

DEPARTMENT OF ENERGY Environmental Management Los Alamos Field Office (EM-LA)

Los Alamos, New Mexico 87544

EMLA-24-BF19-2-1

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



November 13, 2023

Subject: Submittal of the 2023 Annual Progress Report for the Corrective Measures Evaluation for Royal Demolition Explosive in Deep Groundwater

Dear Mr. Shean:

Enclosed please find two hard copies with electronic files of the "2023 Annual Progress Report for the Corrective Measures Evaluation for Royal Demolition Explosive in Deep Groundwater." This report summarizes activities completed by Newport News Nuclear BWXT-Los Alamos, LLC, from October 1, 2022, through September 30, 2023, related to investigation of Royal Demolition Explosive contamination in deep groundwater.

Please note that the Corrective Measures Evaluation (CME) for the Royal Demolition Explosive in Deep Groundwater has not been approved. The U.S. Department of Energy (DOE) Los Alamos Field Office and the New Mexico Environment Department (NMED) will determine whether a CME is needed in the future for purposes of the Royal Demolition Explosives Characterization Campaign under the 2016 Compliance Order on Consent between DOE and NMED.

If you have any questions, please contact Clark Short at (505) 551-2942 (clark.short@em-la.doe.gov) or Cheryl Rodriguez at (505) 414-0450 (cheryl.rodriguez@em.doe.gov).

Sincerely,

Digitally signed by BRIAN HARCEK Date: 2023.11.09 16:05:47 -07'00'

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

- 1. Two hard copies with electronic files:
 - 2023 Annual Progress Report for the Corrective Measures Evaluation for Royal Demolition Explosive in Deep Groundwater (EM2023-0619)

cc (letter and enclosure[s] emailed): Laurie King, EPA Region 6, Dallas, TX Raymond Martinez, San Ildefonso Pueblo, NM Dino Chavarria, Santa Clara Pueblo, NM Steve Yanicak, NMED-DOE-OB Neelam Dhawan, NMED-HWB Kylian Robinson, NMED-HWB Jeannette Hyatt, LANL Stephen Hoffman, NA-LA Felicia Aguilar, N3B William Alexander, N3B Robert Edwards III, N3B Vicky Freedman, N3B Dana Lindsay, N3B Christian Maupin, N3B Vince Rodriguez, N3B Clark Short, N3B Bradley Smith, N3B Jeffrey Stevens, N3B Troy Thomson, N3B Amanda White, N3B John Evans, EM-LA Sarah Eli Gilbertson, EM-LA Brian Harcek, EM-LA Thomas McCrory, EM-LA Michael Mikolanis, EM-LA Kent Rich, EM-LA Cheryl Rodriguez, EM-LA Hai Shen, EM-LA Susan Wacaster, EM-LA emla.docs@em.doe.gov n3brecords@em-la.doe.gov Public Reading Room (EPRR) PRS website

November 2023 EM2023-0619

2023 Annual Progress Report for the Corrective Measures Evaluation for Royal Demolition Explosive in Deep Groundwater



Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the U.S. Department of Energy Office of Environmental Management Contract No. 89303318CEM000007 (the Los Alamos Legacy Cleanup Contract), has prepared this document pursuant to the Compliance Order on Consent, signed June 24, 2016. The Compliance Order on Consent contains requirements for the investigation and cleanup, including corrective action, of contamination at Los Alamos National Laboratory. The U.S. government has rights to use, reproduce, and distribute this document. The public may copy and use this document without charge, provided that this notice and any statement of authorship are reproduced on all copies.

2023 Annual Progress Report for the Corrective Measures Evaluation for Royal Demolition Explosive in Deep Groundwater

	November 20	23		
Responsible project mar	nager:			
Clark Short	Thoy thomas	Project Manager	GW Remediation	10/20/2023
Printed Name	Signature	Title	Organization	Date
Responsible program di				
Michael Erickson	Aguilar Date: 2023.10.20 For 10:35:13.0600'	Program r Director	Water Program	10/20/2023
Printed Name	Signature	Title	Organization	Date
Responsible N3B repres	entative:	Program Manager	N3B Environmental Remediation Program	10/20/2023
Printed Name	(Signature	Title	Organization	Date
Responsible DOE EM-L	A representative: Digitally signed by BRIAN HARCEK Date: 2023.11.09 16:06:06 -07'00'	Acting Co- Director	Office of Quality and Regulatory Compliance	
Printed Name	Signature	Title	Organization	Date

