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December 20, 2022

Arturo Duran, Designated Agency Manager
U.S. Department of Energy
Environmental Management
Los Alamos Field Office
1200 Trinity Drive, Suite 400
Los Alamos, NM 87544

**RE: APPROVAL
REQUEST FOR CERTIFICATES OF COMPLETION FOR THREE SOLID WASTE MANAGEMENT UNITS
AND TWO AREAS OF CONCERN AT TECHNICAL AREA 49 INSIDE THE NUCLEAR
ENVIRONMENTAL SITE BOUNDARY
LOS ALAMOS NATIONAL LABORATORY
EPA ID#NM0890010515
HWB-LANL-22-070**

Dear Arturo Duran:

The New Mexico Environment Department (NMED) has received the United States Department of Energy's (DOE) (the Permittee) *Request for Certificates of Completion for Three Solid Waste Management Units and Two Areas of Concern Inside the Nuclear Site Boundary* dated and received September 21, 2022 and referenced by EMLA-2022-BF140-02-001 (Request).

Solid Waste Management Units (SWMUs) 49-001(g), 49-003, 49-001(e), and Areas of Concern 49-008(c) and 49-008(d) were investigated and the results were included in *Supplemental Investigation Report for Site at Technical Area 49 Inside the Nuclear Environmental Site Boundary, Revision 1* (SIR) that was submitted on May 24, 2022 (referenced by EM2022-0109) and the SIR was approved by NMED on June 29, 2022. On September 21, 2022, following the approval of the SIR, the Permittee submitted the Request for Certificates of Completion without controls for SWMU 49-001(g), SWMU 49-003, AOC 49-008(c), AOC 49-008(d) and with controls for SWMU 49-001(e).

SWMU 49-001(g) was an area of soil contamination located north of SWMUs 49-001(b) and 49-001(c), which resulted from the transport of radionuclide contamination associated with the release from shaft 2-M to the surface and near-surface soil. In 1961, the Permittees placed an asphalt pad over Area 2 that was contaminated due to the release of radioactive contamination that occurred during the drilling and subsequent drifting of shaft 2-M (i.e., SWMU 49-001(g)). In March 1975, the asphalt pad was observed to have collapsed over shaft 2-M, creating an opening approximately 6 ft long x 3 ft wide x 3 ft to 4 ft deep in the asphalt and underlying fill. Debris was deposited into a small unlined pit near AOC 49-002 and north of the road from Area 10. In September 1976, the opening over shaft 2-M was filled with crushed rock and clay, and the entire pad covering Area 2 was repaved with another 4 to 6 in. of asphalt. Monitoring from 1980 to 1987 showed no standing water in corehole (CH) CH-2. In May 1991, cracks were noted in the asphalt pad with vegetation growing through some of the cracks, and standing water was detected again in CH-2.

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Investigations were conducted in 1994, 1998, 2000, 2003, 2005-2007, 2009-2010, and 2015 to define the nature and extent of the contamination. The results presented in the SIR indicated that SWMU 49-001(g) investigations combined sampling results from 49-001(b), 49-001(c), and 49-001(d) to assess risk. The results presented in the SIR indicated that SWMU 49-001(g) does not pose an unacceptable risk to human health under the residential and industrial land use scenarios. The results of ecological risk screening indicate that the site does not pose a risk to the environment.

The Permittees did not calculate the risk to human health for the construction worker scenario. NMED evaluated the construction worker risk at a Hazard Index (HI) of 0.005, which is less than the NMED target HI of 1.0. The site does not pose risk to a construction worker.

SWMU 49-003 was an inactive leach field associated with drain lines at Area 11 inside the northern portion of the MDA AB. The leach field was located approximately 20 ft to 25 ft east of the location of former building 49-15 and was connected to the former building by a drainline. The leach field was constructed of vitrified clay pipe installed in gravel bedding. Former building 49-15 housed a radiochemistry laboratory and change house. The former building 49-15 laboratory was used to analyze samples collected during the experiments conducted in the experimental shafts at Areas 2, 2A, 2B, and 4. Former building 49-15 and related structures including latrines, a storage building, and propane and butane tanks in Area 11 were decontaminated, demolished, and removed in 1970 and 1971; the leach field and drain lines were left in place.

Investigations were conducted in 1995 and 2015 to define the nature and extent of the contamination. The results presented in the SIR indicated that SWMU 49-003 does not pose an unacceptable risk to human health under the residential and industrial land use scenarios. The results of ecological risk screening indicate that the site does not pose a risk to the environment.

The Permittees did not calculate the risk to human health for the construction worker. NMED evaluated the construction worker risk at an HI of 0.015, which is less than the NMED target HI of 1.0. The site does not pose risk to a construction worker.

