



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

EMLA-2022-BF148-02-001

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



September 28, 2022

Subject: Submittal of Starmer/Upper Pajarito Canyon Aggregate Area Progress Report

Dear Mr. Shean:

Enclosed please find two hard copies with electronic files of the "Starmer/Upper Pajarito Canyon Aggregate Area Progress Report." This report fulfills fiscal year 2022 Milestone #17 in Appendix B of the 2016 Compliance Order on Consent under the Pajarito Watershed Campaign.

If you have any questions, please contact Joseph Chandler at (281) 961-3141 (joseph.chandler@em-la.doe.gov) or Cheryl Rodriguez at (505) 414-0450 (cheryl.rodriguez@em.doe.gov).

Sincerely,

**ARTURO
 DURAN**

Digitally signed by
 ARTURO DURAN
 Date: 2022.09.26
 16:13:37 -06'00'

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

Enclosure(s):

1. Two hard copies with electronic files:
 Starmer/Upper Pajarito Canyon Aggregate Area Progress Report (EM2022-0564)

cc (letter with hard-copy enclosure[s]):
Brenda Bowlby, N3B

cc (letter with CD/DVD enclosure[s]):
Laurie King, EPA Region 6, Dallas, TX
Steve Yanicak, NMED-DOE-OB
Chris Catechis, NMED-RPD
emla.docs@em.doe.gov
n3brecords@em-la.doe.gov
Public Reading Room (EPRR)
PRS website

cc (letter emailed):
Jennifer Payne, LANL
Stephen Hoffman, NA-LA
William Alexander, N3B
Pattie Baucom, N3B
Joseph Chandler, N3B
Kate Ellers, N3B
Michael Erickson, N3B
Kim Lebak, N3B
Joseph Legare, N3B
Dana Lindsay, N3B
Robert Macfarlane, N3B
Pamela Maestas, N3B
Christian Maupin, N3B
Tracy McFarland, N3B
Kenneth Ocker, N3B
Troy Thomson, N3B
M. Lee Bishop, EM-LA
John Evans, EM-LA
Michael Mikolanis, EM-LA
David Nickless, EM-LA
Cheryl Rodriguez, EM-LA

September 2022
EM2022-0564

Starmer/Upper Pajarito Canyon Aggregate Area Progress Report



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.


Starmer/Upper Pajarito Canyon Aggregate Area Progress Report

September 2022

Responsible program director:

Michael O. Erickson		Program Director	RCRA Remediation Program	September 21, 2022
Printed Name	Signature	Title	Organization	Date

Responsible N3B representative:

Troy Thomson		Program Manager	N3B Environmental Remediation Program	September 21, 2022
Printed Name	Signature	Title	Organization	Date

Responsible DOE EM-LA representative:

Arturo Q. Duran	ARTURO DURAN <small>Digitally signed by ARTURO DURAN Date: 2022.09.26 16:13:58 -06'00'</small>	Compliance and Permitting Manager	Office of Quality and Regulatory Compliance	
Printed Name	Signature	Title	Organization	Date

CONTENTS

1.0 PURPOSE OF REPORT 1

2.0 OVERVIEW 3

2.1 Mobilization and Investigations..... 3

3.0 SUMMARY OF FIELDWORK COMPLETED IN FISCAL YEAR 2022 4

3.1 SWMU 09-001(d) – Firing Site 4

3.1.1 Site Description and Operational History 4

3.1.2 Previous Investigations 4

3.1.3 Investigation Objectives 4

3.1.4 Fieldwork Completed..... 5

3.2 SWMU 09-003(h) – Soil Contamination Associated with Former Sump and Pipes 5

3.2.1 Site Description and Operational History 5

3.2.2 Previous Investigations 5

3.2.3 Investigation Objectives 5

3.2.4 Fieldwork Completed..... 6

4.0 FY 2022 MILESTONE 6

5.0 PLANNED WORK IN FY 2023 6

6.0 REFERENCES 6

Figure

Figure 2.0-1 FY 2022 sampling completed at Starmer/Upper Pajarito Canyon Aggregate Area 9

