incomplete. A similar qualitative assessment may be warranted for developed areas or other areas where the area of contamination represents a very small portion of the site (less than 2 acres). However, the risk assessments should include these qualitative discussions as applicable for each site in the reports.

Army Response:

According to the most recent NMED guidance (March 2017 Revised), the beef ingestion pathway is evaluated qualitatively. The Work Plan text has been revised to incorporate this change. Discussion of the beef ingestion pathway is now provided in three places within two sections of the Work Plan:

- *Section 12.1.4.2, pg 12-3: “The NMED risk guidance for human health (NMED, 2017a) requires a qualitative evaluation for the beef ingestion pathway for sites that are greater than 2 acres. The acreage varies widely for the SWMUs and AOCs throughout Parcel 11, but is known to be larger than 2 acres at SWMU 3 and SWMU 10 and for a portion of SMWU 40 (Building 10 Storage Yard). The beef ingestion pathway is considered incomplete at the remaining SWMUs or AOCs based on sizes less than 2 acres or on-ground conditions that are unsuitable conditions for grazing (e.g., buildings remain or pavement or other hardscape covers the surface).”*
- *Section 12.1.5, pg 12-4: “There also is the potential for indirect exposure through the VI and beef ingestion pathways. These indirect exposures will be evaluated qualitatively at those SWMUS or AOCs where the exposure pathway analysis conducted at the time of the risk evaluation demonstrates they are complete.”*
- *Section 12.1.5, pg 12-5, bullet 2:*
 2. *Vacant property (greater than 2 acres), **Figures 12-2 and 12-4** – These are larger sites with the potential to support the same future receptors as smaller vacant property, but they are also large enough to potentially support cattle grazing. There is no current use at this time.*

SWMU 3 (Fenced Storage Yard)

SWMU 10 (Sewage Treatment Plant)

SWMU 40 (Building 10 Storage Yard)

These are mostly vacant spaces that could support a wide range of future uses, including residential development and cattle grazing.

NMED Comment 18: Section 12.2, Cumulative Risk Evaluation, p 12-6

Permittee's Statement: *"Re-calculate the dioxin/furan toxic equivalents (TEQ) using validated results, for sites where this compound class is a concern. The laboratory calculated TEQ is used in the initial assessment so the TEQ does not initially account for the results of data validation. TEQs are calculated using the current 2005 toxic equivalency factors published by the World Health Organization in 2005 (Van den Berg, et.al., 2006). Updated calculations, if performed, will be included as an appendix to the Phase 2 RFI Letter Report. The TEQ calculated using validated results will be used as the alternative to the maximum concentration in the re-evaluation of cumulative risk."*

NMED's Comment: First, since the laboratory calculated TEQ does not include data validation, the use of it is not appropriate. Risk assessments should be conducted using 100% validated data. The TEQ must be calculated utilizing the validated congener data for use in the screening assessment. The TEQ must not be used as a refining tool.

Army Response:

Dioxins/furans are not analytes of concern at Parcel 11. The text referring to dioxins/furans was removed. The Army agrees that risk assessments should be conducted using 100% validated data. However, the text was included in error. It is not related to this site.

NMED Comment 19: Section 12.2, Cumulative Risk Evaluation, p 12-6

Permittee's Statement: *"Identify the concentrations that contribute significantly to unacceptable health risks. This data review will allow an alternate maximum concentration to be selected from the existing data set to represent a post-removal action concentration in the re-evaluation of cumulative risk."*

NMED's Comment: Clarify the intent of this paragraph to state that if initial site data indicate corrective actions are warranted and removals are conducted, the risk assessments will be refined using confirmation data.

Army Response:

This paragraph was eliminated during revisions to the Work Plan to reflect a clear risk evaluation process that aligns with the requirements of the RCRA permit and the current version of the NMED risk guidance, most recently revised in March 2017. The risk evaluation approach now lays out a four-part process to conducting the human health risk evaluation as described in Section 12.1.6. The introduction to Section 12.1.6, on pg 12-6 provides an overview: "The risk evaluation consists of four parts. The first part is a risk screening step

that compares the analytical results for each detected constituent in each sample to the corresponding screening level. The second part is an evaluation of metals background concentrations and essential nutrients. The third part is a cumulative risk evaluation to assess the potential health risks from simultaneous exposure to multiple analytes in soil. The fourth part is an evaluation of the vapor intrusion pathway if it found to be complete. The details for each part of the risk evaluation are presented below."

In addition, the Work Plan was revised to incorporate an ecological risk evaluation as described in Section 12.2.

If you have questions or require further information, please call me at (505) 721-9770.

Sincerely,

PATTERSON.MAR Digitally signed by
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