CONTENTS

1.0	INTRODUCTION1		
2.0	DEEP GROUNDWATER INVESTIGATION ACTIVITIES1		
	2.1	IFGMP Sampling	1
	2.2	Tracer Test Update	1
3.0	REGU	LATORY, PUBLIC, AND STAKEHOLDER INVOLVEMENT	2
4.0	WORK PLANNED FOR MY 20242		
5.0	REFERENCES AND MAP DATA SOURCES		2
	5.1	References	2
	5.2	Map Data Sources	3

Figures

Figure 1.0-1	Ta-16 260 monitoring group locations and 260 Outfall5
J -	

1.0 INTRODUCTION

This report serves as the eighth annual progress report for the corrective measures evaluation (CME) of Royal Demolition Explosive (RDX) in deep groundwater at the Los Alamos National Laboratory (LANL or the Laboratory). The report summarizes activities that the U.S. Department of Energy (DOE) Environmental Management Los Alamos Field Office (EM-LA) and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) completed from October 2022 through September 2023 (monitoring year [MY] 2023) related to the RDX deep groundwater investigation for the Technical Area 16 (TA-16) 260 Outfall (Figure 1.0-1).

DOE and Los Alamos National Security, LLC, submitted the "Corrective Measures Evaluation Report, Intermediate and Regional Groundwater, Consolidated Unit 16-021(c)-99" (hereafter, the CME report) in August 2007 (LANL 2007, 098734)). The New Mexico Environment Department (NMED) issued a notice of disapproval in April 2008 (NMED 2008, 101311), requesting additional characterization to evaluate the feasibility of the remedial alternatives proposed in the CME report, and to assess the extent of contamination in perched-intermediate groundwater and in the regional aquifer.

The deep groundwater investigation activities conducted during MY 2023 are discussed in this report.

2.0 DEEP GROUNDWATER INVESTIGATION ACTIVITIES

During the MY 2023 reporting period, the ongoing investigation of the nature and extent of RDX contamination in perched-intermediate groundwater and the regional aquifer included the following activities:

- sampling of TA-16 260 monitoring group wells in accordance with the "Interim Facility-Wide Groundwater Monitoring Plan for the 2023 Monitoring Year, October 2022-September 2023, Revision 1" (IFGMP) (N3B 2022, 702346)
- continued sampling to monitor tracer breakthrough in the perched-intermediate zones

These activities are discussed below.

2.1 IFGMP Sampling

Four groundwater-sampling campaigns were conducted for the TA-16 260 monitoring group (Figure 1.0-1) during MY 2023, in accordance with the IFGMP, on November 30–December 20, 2022; March 13–30, 2023; May 22–30, 2023; and August 7–24, 2023. The analytical data from these sampling campaigns are available on the Intellus New Mexico website (<u>https://www.intellusnm.com</u>) and are presented in the TA-16 260 monitoring group and base flow sampling annual periodic monitoring reports.

2.2 Tracer Test Update

Tracer deployments from the perched-intermediate two piezometer well CdV-9-1(i) and monitoring wells R-25b and CdV-16-1(i) were conducted in October and November 2015 (LANL 2017, 602161). Review of available MY 2023 tracer data for indications of breakthrough at downgradient wells indicated that the tracers had not yet fully moved beyond the vicinity of the screens where they were deployed, and no cross-well detections had occurred. Long-term tracer breakthrough monitoring will continue, and the results of the tracer tests will be reported on an annual basis in future CME progress reports.

3.0 REGULATORY, PUBLIC, AND STAKEHOLDER INVOLVEMENT

Activities to characterize the perched-intermediate and regional groundwater continued to be performed in MY 2023. No meetings were held to discuss RDX remediation or characterization during MY 2023.

4.0 WORK PLANNED FOR MY 2024

Deep groundwater CME activities for MY 2024 will include the following:

- performing IFGMP sampling
- addressing NMED comments concerning the "Investigation Report for Royal Demolition Explosive in Deep Groundwater" (N3B 2019, 700561) and the "Fate and Transport Modeling and Risk Assessment Report for RDX Contamination in Deep Groundwater, Revision 1" (N3B 2022, 702351)
- submitting an updated drilling work plan and permit for regional groundwater monitoring well R-74
- submitting a drilling work plan and permit for regional groundwater monitoring well R-75

A summary of the MY 2024 CME activities for RDX in deep groundwater will be reported in the ninth annual progress report, which will be submitted to NMED by November 30, 2024.