1.0 PURPOSE OF REPORT

This progress report fulfills fiscal year (FY) 2022 Milestone #17 of the 2016 Compliance Order on Consent (Consent Order), Appendix B, under the Pajarito Watershed campaign. Milestone #17 is a progress report summarizing the fieldwork implementation and status of site investigations conducted in accordance with the approved "Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1" (LANL 2011, 111794; NMED 2011, 201465). The Starmer/Upper Pajarito Canyon Aggregate Area is one of four aggregate areas in the Pajarito Watershed campaign. Solid waste management units (SWMUs) and areas of concern (AOCs) within the Starmer/Upper Pajarito Canyon Aggregate Area are located at Technical Areas (TAs) 08, 09, 22, and 40. The SWMUs and AOCs proposed for sampling in the Starmer/Upper Pajarito Canyon Aggregate Area are listed below.

- AOC 08-001(a) – Off-Gas System
- AOC 08-001(b) – Off-Gas System
- SWMU 08-002 – Firing Site
- SWMU 08-003(a) – Former Septic Tank
- SWMU 08-004(b) – Drainline
- SWMU 08-004(c) – Floor Drain and Sumps
- SWMU 08-004(d) – Drains
- SWMU 08-005 – Former Storage Vessel
- SWMU 08-006(a) – Material Disposal Area (MDA) Q
- SWMU 08-009(a) – Drainline and Outfall
- AOC 08-009(c) – Storm Drain and Outfall from Building 08-23
- SWMU 08-009(d) – Drains
- SWMU 08-009(e) – Outfall from Building 08-21
- AOC 08-009(f) – Outfall Associated with Building 08-22
- SWMU 09-001(a) – Soil Contamination from Firing Site and Former Firing Site Structure 09-4
- SWMU 09-001(b) – Firing Site
- SWMU 09-001(c) – Firing Site
- SWMU 09-001(d) – Firing Site
- SWMU 09-002 – Burn Pit
- SWMU 09-003(a) – Soil Contamination Associated with Former Settling Tank
- SWMU 09-003(b) – Soil Contamination Associated with Former Settling Tank
- SWMU 09-003(d) – Soil Contamination Associated with Former Settling Tank
- SWMU 09-003(e) – Soil Contamination Associated with Former Basket Pit
- SWMU 09-003(g) – Soil Contamination Associated with Former Sump and Pipes
- SWMU 09-003(h) – Soil Contamination Associated with Former Sump and Pipes

- SWMU 09-003(i) – Soil Contamination Associated with Former Sump and Pipes
- SWMU 09-004(a) – Settling Tank
- SWMU 09-004(b) – Settling Tank
- SWMU 09-004(c) – Settling Tank
- SWMU 09-004(d) – Settling Tank
- SWMU 09-004(e) – Settling Tank
- SWMU 09-004(f) – Settling Tank
- SWMU 09-004(g) – Settling Tank
- SWMU 09-004(h) – Settling Tank
- SWMU 09-004(i) – Settling Tank
- SWMU 09-004(j) – Settling Tank
- SWMU 09-004(k) – Settling Tank
- SWMU 09-004(l) – Settling Tank
- SWMU 09-004(m) – Settling Tank
- SWMU 09-004(n) – Settling Tank
- SWMU 09-004(o) – Settling Tank
- SWMU 09-005(a) – Soil Contamination from Former Septic Tank
- SWMU 09-005(d) – Septic Tank
- SWMU 09-005(g) – Settling Tank
- SWMU 09-006 – Soil Contamination Associated with Former Septic Tank
- SWMU 09-008(b) – Oxidation Pond
- SWMU 09-009 – Surface Impoundment
- AOC 09-010(a) – Storage Area
- AOC 09-010(b) – Storage Area
- AOC 09-011(b) – Storage Area
- AOC 09-011(c) – Storage Area
- AOC 09-012 – Disposal Pit
- SWMU 09-013 – MDA M
- AOC 09-014 – Soil Contamination Associated with Former Camera Mount
- SWMU C-09-001 – Soil Contamination Associated with Outfall
- SWMU 22-010(b) – Septic System
- SWMU 22-011 – Disposal Pit (verify absence of waste only)
- SWMU 22-012 – Decontamination Pad
- SWMU 22-015(c) – Outfall from Building 22-52

