



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

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November 23, 2022

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NMED Hazardous Waste Bureau

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

Subject: Submittal of the 2022 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 "2022 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, 2021, through September 30, 2022, related to Royal Demolition Explosive in deep groundwater.

If you have any questions, please contact Patrick McGuire at (505) 709-7918 (patrick.mcguire@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

Enclosure(s):

1. Two hard copies with electronic files:
2022 Annual Progress Report for the Corrective Measures Evaluation for Royal Demolition
Explosive in Deep Groundwater (EM2022-0723)

cc (letter and enclosure[s] emailed):

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Raymond Martinez, San Ildefonso Pueblo, NM
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November 2022
EM2022-0723

2022 Annual Progress Report for the Corrective Measures Evaluation for Royal Demolition Explosive in Deep Groundwater

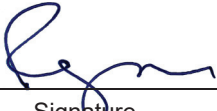


Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the U.S. Department of Energy Office of Environmental Management Contract No. 89303318CEM000007 (the Los Alamos Legacy Cleanup Contract), has prepared this document pursuant to the Compliance Order on Consent, signed June 24, 2016. The Compliance 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.


2022 Annual Progress Report for the Corrective Measures Evaluation for Royal Demolition Explosive in Deep Groundwater

November 2022


Responsible program director:

Ryan Flynn		Program Director	Water Program	11/15/22
Printed Name	Signature	Title	Organization	Date

Responsible N3B representative:

Troy Thomson		Program Manager	N3B Environmental Remediation Program	11/16/22
Printed Name	Signature	Title	Organization	Date

Responsible DOE EM-LA representative:

Arturo Q. Duran		Compliance and Permitting Manager	Office of Quality and Regulatory Compliance	
Printed Name	Signature	Title	Organization	Date

Digitally signed by BRIAN HARCEK
Date: 2022.11.23 12:43:13 -07'00'

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1.0 INTRODUCTION

This report serves as the seventh annual progress report for the corrective measures evaluation (CME) of Royal Demolition Explosive (RDX) in deep groundwater. The report summarizes activities that the U.S. Department of Energy (DOE) Environmental Management Los Alamos Field Office and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) completed from October 2021 through September 2022 (fiscal year [FY] 2022) 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 FY 2022 are discussed in this report.

2.0 DEEP GROUNDWATER INVESTIGATION ACTIVITIES

During the FY 2022 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 (IFGMP) (N3B 2021, 701672)
- Continued sampling to monitor tracer breakthrough in the perched-intermediate zones
- Submission of the Fate and Transport Modeling and Risk Assessment Report for RDX Contamination in Deep Groundwater, Revision 1 (N3B 2022, 702351)
- Five meetings to discuss comment responses for the risk assessment report.

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 FY 2022, in accordance with the “Interim Facility-Wide Groundwater Monitoring Plan for the 2022 Monitoring Year, October 2021–September 2022, Revision 1” (N3B 2021, 701672). The IFGMP sampling campaigns were conducted December 7 – December 17, 2021; March 1 – March 21, 2022; June 3 – June 15, 2022; and August 9 – August 26, 2022. The analytical data from these sampling campaigns are available on the Intellus New Mexico website (<https://www.intellusnm.com>) 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 were conducted in October and November 2015. Review of available FY 2022 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.

2.3 Fate and Transport Modeling and Risk Assessment Report

The deep groundwater investigation report (IR) identified uncertainties regarding potential risk to human health (N3B 2019, 700561). To address these uncertainties and to maintain consistency with NMED risk assessment guidance (NMED 2019, 700550), the deep groundwater IR recommended development of a risk assessment for RDX contamination in groundwater that would incorporate a fate-and-transport modeling analysis as input to the evaluation. The risk assessment report, which became 2020 Milestone 7 of Appendix B of the 2016 Compliance Order on Consent, was submitted to NMED on May 29, 2020 (N3B 2020, 700925). NMED provided draft comments to DOE on November 25, 2020 (Krambis 2020, 701140). DOE submitted comment responses to NMED by email on March 1, 2021 (Maupin 2021, 701363).

The nature of NMED's comments to the risk assessment report required submittal of a revision to NMED. This revision became 2022 Milestone 2022-10, and was submitted to NMED on September 29, 2022.

3.0 REGULATORY, PUBLIC, AND STAKEHOLDER INVOLVEMENT

Activities to characterize the perched-intermediate and regional groundwater continued to be performed in FY 2022. Communication with the NMED Hazardous Waste Bureau, the NMED DOE Oversight Bureau, and the U.S. Environmental Protection Agency were held on November 18, 2021; December 8, 2021; January 10, 2022; January 27, 2022; and February 24, 2022, to discuss the responses to the risk assessment report comments.

4.0 WORK PLANNED FOR FY 2023

In FY 2023, deep groundwater CME activities will include the following:

- Performing IFGMP sampling
- Addressing NMED comments concerning the deep groundwater IR (N3B 2019, 700561) and the risk assessment report, revision 1 (N3B 2022, 702351)

A summary of the FY 2023 CME activities for RDX in deep groundwater will be reported in the eighth annual progress report and submitted to NMED by November 30, 2023.

5.0 REFERENCES AND MAP DATA SOURCES

5.1 References

The following reference list includes documents cited in this report. Parenthetical information following each reference provides the author(s), publication date, and ERID, ESHID, or EMID. ERIDs were assigned by Los Alamos National Laboratory's (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).

