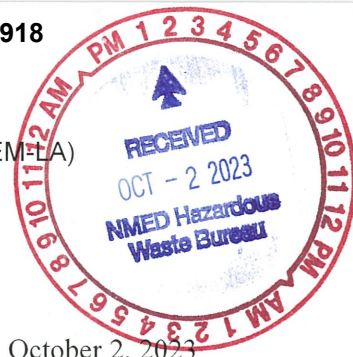




EMID-702918

DEPARTMENT OF ENERGY
Environmental Management Los Alamos Field Office (EM-LA)
Los Alamos, New Mexico 87544



EMLA-23-BF312-2-1

October 2, 2023

Mr. Rick Shean
Designated Agency Manager
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6313

Subject: Request for Certificates of Completion without Controls for Solid Waste Management Units 21-017(a, b, and c) in the Delta Prime Site Aggregate Area

- References:
1. Los Alamos National Laboratory, February 2006. "Investigation Report for Material Disposal Area U, Consolidated Unit 21-017(a)-99, at Technical Area 21," Los Alamos National Laboratory document LA-UR-05-9564
 2. New Mexico Environment Department, letter to D. Gregory and D. McInroy from J.P. Bearzi, "Approval for the Investigation Report for Material Disposal Area U, Consolidated Unit 21-017(a)-99, at Technical Area 21," dated September 28, 2006
 3. New Mexico Environment Department, November 2022. "Risk Assessment Guidance for Site Investigations and Remediation, Volume 1, Soil Screening Guidance for Human Health Risk Assessments," Hazardous Waste Bureau and Ground Water Quality Bureau

Dear Mr. Shean:

In accordance with Section XXI of the Compliance Order on Consent (Consent Order), the U.S. Department of Energy (DOE) Environmental Management Los Alamos Field Office (EM-LA) is requesting certificates of completion without controls for the following solid waste management units (SWMUs) within the Delta Prime (DP) Site Aggregate Area:

- SWMU 21-017(a), Absorption Bed (Material Disposal Area [MDA] U)
- SWMU 21-017(b), Absorption Bed (MDA U)
- SWMU 21-017(c), Soil Contamination from Former Distribution Box (MDA U)

The above SWMUs were included in the "Investigation Report for Material Disposal Area U, Consolidated Unit 21-017(a)-99, at Technical Area 21," (hereafter the IR) (Reference 1). The IR demonstrated that nature and extent of contamination were defined for the three SWMUs and that they did not pose potentially unacceptable risk or dose to human health under the industrial scenario or to ecological receptors. The sites were evaluated for the industrial scenario based on current land use at the time the IR was prepared. Based on the results of the IR, the New Mexico Environment Department (NMED) issued certificates of completion with controls for the three sites on September 28, 2006 (Reference 2). In its letter, NMED specified that the first control for the sites was that land use remain industrial. The second control was prohibition of construction of any structures at MDA U. NMED indicated that the no-construction control would be removed if DOE provided additional information

demonstrating that vapor intrusion does not pose a risk to human health at the site using the Johnson and Ettinger model.

The purpose of this letter is to provide additional information to support removal of the two controls and issuance of certificates of completion without controls for SWMUs 21-017(a), 21-017(b), and 21-017(c). This information includes demonstration that the sites do not pose a potentially unacceptable human-health risk under the residential scenario and do not pose a risk due to vapor intrusion. DOE notes that NMED's current guidance for evaluating the vapor intrusion pathway no longer allows use of the Johnson and Ettinger model ("Risk Assessment Guidance for Site Investigations and Remediation, Volume 1, Soil Screening Guidance for Human Health Risk Assessments," Reference 3). Vapor intrusion risk is, therefore, evaluated in accordance with current NMED risk assessment guidance using vapor intrusion screening levels (VISLs).

Residential Risk

Although the land use for the MDA U sites identified in the IR was industrial, the residential risk scenario was also evaluated as required by the 2005 Consent Order (Reference 1). The human-health risk assessment results for the residential scenario presented in the IR included a total excess cancer risk of 2×10^{-5} , which is above the NMED target of 1×10^{-5} (Reference 3), and a hazard index of 0.7, which is below the NMED target of 1 (Reference 3). The results of the carcinogenic risk evaluation indicate that most of the risk is associated with arsenic (excess cancer risk = 7.46×10^{-6}), and the total excess cancer risk without arsenic is 7.67×10^{-6} and below the NMED target. As explained below, the risk screening evaluation presented in the IR overestimates the risk associated with arsenic.