- SWMU 22-015(d) – Drainline and Outfall Associated with Building 22-1
- SWMU 22-015(e) – Sump
- SWMU 22-016 – Septic System
- SWMU 40-001(c) – Septic System
- SWMU 40-003(a) – Scrap Burn Site/Open Detonation
- AOC 40-003(b) – Burning Area
- SWMU 40-004 – Operational Release
- SWMU 40-009 – Landfill
- SWMU 40-010 – Surface Disposal Site

2.0 OVERVIEW

This progress report summarizes the field investigations conducted by the U.S. Department of Energy (DOE) Environmental Management Los Alamos Field Office (EM-LA) and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) in accordance with the approved “Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1” (LANL 2011, 111794; NMED 2011, 201465). This progress report presents the status of fieldwork implementation and progress to date for the Starmer/Upper Pajarito Canyon Aggregate Area.

Characterization sampling was initiated in FY 2022 at SWMUs 09-001(d) and 09-003(h) (Figure 2.0-1). The results from the investigation of SWMUs 09-001(d) and 09-003(h) will be presented in the Investigation Report for Starmer/Upper Pajarito Canyon Aggregate Area.

2.1 Mobilization and Investigations

Site mobilization by the subcontractor began on August 19 and completed on August 26, 2022. Field investigation and sampling activities began on August 26, 2022, and are ongoing. Between August 26 and September 16, 2022, a total of 86 investigation samples were collected from SWMUs 09-001(d) and 09-003(h).

Collection of the approximately 2150 samples from the SWMUs and AOCs specified in the approved “Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1,” as well as additional samples needed to define nature and extent of contamination and evaluate risk is scheduled to take approximately 22 months. Further sampling to define the nature and extent of contamination and/or any required corrective actions to address site contamination may be required following an evaluation of the analytical data.

3.0 SUMMARY OF FIELDWORK COMPLETED IN FISCAL YEAR 2022

The following sections summarize the status of fieldwork initiated at SWMUs 09-001(d) and 09-003(h).

3.1 SWMU 09-001(d) – Firing Site

3.1.1 Site Description and Operational History

SWMU 09-001(d) is a former firing site control building (former structure 09-5) that was located at the TA-09 Far Point firing site, approximately 300 ft north of existing buildings 09-36 and 09-40. The 1990 SWMU report identifies structure 09-5 as a firing site (LANL 1990, 007511). This description was likely based on structure location plan R-124, which is included in the 1990 SWMU report and which identifies structure 09-5 as a firing chamber. The 1990 SWMU report presumed that a firing chamber is always used to test explosives. However, a site worker described the building as a personnel shelter, i.e., a building used by firing site personnel to remotely fire and observe explosives tests. Use as a control/observation building is verified by an engineering drawing of structure 09-5 under its former designation of AE-5. The engineering drawing shows structure 09-5 as a 12-ft-long × 10-ft-wide × 8-ft-high building constructed of 14-in.-thick reinforced concrete walls, with a door that was steel plated on the outside, and covered with earth on three sides. A 2.5-ft-wide × 8-ft.-long wood bench stretched along the length of one interior wall. A wooden bench would not have been placed inside a building intended for test firing explosives. The presence of the steel plate on the door's exterior rather than its interior signifies that the door was intended to protect the interior of the building from exterior forces. Structure 09-5 was built in 1947, decommissioned in 1959, and removed in 1965.