AOC 49-008(c) was an area of potentially contaminated soil from historical radiochemistry operations and small-scale containment experiments at Area 11 inside the northern portion of the MDA AB NES boundary at TA-49. Area 11 was approximately 220 ft × 300 ft. Activities were conducted at Area 11 from 1959 to 1961 supported experiments conducted elsewhere at TA-49. Radiochemistry operations were conducted in a former laboratory and change house (former building 49-15) which was the main structure at Area 11. Laboratory processes included sample dissolution in acids (nitric, hydrochloric, hydrofluoric, sulfuric, and perchloric) and solvent extraction using methyl isobutyl ketone, ammonium hydroxide, and sodium hydroxide. The structures in Area 11 were decontaminated and removed in 1970 and 1971.

Investigations were conducted in 1995, 2009-2010, and 2015 to define the nature and extent of the contamination. The results presented in the SIR indicated that SWMU 49-008(c) does not pose an unacceptable risk to human health under the residential, and industrial land use scenarios. The results of ecological risk screening indicate that the site does not pose a risk to the environment.

The Permittees did not calculate the risk to human health for the construction worker. NMED evaluated the construction worker risk to be at HI of 0.02, which is less than the NMED target HI of 1.0. The site does not pose risk to a construction worker.

AOC 49-008(d) was an area of potential soil contamination located within Area 12 in the northeast corner of the MDA AB NES boundary at TA-49. Area 12 was used in 1960 and 1961 to conduct confinement experiments related to experiments at MDA AB that involved high explosive (HE) detonations in sealed metal bottles. The bottles measured up to 5 ft in diameter × 16 ft long and were placed in a 10-ft-diameter × 30-ft-deep underground shaft during the experiments. Former building 49-23 was constructed over the shaft and was known as the "Bottle House". The Bottle House and cable pull test facility (CPTF) were removed in February 2006 and were decontaminated and decommissioned.

Investigations were conducted in 1995, 2009-2010, and 2015 to define the nature and extent of the contamination. Three voluntary corrective actions (VCAs) were undertaken in 1997 to utilize radiological field screening and soil sampling was used to direct the removal of contaminated soil. Following confirmatory sampling, soil-removal areas were backfilled with clean crushed tuff, covered with a thin layer of topsoil, and seeded.

The results presented in the SIR indicated that SWMU 49-008(d) does not pose an unacceptable risk to human health under the residential and industrial land use scenarios. The results of ecological risk screening indicate that the site does not pose a risk to the environment.

The Permittees did not calculate the risk to human health for the construction worker. NMED evaluated the construction worker risk to be at HI of 0.22, which is less than the NMED target HI of 1.0 and a total excess cancer risk of 8.84E-09 which is less than the target screening level of 1.0E-05. The site does not pose a risk to a construction worker.

SWMU 49-001(e) was an area consisting of thirteen (13) experimental shafts ranging between 57 ft and 142 ft below ground surface. The shafts were drilled in a grid-like pattern 100 ft by 100 ft and distanced approximately 20 ft apart. Seven of the shafts were shot with a tracer, four of the shafts were used for containment shots, and the remaining two shafts were not used and were backfilled.

Investigations were conducted in 1995, and 2009-2010 to define the nature and extent of the contamination. The results presented in the SIR indicated that SWMU 49-001(e) poses an unacceptable risk to human health under the residential land use scenario having a total excess cancer risk of 2.0E-05, which is greater than the NMED target of 1.0E-05, and a hazard index (HI) of 2, which is greater than the NMED target HI of 1.0. The results presented in the SIR indicated that SWMU 49-001(e) does not pose an unacceptable risk to human health under the industrial land use scenario. The results of ecological risk screening indicate that the site does not pose a risk to the environment.

The Permittees did not calculate the risk to human health for the construction worker. NMED evaluated the construction worker risk to be at HI of 1.91, which is greater than the NMED target HI of 1.0.

NMED hereby issues certificates of completion without controls for SWMU 49-001(g), 49-003, AOC 49-008(c) and AOC 49-008(d). NMED hereby issues a certificate of completion with controls for SWMU 49-

001(e) restricting it to industrial land use only. Although corrective action is complete under the Consent Order, the DOE must continue to comply with all other applicable state and federal regulations.

If new information becomes available that indicates that the site may pose an unacceptable risk to human health or the environment, NMED may require additional investigations and/or corrective action at this site.

If you have any questions regarding this letter, please contact Siona Briley at (505) 690-5160.

Sincerely,

Rick Shean

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Shean
Date: 2022.12.20 13:34:21
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Rick Shean
Chief
Hazardous Waste Bureau

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File: 2022 LANL, TA-49, Approval Request for Certificate of Completion for Three (3) Solid Waste Management Units, and Two (2) Areas of Concern at TA-49 Outside NES
LANL-22-070