The sampling results presented in the IR show that arsenic was not detected above the background values (BVs) in any of the 75 soil and fill samples or 9 sediment samples collected at the site. Arsenic was retained as a chemical of potential concern (COPC) and included in the risk evaluation because it was detected above BVs in 7 of 103 samples collected from upper tuff units (Qbt 2 and Qbt 3) and 1 of 2 samples collected from the middle tuff unit (Qbt 1v). Arsenic was not detected above its BV in the 1 sample collected from the lower tuff unit (Qbo). The exposure point concentration (EPC) for the residential risk evaluation for SWMUs 21-017(a), 21-017(b), and 21-017(c) was the 95% upper confidence limit of the mean of arsenic results from all samples collected from the depth interval 0 to 10 ft below ground surface (bgs). Samples in this depth range consisted of 95 samples collected from soil, fill, sediment, and upper tuff (Qbt 3).

The 95 samples providing the data used to calculate the residential EPC for arsenic consist of 75 soil/fill samples, 9 sediment samples, and 11 upper tuff (Qbt 3) samples. All arsenic results for the 84 soil/fill and sediment samples were below the soil and sediment BVs (8.17 mg/kg and 3.98 mg/kg, respectively). The arsenic results for the 11 tuff samples included in the calculation of the residential EPC ranged from 1.5 mg/kg to 4.3 mg/kg, with 4 of the 11 results above the Qbt 2,3,4 BV (2.79 mg/kg). Thus, arsenic results for 91 of the 95 samples used to calculate the residential EPC were below BVs. The residential EPC (2.91 mg/kg) is less than the soil and sediment BVs and only 0.12 mg/kg above the Qbt 2,3,4 BV. The cancer risk associated with exposure to the soils, sediments, and tuff at SWMUs 21-017(a), 21-017(b), and 21-017(c), therefore, is equivalent to or less than the cancer risk associated with exposure

to background soils, sediments, and tuff. Inclusion of arsenic as a COPC in the total excess cancer risk for the residential scenario at SWMUs 21-017(a), 21-017(b), and 21-017(c) overestimates the risk associated with exposure to hazardous constituents released from these sites, and SWMUs 21-017(a), 21-017(b), and 21-017(c) do not pose an unacceptable risk to human health under the residential scenario.

Vapor Intrusion

Exposure to vapors migrating from the subsurface into buildings is evaluated using the process presented in NMED's risk assessment guidance (Reference 3). This process uses a tiered approach that first evaluates whether the vapor intrusion pathway is complete. The pathway is deemed incomplete if structures are not present at the site and buildings are reasonably expected to be absent in the future. There are currently no structures at MDA U, although the site could potentially be developed in the future. The vapor intrusion pathway is, therefore, considered potentially complete and must be evaluated further qualitatively or quantitatively. Although volatile and toxic organic chemicals were detected infrequently in soil samples at MDA U, a quantitative evaluation of the soil vapor pathway was performed because soil vapor samples had been collected at the site. This evaluation involved comparison of measured concentrations of volatile and toxic constituents in vapor samples with the VISLs presented in NMED's guidance (Reference 3).

The IR presents results of vapor sampling performed during investigations at SWMUs 21-017(a), 21-017(b), and 21-017(c) during 1998 and 2005. In 1998, vapor samples were collected from eight boreholes at MDA U and analyzed for VOCs. The shallow sample at each borehole was collected from a depth of 25 ft bgs. In 2005, vapor samples were collected from nine boreholes at MDA U and analyzed for VOCs. The shallow samples at each location were collected at depths ranging from 4 ft to 19 ft bgs, corresponding to the approximate depths of the absorption beds near the boreholes. The VOC results from the shallow samples collected at each location during 1998 and 2005 were compared with the VISLs for residential exposure. The shallow samples were deemed most representative of subsurface vapor that could potentially migrate into a building. Table 1 presents the concentrations of VOCs detected in these samples, along with the residential VISLs.