Although associated with TA-09, SWMU 09-001(d) is within the physical boundary of TA-08.

3.1.2 Previous Investigations

During the 1994 Resource Conservation and Recovery Act (RCRA) facility investigation RFI, SWMU 09-001(d) was sampled as part of a set of sites referred to as the Anchor Ranch East Site set, which also included SWMUs 09-003(g), 09-003(h), and 09-003(i). This set of sites was grouped because of past activities (high explosives [HE] research, development, and testing) and demolition and decommissioning of their associated structures (buildings 09-1, 09-2, 09-3, and 09-13). Thirteen surface samples were collected from 13 locations in the area around former building 09-1. Samples were field-screened for radioactivity, organic vapors, and HE. Field-screening results showed no elevated radioactivity levels, and photoionization detector (PID) measurements were less than 1 ppm; HE was not detected in any the samples. All samples were submitted to an off-site analytical laboratory for analysis of target analyte list (TAL) metals, nitrate, semivolatle organic compounds (SVOCs), and HE (LANL 1996, 054586).

3.1.3 Investigation Objectives

The primary objective of the investigation at SWMU 09-001(d) is to implement the approved "Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1" and collect 26 samples from 13 locations (LANL 2011, 111794; NMED 2011, 201465). A secondary objective is to ensure a sufficient number of samples are collected to define nature and extent of contamination at SWMU 09-001(d) and to determine if the site poses a potential unacceptable risk to human health or the environment. To meet both objectives, a total of 87 samples from 29 locations are planned to be collected at SWMU 09-001(d). At each location, samples will be collected from 0–1 ft, 2–3 ft, and 4–5 ft below ground surface (bgs). The samples locations are shown in Figure 2.0-1.

3.1.4 Fieldwork Completed

Sampling at SWMU 09-001(d) began on September 7, 2022, and will be completed by the end of the month. As of September 16, 2022, a total of 57 investigation samples were collected from 20 locations at SWMU 09-001(d). Samples are being analyzed for TAL metals, cyanide, nitrate, perchlorate, pH, volatile organic compounds (VOCs), SVOCs, dioxin/furans, explosive compounds, americium-241, gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Twenty-seven samples are also being analyzed for polychlorinated biphenyls (PCBs). Figure 2.0-1 shows the sample locations at SWMU 09-001(d).

3.2 SWMU 09-003(h) – Soil Contamination Associated with Former Sump and Pipes

3.2.1 Site Description and Operational History

SWMU 09-003(h) is identified in the 1990 SWMU Report (LANL 1990, 007511) as the former sump and associated inlet and outlet drainlines in former building 09-3, a former HE casting facility. Engineering drawings show the “sump” in building 09-3 consisted of a single catch basin that functioned as an HE settling tank. Built in 1943, former building 09-3 was divided into two sections: one measured 17 ft wide × 30 ft long × 8 ft high, and the other measured 12 ft² × 9 ft high. The sections were joined by a wood-framed corridor. The larger section had three reinforced-concrete walls and one wood-framed wall. The building was surrounded on three sides and on the top by an earthen berm. The catch basin received wastewater from drain troughs in the original building and had no discharge lines. The building housed an HE casting facility with a hydraulic press. A control room for remote-control mixing of HE was added in 1949. The RFI work plan states that building 09-3 was also used to store radioactively contaminated equipment (LANL 1993, 020949). Building 09-3 was decommissioned in 1959 and removed in 1965, including the catch basin and drain troughs.

Although associated with TA-09, SWMU 09-003(h) is located within the physical boundary of TA-08.

