



U.S. DEPARTMENT OF  
**ENERGY**

OFFICE OF  
**ENVIRONMENTAL  
MANAGEMENT**



Presentation for  
**Northern New Mexico Citizens' Advisory Board**  
**LANL Legacy Cleanup: Aggregate Areas**

*September 20, 2023*

*Presented by*

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*N3B Los Alamos, RCRA Remediation Program Director*



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**N3B** Los  
Alamos





## Los Alamos Legacy Cleanup Contract





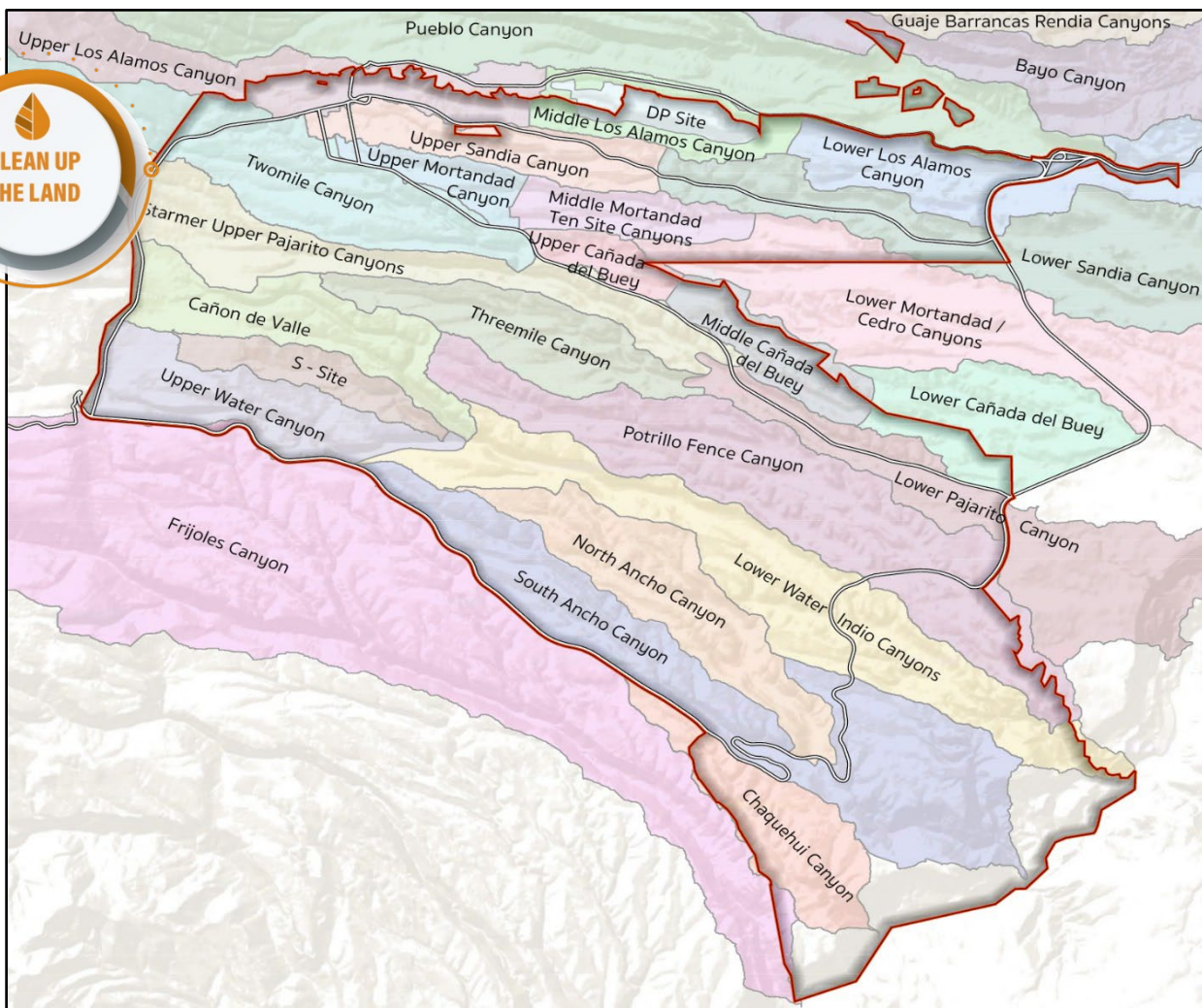


# Aggregate Areas: Overview

An Aggregate Area is an area within a single watershed or canyon at Los Alamos National Laboratory (LANL), made up of one or more solid waste management units (SWMU) or areas of concern (AOCs).