As shown in Table 1, 23 VOCs were detected in the MDA U vapor samples. The frequency of detection ranged from 1 of 17 samples to 17 of 17 samples. All detected results for chemicals having VISLs were less than the corresponding residential VISL. Therefore, vapor intrusion should not pose a potential unacceptable human health risk for SWMUs 21-017(a), 21-017(b), and 21-017(c).

Summary

The evaluation of human-health risk for the residential scenario at SWMUs 21-017(a), 21-017(b), and 21-017(c) indicates that the risk reported in the IR overestimated the actual excess cancer risk for the sites because the contribution from arsenic was equivalent to background. The total excess cancer risk for the sites under the residential scenario exclusive of arsenic is 7.67×10^{-6} and below the NMED target of 1×10^{-5} . Evaluation of the vapor intrusion pathway shows concentrations of all VOCs detected in shallow vapor samples are below residential VISLs, and SWMUs 21-017(a), 21-017(b), and 21-017(c) do not pose an unacceptable risk from vapor intrusion.

Based on the above evaluations, the controls identified in NMED's approval letter (Reference 2) are not needed, and EM-LA is requesting certificates of completion without controls for SWMUs 21-017(a), 21-017(b), and 21-017(c).

Per Section XXIII.D of the Consent Order, EM-LA sought to reach agreement with NMED on a review schedule by which NMED will review and approve or disapprove this submission.¹ Consistent with Section XXIII.D and Appendix D (Document Review/Comment and Revision Schedule) of the Consent Order, EM-LA proposed a 120-day period for NMED to review and approve or disapprove this submission. NMED failed to respond to EM-LA's proposal. Because of NMED's failure to respond, EM-LA and NMED were unable to reach agreement on the review schedule by which NMED will review and approve or disapprove the submission. A copy of the correspondence from EM-LA to NMED regarding NMED's review schedule is included as Enclosure 2.

It is crucial that NMED commits to a review schedule of EM-LA's submissions for EM-LA to be able to timely and effectively plan for—and expeditiously execute—legacy waste remediation through the Consent Order corrective action process. Moreover, such commitment from NMED needs to be in accordance with the Consent Order.

If you have any questions, please contact Christian Maupin at (505) 695-4281 (christian.maupin@em-la.doe.gov) or Cheryl Rodriguez at (505) 414-0450 (cheryl.rodriguez@em.doe.gov).

Sincerely,



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Arturo Q. Duran For
Compliance and Permitting Manager
U.S. Department of Energy
Environmental Management
Los Alamos Field Office

¹ Section XXIII.D states, in pertinent part:

“Prior to DOE's submission of any work plan or report required by Sections XIII, XVI, XVIII, XIX, or XV (Facility Investigation, Corrective Measures Evaluation, Corrective Measures Implementation, Accelerated Corrective Action, Interim Measures), **the Parties agree to reach agreement on review schedules by when NMED will review and approve or disapprove DOE's submission(s).**” “If NMED action on a DOE submission is not completed in accordance with an agreed-upon review schedule, the submittal will be **deemed approved**” (emphasis added). EM-LA recognizes that “NMED may request a single extension for a specified number of days to an agreed-upon review schedule.”

Enclosure(s): Two hard copies with electronic files

1. Table 1, Volatile Organic Compounds Detected in Shallow Vapor Samples from Boreholes at Solid Waste Management Units 21-017(a), 21-017(b), and 21-017(c) (EM2023-0589)
2. Email from A. Duran (EM-LA) to R. Shean (NMED), August 29, 2023, "Request for NMED Review of 120 day period for Request for COCs without Controls for SWMUs 21-017(a, b, and c) in the Delta Prime Site Aggregate Area"

cc (letter and enclosure[s] emailed):

Laurie King, EPA Region 6, Dallas, TX

Steve Yanicak, NMED-DOE-OB

Neelam Dhawan, NMED-HWB

Ricardo Maestas, NMED-HWB

Kylian Robinson, NMED-HWB

Jeannette Hyatt, LANL

Stephen Hoffman, NA-LA

John Evans, EM-LA

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Public Reading Room (EPRR)