3.2.2 Previous Investigations

During the 1994 RFI, SWMU 09-003(h) was sampled as part of a set of sites referred to as the Anchor Ranch East Site set, which also includes SWMUs 09-001(d), 09-003(g), and 09-003(i). The set of sites was grouped because of past activities in HE research, development, and testing, and the decommissioning and demolition of the associated structures (former buildings 09-1, 09-2, 09-3, and 09-13). Thirteen surface samples were collected from 13 locations in the area around former building 09-3 [SWMU 09-003(h)]. Samples were field-screened for radioactivity, organic vapors, and HE. Field-screening results showed no elevated radioactivity levels, and PID measurements were less than 1 ppm; HE was not detected in any of the samples. All samples were submitted to an off-site analytical laboratory for analysis of TAL metals, nitrate, SVOCs, and HE (LANL 1996, 054586).

3.2.3 Investigation Objectives

The primary objective of the investigation at SWMU 09-003(h) is to implement the approved “Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1” and collect 12 samples from 6 locations (LANL 2011, 111794; NMED 2011, 201465). A secondary objective is to ensure a sufficient number of samples are collected to define nature and extent of contamination at SWMU 09-003(h) and to determine if the site poses a potential unacceptable risk to human health or the environment. To meet both objectives, a total of 39 samples from 15 locations are planned to be collected at SWMU 09-003(h). Samples will be collected from 4–5 ft and 9–10 ft bgs at 6 locations in the footprint of the former sump

and around the perimeter of the sump. At the remaining 9 locations, samples will be collected from 0–1 ft, 2–3 ft, and 4–5 ft bgs. Figure 2.0-1 shows the sample locations at SWMU 09-003(h).

3.2.4 Fieldwork Completed

Sampling at SWMU 09-003(h) started on August 26, 2022, and will be completed at the end of September 2022. As of September 16, 2022, a total of 29 investigation samples were collected from 12 locations at SWMU 09-003(h). Samples are being analyzed for TAL metals, cyanide, nitrate, perchlorate, pH, VOCs, SVOCs, PCBs, explosive compounds, americium-241, gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. The sample locations collected are shown in Figure 2.0-1.

4.0 FY 2022 MILESTONE

The requirement of a progress report summarizing the fieldwork implementation and status of site investigations for the Starmer/Upper Pajarito Canyon Aggregate Area has been met by the completion and submittal of this progress report. Section 3.0 describes the fieldwork completed in FY 2022.

5.0 PLANNED WORK IN FY 2023

Fieldwork at Starmer/Upper Pajarito Canyon Aggregate Area will continue in FY 2023 to complete the sampling specified in the approved “Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1” (LANL 2011, 111794; NMED 2011, 201465) as well as additional samples needed to define nature and extent of contamination and evaluate risk. Further sampling and/or corrective actions to address unacceptable levels of contamination may be required following an evaluation of analytical data and preliminary risk assessments.

6.0 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).

LANL (Los Alamos National Laboratory), November 1990. “Solid Waste Management Units Report,” Vol. I of IV (TA-0 through TA-9), Los Alamos National Laboratory document LA-UR-90-3400, Los Alamos, New Mexico. (LANL 1990, 007511)

LANL (Los Alamos National Laboratory), July 1993. “RFI Work Plan for Operable Unit 1157,” Los Alamos National Laboratory document LA-UR-93-1230, Los Alamos, New Mexico. (LANL 1993, 020949)

LANL (Los Alamos National Laboratory), March 1996. “RFI Report for Potential Release Sites at TA-8 and TA-9,” Los Alamos National Laboratory document LA-UR-96-418, Los Alamos, New Mexico. (LANL 1996, 054586)

LANL (Los Alamos National Laboratory), March 2011. "Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-11-1821, Los Alamos, New Mexico. (LANL 2011, 111794)

NMED (New Mexico Environment Department), March 29, 2011. "Approval with Modifications, Investigation Work Plan, Starmer/Upper Pajarito Canyon Aggregate Area," New Mexico Environment Department letter to G.J. Rael (DOE-LASO) and M.J. Graham (LANL) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico. (NMED 2011, 201465)