**CLEANUP GOAL:** Conduct corrective actions so that contaminated soil and debris do not result in unacceptable risk to human health and ecological receptors based on current and reasonably foreseeable land use.

**CAMPAIGNS:** Campaigns consist of corrective action activities using a risk-based approach to grouping, prioritizing, and accomplishing such activities. Each Aggregate Area is listed in a Campaign.



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# Aggregate Areas: Additional Details

- ✓ Each aggregate area is within a single watershed or canyon
- ✓ Each aggregate area is comprised of one or more SWMUs or AOCs
- ✓ Environmental media affected or potentially affected by releases from SWMUs or AOCs include soil, surface water and groundwater, and sediments
- ✓ Under the Consent Order, Aggregate Areas are combined into campaigns to address area-wide contamination, human health and ecological risk
- ✓ Each Aggregate Area campaign has multiple aggregate areas

**SWMU:** A unit at which solid waste has been placed at any time, and from which New Mexico Environment Department (NMED) determines there may be a risk of a release of hazardous waste or hazardous waste constituents. Such units do not include one-time spills.

**AOC:** Any area that is not a SWMU that may have had a release of a hazardous waste or hazardous constituent not from a SWMU.



Southern External Boundary Campaign

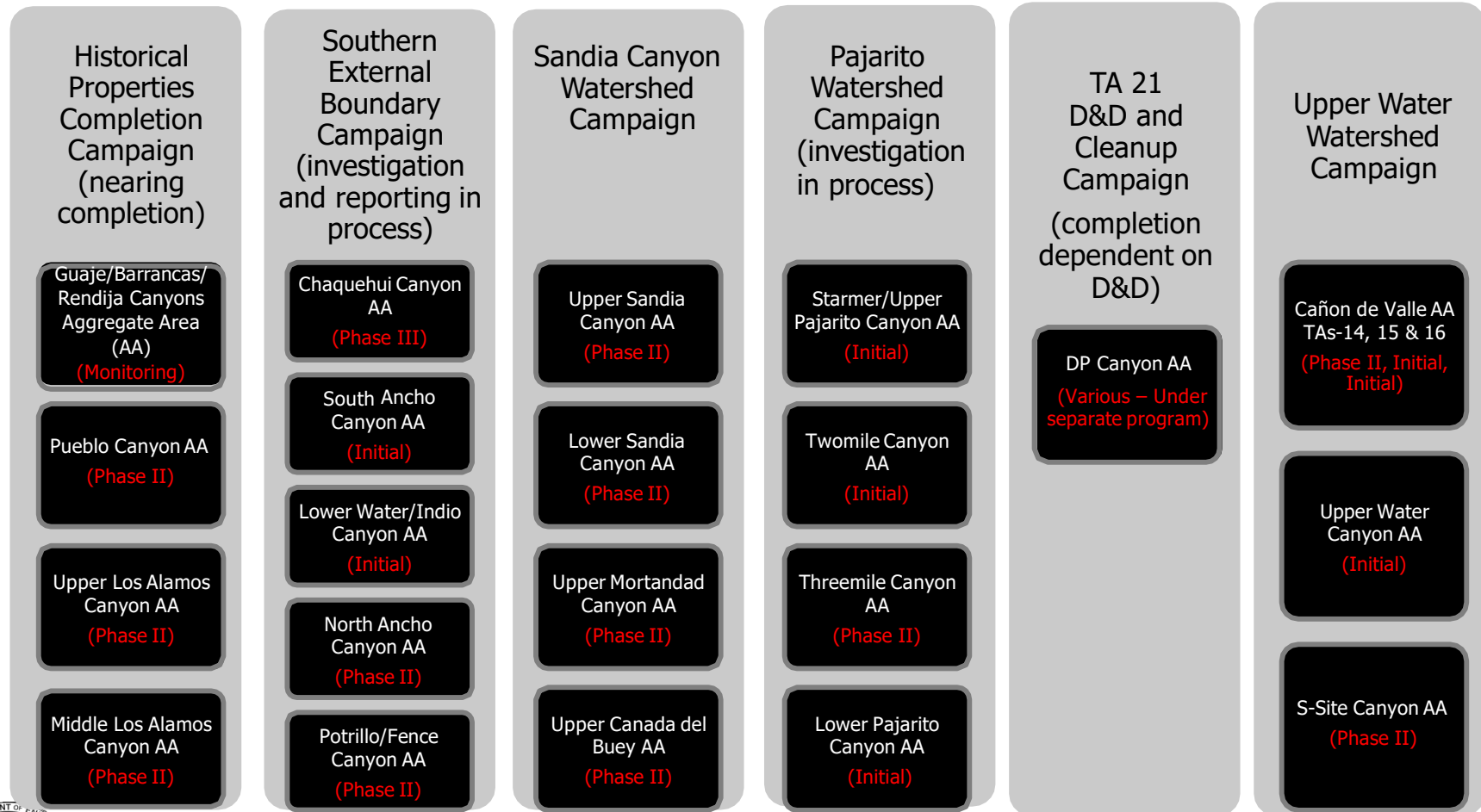






# Aggregate Areas: Campaigns

## 21 Aggregate Areas are grouped into six Campaigns





# Aggregate Areas: Consent Order Campaigns

## Campaigns In Progress

### Historical Properties Completion Campaign

SWMUs/AOCs: 62

Available field work complete

### Southern External Boundary Campaign

SWMUs/AOCs: 76