PRS website

Enclosure 1

*Table 1, Volatile Organic Compounds Detected
in Shallow Vapor Samples from Boreholes at Solid Waste
Management Units 21-017(a), 21-017(b), and 21 017(c)*

Table 1
Volatile Organic Compounds Detected in Shallow Vapor Samples
from Boreholes at Solid Waste Management Units 21-017(a), 21-017(b), and 21-017(c)

Sample ID	Location ID	Depth (ft)	Acetone	Benzene	2-Butanone	Carbon Disulfide	Chloroform	Chloromethane	Cyclohexane	Dichlorodifluoromethane
Residential VISL^a			1,080,000	120	174,000	24,300	40.7	520	34,800	3480
MD21-98-0398	21-10838	25	— ^b	—	—	—	—	13.8	—	—
MD21-98-0408	21-10839	25	—	—	—	—	—	—	—	—
MD21-98-0418	21-10840	25	—	4.79	—	—	—	—	—	2.87
MD21-98-0429	21-10841	25	—	—	—	—	—	—	—	2.97
MD21-98-0439	21-10842	25	—	—	—	—	—	—	—	2.67
MD21-98-0449	21-10843	25	—	—	—	—	—	—	—	—
MD21-98-0460	21-10844	25	—	4.47	—	—	6.83	—	—	2.87
MD21-98-0474	21-10845	25	—	8.94	—	—	15.6	—	—	—
MD21-05-63502	21-24772	12	120	—	17	7.7	—	—	—	—
MD21-05-63504	21-24774	19	110	—	9.1	—	—	—	—	—
MD21-05-63506	21-24775	14	15	56	—	4.4	—	—	11	—
MD21-05-63508	21-24776	4	26	—	—	—	—	—	—	—
MD21-05-63510	21-24777	4	25	—	—	—	4.8	—	—	—
MD21-05-63512	21-24778	13	42	—	4.6	—	—	—	—	—
MD21-05-63514	21-24779	11	36	—	2.9	2.9	—	—	—	—
MD21-05-63521	21-24780	4	—	28	—	—	—	—	—	—
MD21-05-63518	21-24781	19	—	—	—	—	4.7	—	—	—

Table 1 (continued)

Sample ID	Location ID	Depth (ft)	Ethanol	Ethylbenzene	4-Ethyltoluene	n-Heptane	Hexane	Propylene	Styrene	Tetrachloroethene
Residential VISL^a			na^c	374	na	14,000^d	24,300^d	103,000^d	34,800	1390
MD21-98-0398	21-10838	25	—	—	—	—	—	—	—	—
MD21-98-0408	21-10839	25	—	—	—	—	—	—	—	—
MD21-98-0418	21-10840	25	—	2.52	—	—	—	—	—	—
MD21-98-0429	21-10841	25	—	—	—	—	—	—	—	—
MD21-98-0439	21-10842	25	—	—	—	—	—	—	—	—
MD21-98-0449	21-10843	25	—	—	—	—	—	—	—	—
MD21-98-0460	21-10844	25	—	—	—	—	—	—	—	—
MD21-98-0474	21-10845	25	—	—	—	—	—	—	—	—
MD21-05-63502	21-24772	12	13	—	16	—	—	—	93	8.8
MD21-05-63504	21-24774	19	—	—	—	—	—	5.8	320	—
MD21-05-63506	21-24775	14	—	6.3	6.1	14	72	—	13	—
MD21-05-63508	21-24776	4	—	—	—	—	4.4	—	210	—
MD21-05-63510	21-24777	4	—	—	—	—	—	—	100	—
MD21-05-63512	21-24778	13	—	—	—	—	7.5	—	120	—
MD21-05-63514	21-24779	11	—	—	7.3	—	—	—	45	—
MD21-05-63521	21-24780	4	—	4.9	—	—	20	—	250	—
MD21-05-63518	21-24781	19	—	—	—	—	—	—	150	—

Table 1 (continued)