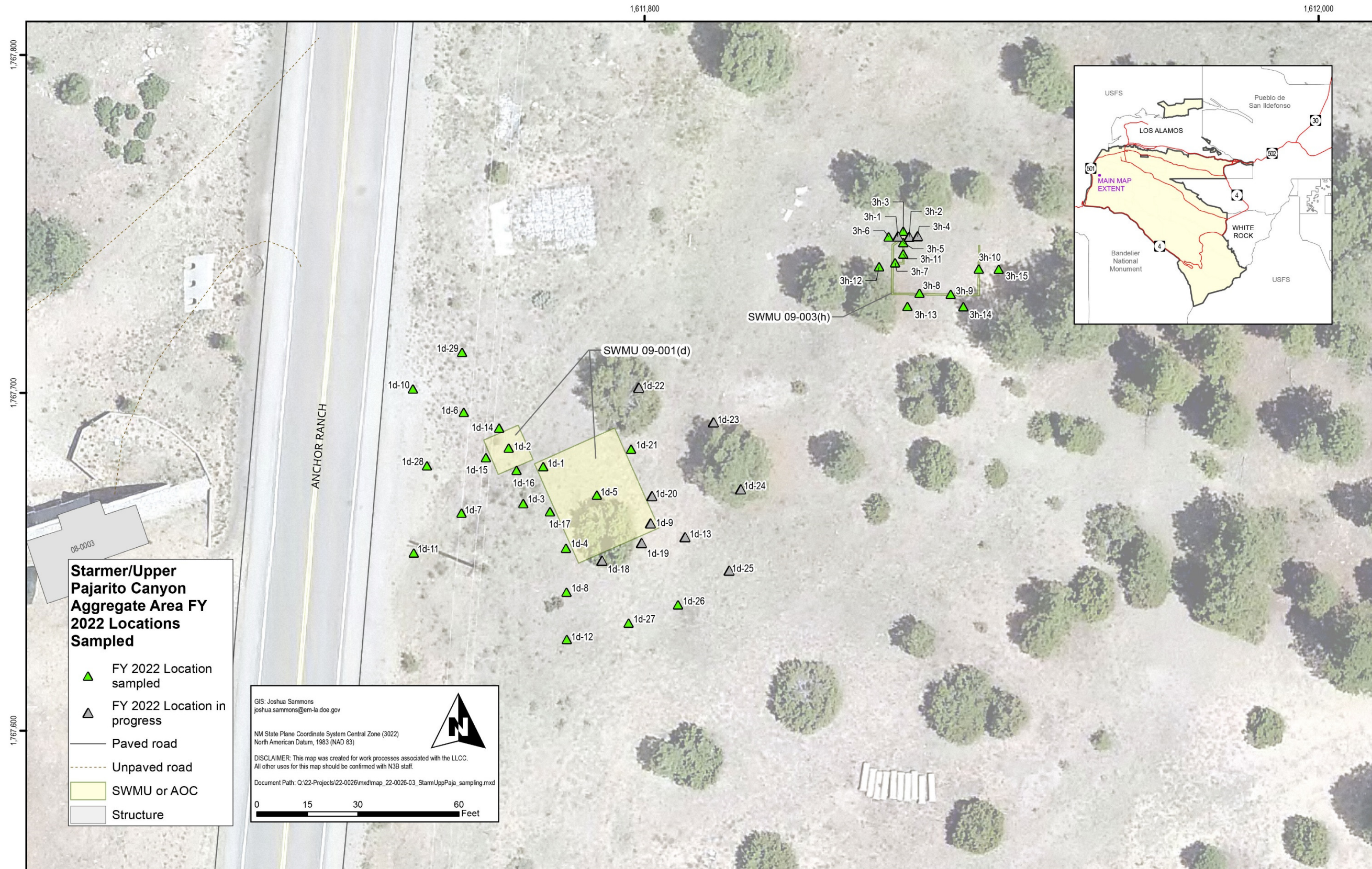


Figure 2.0-1 FY 2022 sampling completed at Starmer/Upper Pajarito Canyon Aggregate Area