Krambis, C., November 25, 2020. Draft Comments on the 5/29/2020 submittal to NMED concerning the RDX Risk Assessment and Fate and Transport Modelling Report. E-mail message to E. Day (N3B), P. McGuire (N3B), B. Robinson (N3B), C. Rodriguez (EM-LA), and A. Duran (EM-LA) from C. Krambis (NMED), Santa Fe, New Mexico. (Krambis 2020, 701140)

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)

Maupin, C., March 1, 2021. RE: NMED Draft Comments on the Investigation Report for Royal Demolition Explosive in Deep Groundwater. E-mail message to C. Krambis (NMED) from C. Maupin (N3B), Los Alamos, New Mexico. (Maupin 2021, 701363)

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), May 2020. "Fate and Transport Modeling and Risk Assessment Report for RDX Contamination in Deep Groundwater," Newport News Nuclear BWXT-Los Alamos, LLC, document EM2020-0135, Los Alamos, New Mexico. (N3B 2020, 700925)

N3B (Newport News Nuclear BWXT-Los Alamos, LLC), September 2021. "Interim Facility-Wide Groundwater Monitoring Plan for the 2022 Monitoring Year, October 2021–September 2022, Revision 1," Newport News Nuclear BWXT-Los Alamos, LLC, document EM2021-0535, Los Alamos, New Mexico. (N3B 2021, 701672)

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)

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)

NMED (New Mexico Environment Department), June 19, 2019. "Risk Assessment Guidance for Site Investigations and Remediation, Volume 1, Soil Screening Guidance for Human Health Risk Assessments," February 2019 (Revision 2, 6/19/19), Hazardous Waste Bureau and Ground Water Quality Bureau, Santa Fe, New Mexico. (NMED 2019, 700550)

5.2 Map Data Sources

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

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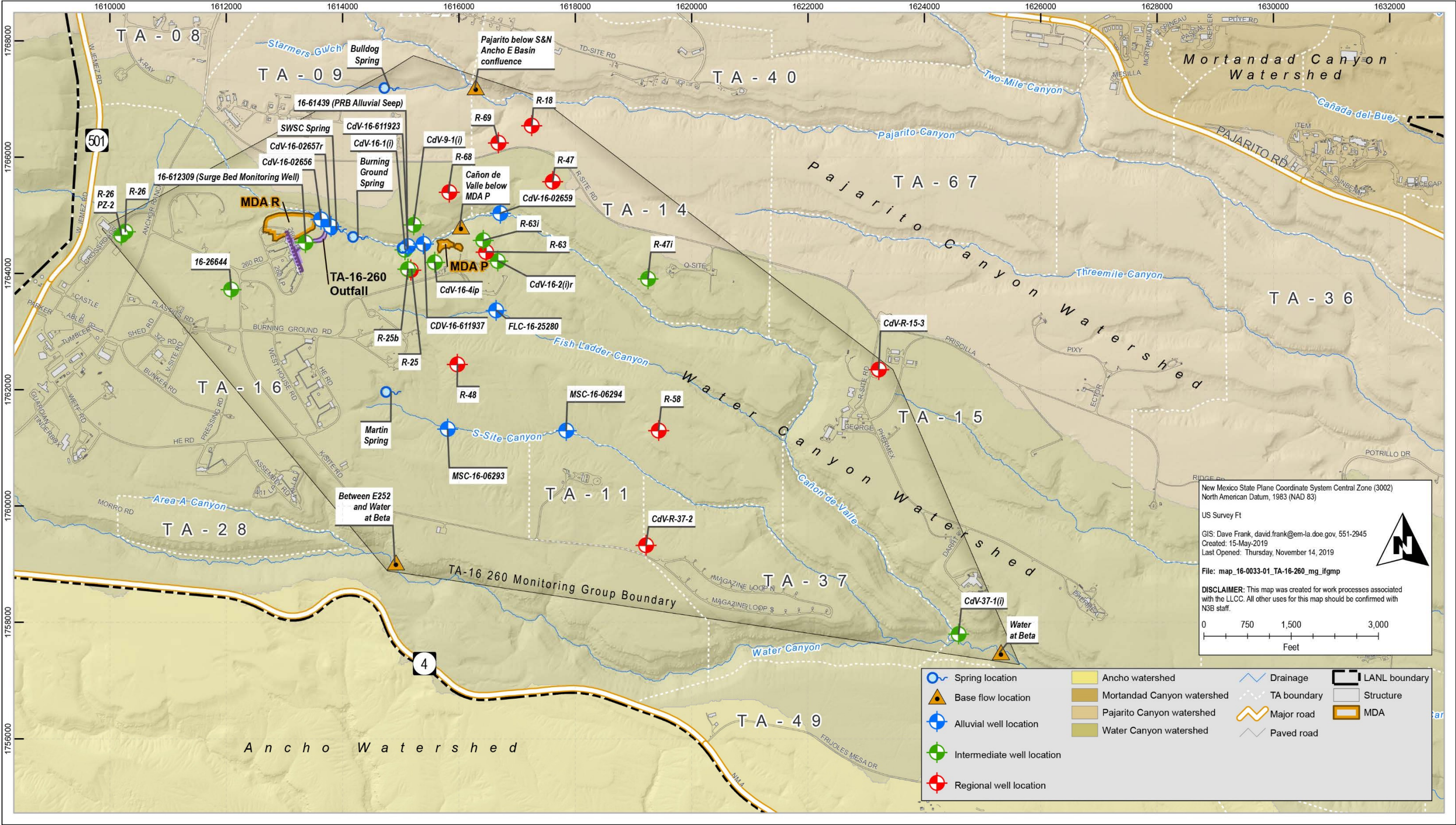


Figure 1.0-1 TA-16 260 monitoring group locations and 260 Outfall