### Pajarito Watershed Campaign

SWMUs/AOCs: 177

### Supplemental Investigation Reports Campaign

SWMUs/AOCs: 146

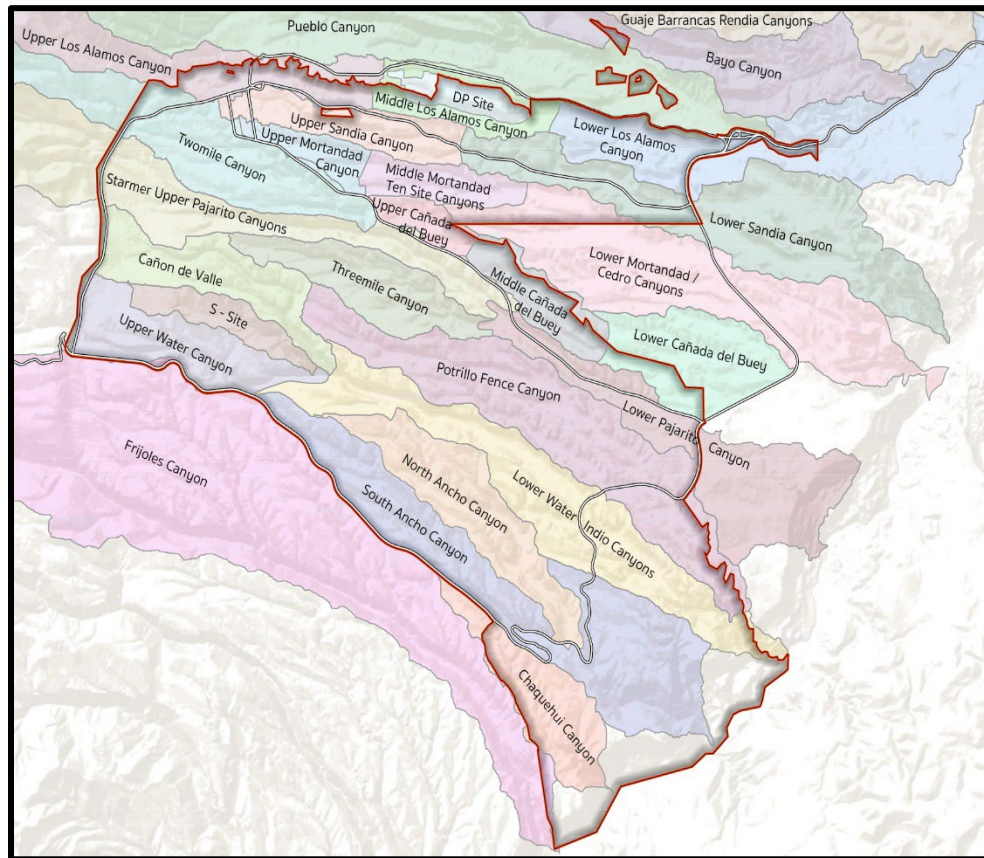
## Future Campaigns

### Sandia Canyon Watershed Campaign

SWMUs/AOCs: 64

### Upper Water Watershed Campaign

SWMUs/AOCs: 266



Campaign Completed: Known Cleanup Sites (Above SSLs) Campaign





# Summary of RCRA Corrective Action Process (where CME is not required)



EM-LA/N3B  
Activity

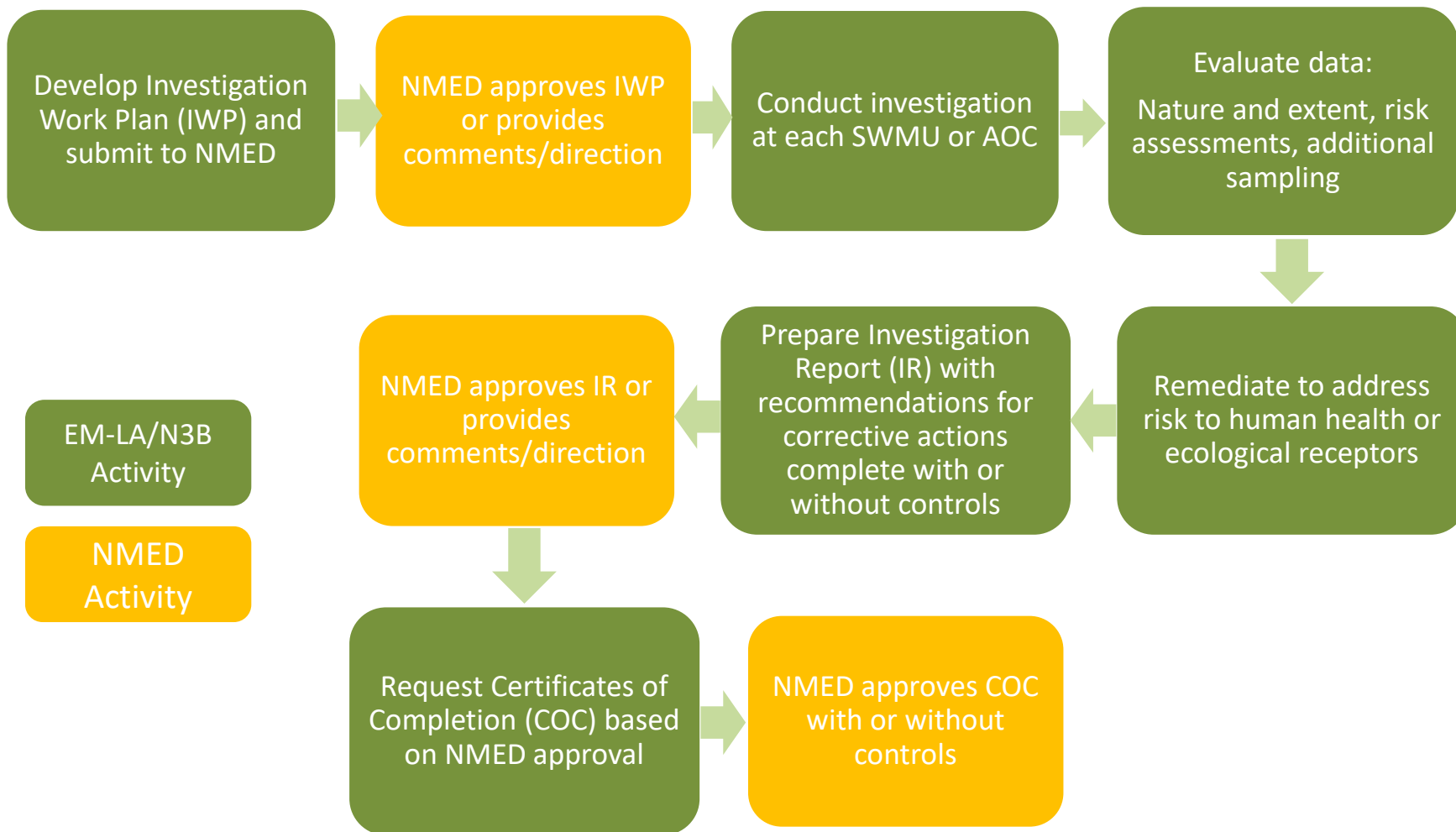
NMED  
Activity

RCRA = Resource Conservation and Recovery Act





# Corrective Action Steps per the Consent Order (where CME is not required)







# Aggregate Areas: Challenges

## Challenges

- Depleted uranium
- Beryllium
- Cultural sites
- Endangered species
- Historical munitions
- Ongoing LANL mission work, including accessing active or high security areas
- Weather delays: rain, lightning, wind, snow, and fire