5.0 REFERENCES AND MAP DATA SOURCES

5.1 References

The following reference list includes documents cited in this plan/report/appendix. Parenthetical information following each reference provides the author(s), publication date, and ERID, ESHID, or EMID. This information is also included in text citations. ERIDs were assigned by the Laboratory's Associate Directorate for Environmental Management (IDs through 599999); ESHIDs were assigned by the Laboratory's Associate Directorate for Environment, Safety, and Health (IDs 600000 through 699999); and EMIDs are assigned by N3B (IDs 700000 and above). IDs are used to locate documents in N3B's Records Management System and in the Master Reference Set. The NMED Hazardous Waste Bureau and N3B maintain copies of the Master Reference Set. The set ensures that NMED has the references to review documents. The set is updated when new references are cited in documents.

- LANL (Los Alamos National Laboratory), August 2007. "Corrective Measures Evaluation Report, Intermediate and Regional Groundwater, Consolidated Unit 16-021(c)-99," Los Alamos National Laboratory document LA-UR-07-5426, Los Alamos, New Mexico. (LANL 2007, 098734)
- LANL (Los Alamos National Laboratory), February 2017. "Status Report for the Tracer Tests at Consolidated Unit 16-021(c)-99, Technical Area 16," Los Alamos National Laboratory document LA-UR-17-20782, Los Alamos, New Mexico. (LANL 2017, 602161)
- N3B (Newport News Nuclear BWXT-Los Alamos, LLC), August 2019. "Investigation Report for Royal Demolition Explosive in Deep Groundwater," Newport News Nuclear BWXT-Los Alamos, LLC, document EM2019-0235, Los Alamos, New Mexico. (N3B 2019, 700561)

- N3B (Newport News Nuclear BWXT-Los Alamos, LLC), September 2022. "Fate and Transport Modeling and Risk Assessment Report for RDX Contamination in Deep Groundwater, Revision 1," Newport News Nuclear BWXT-Los Alamos, LLC, document EM2022-0581, Los Alamos, New Mexico. (N3B 2022, 702351)
- N3B (Newport News Nuclear BWXT-Los Alamos, LLC), September 2022. "Interim Facility-Wide Groundwater Monitoring Plan for the 2023 Monitoring Year, October 2022–September 2023, Revision 1," Newport News Nuclear BWXT-Los Alamos, LLC, document EM2022-0656, Los Alamos, New Mexico. (N3B 2022, 702346)
- NMED (New Mexico Environment Department), April 22, 2008. "Notice of Disapproval Corrective Measures Evaluation Report, Intermediate and Regional Groundwater Consolidated Unit 16-021(c)-99," New Mexico Environment Department letter to D. Gregory (DOE-LASO) and D. McInroy (LANL) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico. (NMED 2008, 101311)

5.2 Map Data Sources

Hillshade; Los Alamos National Laboratory, ER-ES, As published; \\slip\gis\Data\HYP\LiDAR\2014Bare_Earth\BareEarth_DEM_Mosiac.gdb; 2014.

Structures; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 29 November 2010.

Unpaved road; Los Alamos National Laboratory, ER-ES, As published, GIS projects folder; \\slip\GIS\Projects\14-Projects\14-0062\project_data.gdb; digitized_site_features; digitized_road; 2017.

Paved Road Arcs; Los Alamos National Laboratory, FWO Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 29 November 2010.

Drainage Channel; Los Alamos National Laboratory, ER-ES, As published, GIS projects folder; \\slip\GIS\Projects\11-Projects\11-0108\\gdb\gdb_11-0108 generic.mdb; drainage; 2017.

TA-16 260 Outfall, As Published, GIS project folder: Q:\14-Projects\14-0080\project_data.gdb\ polygon\outfall_260

M Wall-PRB, As Published, GIS project folder: Q:\14-Projects\14-0080\project_data.gdb\line\wall_PRB

Connector piping, As Published, GIS project folder: Q:\14-Projects\14-0080\project_ data.gdb\line\connector_piping

Tech areas; Los Alamos National Laboratory, Database Connections\GIS.PUB.PRD1.sde\PUB.Boundaries\PUB.tecareas

Tech Areas line; Los Alamos National Laboratory, Database Connections\GIS.PUB.PRD1.sde\PUB.Boundaries\PUB.tecareas_line

PUB.prs_all_reg_admin; Los Alamos National Laboratory, Database Connections\GIS.PUB.PRD1.sde\PUB.Regulatory\PUB.prs_all_reg_admin



Figure 1.0-1 Ta-16 260 monitoring group locations and 260 Outfall

2023 Annual Progress Report for the CME for RDX in Deep Groundwater