Sample ID	Location ID	Depth (ft)	Toluene	1,1,2-Trichloro-1,2,2-trifluoroethane	1,1,1-Trichloroethane	Trichloroethene	1,2,4-Trimethylbenzene	1,2-Xylene	1,3-Xylene+1,4-Xylene
Residential VISL^a			174,000	1,040,000	174,000	69.5	2100^d	3480	3480
MD21-98-0398	21-10838	25	17.3	—	38.2	—	—	—	23.4
MD21-98-0408	21-10839	25	13.9	—	98.2	14.5	—	—	—
MD21-98-0418	21-10840	25	16.6	—	—	—	4.42	3.38	17.4
MD21-98-0429	21-10841	25	2.34	6.36	70.9	—	—	—	—
MD21-98-0439	21-10842	25	9.79	—	5.29	—	—	—	8.68
MD21-98-0449	21-10843	25	603	—	—	18.3	—	—	34.7
MD21-98-0460	21-10844	25	185	—	—	27.9	7.37	3.17	13.9
MD21-98-0474	21-10845	25	324	—	—	22	8.35	—	17.4
MD21-05-63502	21-24772	12	26	—	44	32	17	12	20
MD21-05-63504	21-24774	19	7.7	—	—	—	—	—	10
MD21-05-63506	21-24775	14	75	—	—	50	6.1	7.8	21
MD21-05-63508	21-24776	4	10	—	—	6.2	—	—	7.2
MD21-05-63510	21-24777	4	4.4	—	—	39	—	—	4.2
MD21-05-63512	21-24778	13	14	—	—	—	—	—	8.4
MD21-05-63514	21-24779	11	20	—	20	17	7.7	5.4	12
MD21-05-63521	21-24780	4	40	—	—	16	—	6.9	18
MD21-05-63518	21-24781	19	11	—	—	30	—	—	8

Notes: All concentrations are in µg/m³. Data from the "Investigation Report for Material Disposal Area U, Consolidated Unit 21-017(a)-99, at Technical Area 21," Table B-2.4-3.

^a Vapor intrusion screening levels (VISLs) from the New Mexico Environment Department's (NMED's) "Risk Assessment Guidance for Site Investigations and Remediation, Volume 1, Soil Screening Guidance for Human Health Risk Assessments" (Risk Assessment Guidance) unless otherwise noted.

^b — = Not detected.

^c na = Not available.

^d VISL is U.S. Environmental Protection Agency indoor air screening level (<https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>) divided by default attenuation factor of 0.3 (NMED's Risk Assessment Guidance).

Enclosure 2

*Email from A. Duran (EM-LA) to R. Shean (NMED),
August 29, 2023, “Request for NMED Review of
120 day period for Request for COCs without Controls
for SWMUs 21-017(a, b, and c) in the Delta Prime Site
Aggregate Area”*

From: Arturo Duran
Sent: Tuesday, August 29, 2023 6:59 AM
To: Shean, Rick, ENV
Cc: Dhawan, Neelam, ENV
Subject: Request for NMED Review of 120 day period for Request for COCs without Controls for SWMUs 21-017(a, b, and c) in the Delta Prime Site Aggregate Area

Dear Rick,

DOE EM-LA will be submitting for your review and approval consideration a Request for Certificates of Completion without control for Solid Waste Management Units 21-017 (a, b and c) in the Delta Prime Site Aggregate Area.

Per Section XXIII.D of the 2016 Compliance Order on Consent (Consent Order), DOE EM-LA proposes a 120 day period for NMED to review and approve or disapprove EM-LA's submission of the request for Certificates of Completion without controls for Solid Waste Management Units 21-017(a, b and c) in Delta Prime Site Aggregate Area.

The 120 day review period will start from the date this document is submitted to NMED. The project's schedule is contingent on NMED's timely review of this submission.

EM-LA requests NMED's agreement with the review period as proposed above. This review period is consistent with the 120 day period for NMED to review Certificates of Completion set forth in Appendix D of the Consent Order.

Section XXIII.D of the Consent Order provides that "[prior to DOE's submission of any work plan or report required by Sections XIII, XVI, XVIII, XIX, or XV (Facility Investigation, Corrective Measures Evaluation, Corrective Measures Implementation, Accelerated Corrective Action, Interim Measures), the Parties agree to reach agreement on review schedules by when NMED will review and approve or disapprove DOE's submission(s)."

Please let me know if NMED agrees with the proposed 120 day NMED's review period for the document reference above.

Thank you

Arturo