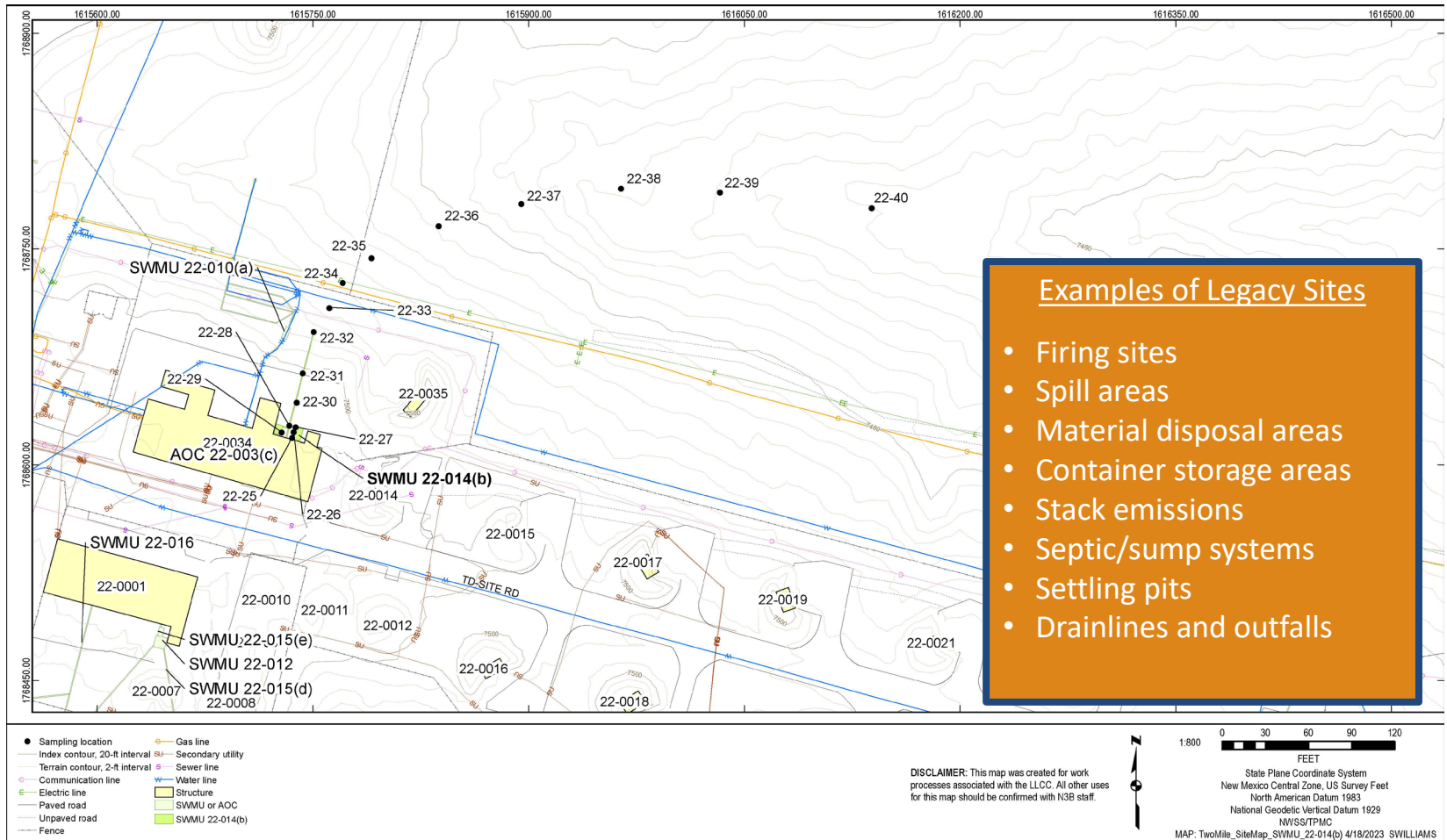


South Ancho Canyon Aggregate Area  
SWMU 33-003(a), Underground Chamber





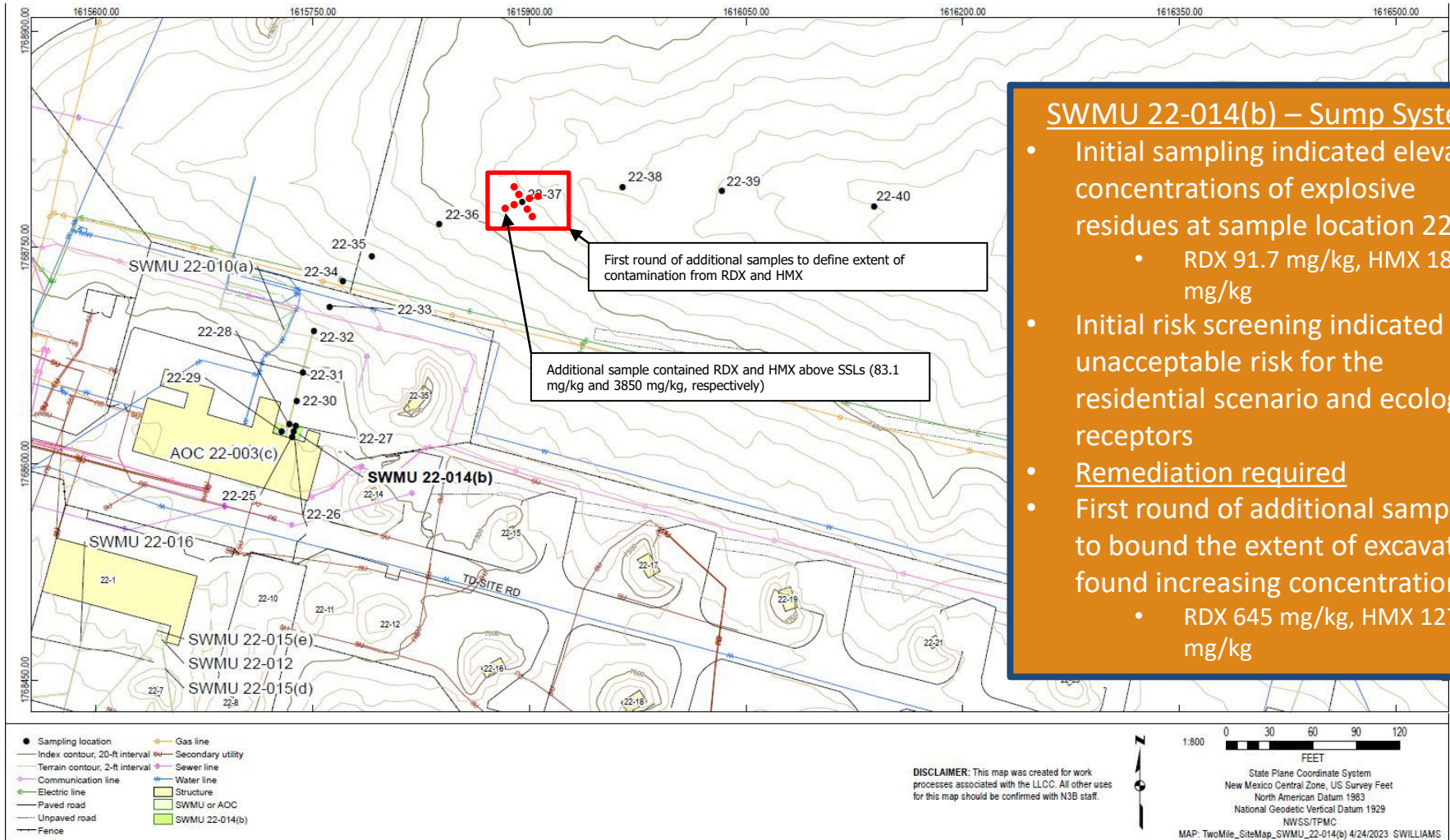
# Deeper Examination: Twomile Canyon Aggregate Area Pajarito Watershed Campaign







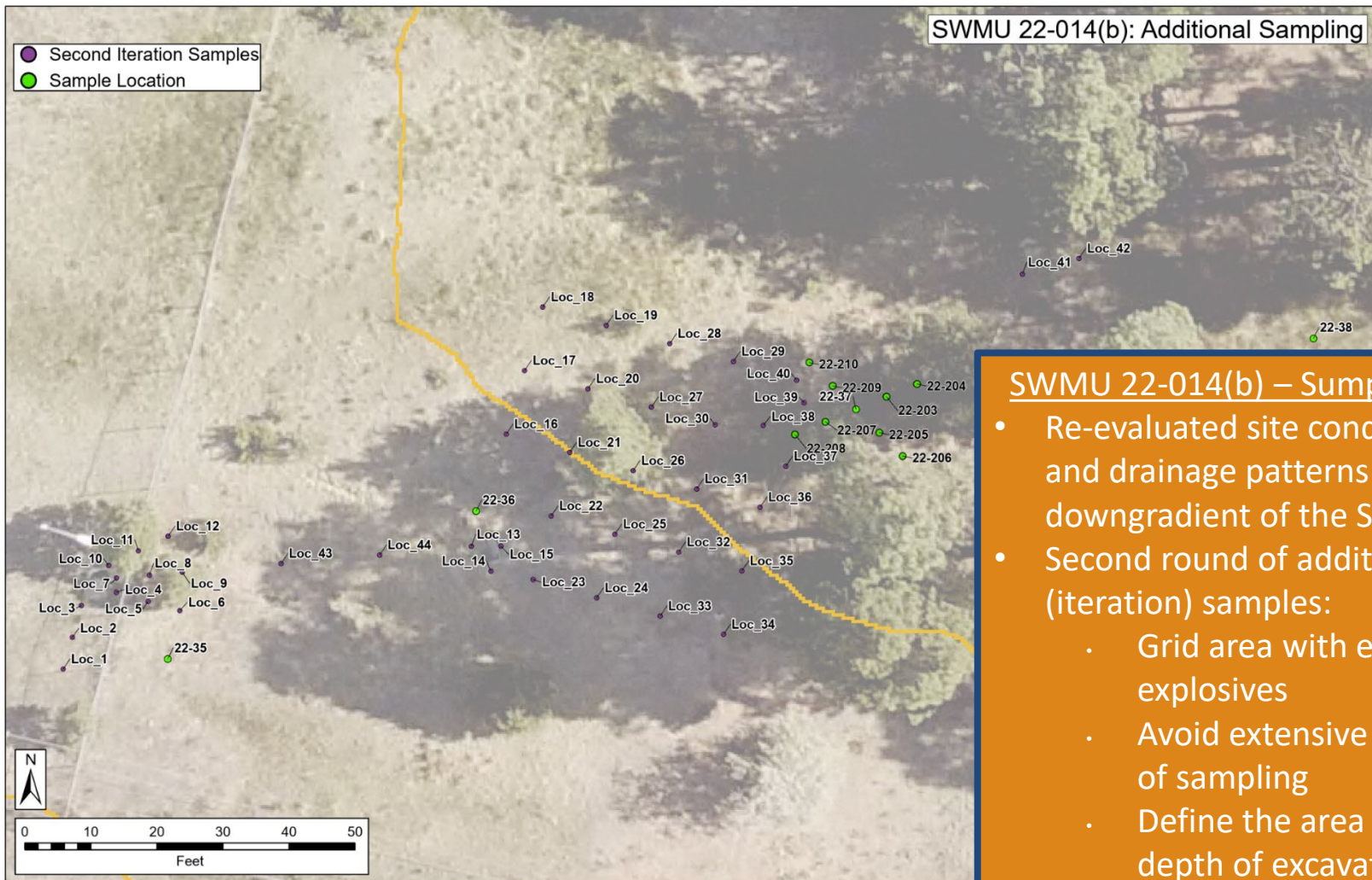
# Deeper Examination: Twomile Canyon Aggregate Area Pajarito Watershed Campaign







# Deeper Examination: Twomile Canyon Aggregate Area Pajarito Watershed Campaign



## SWMU 22-014(b) – Sump System

- Re-evaluated site conditions and drainage patterns downgradient of the SWMU
- Second round of additional (iteration) samples:
  - Grid area with elevated explosives
  - Avoid extensive phases of sampling
  - Define the area and depth of excavation

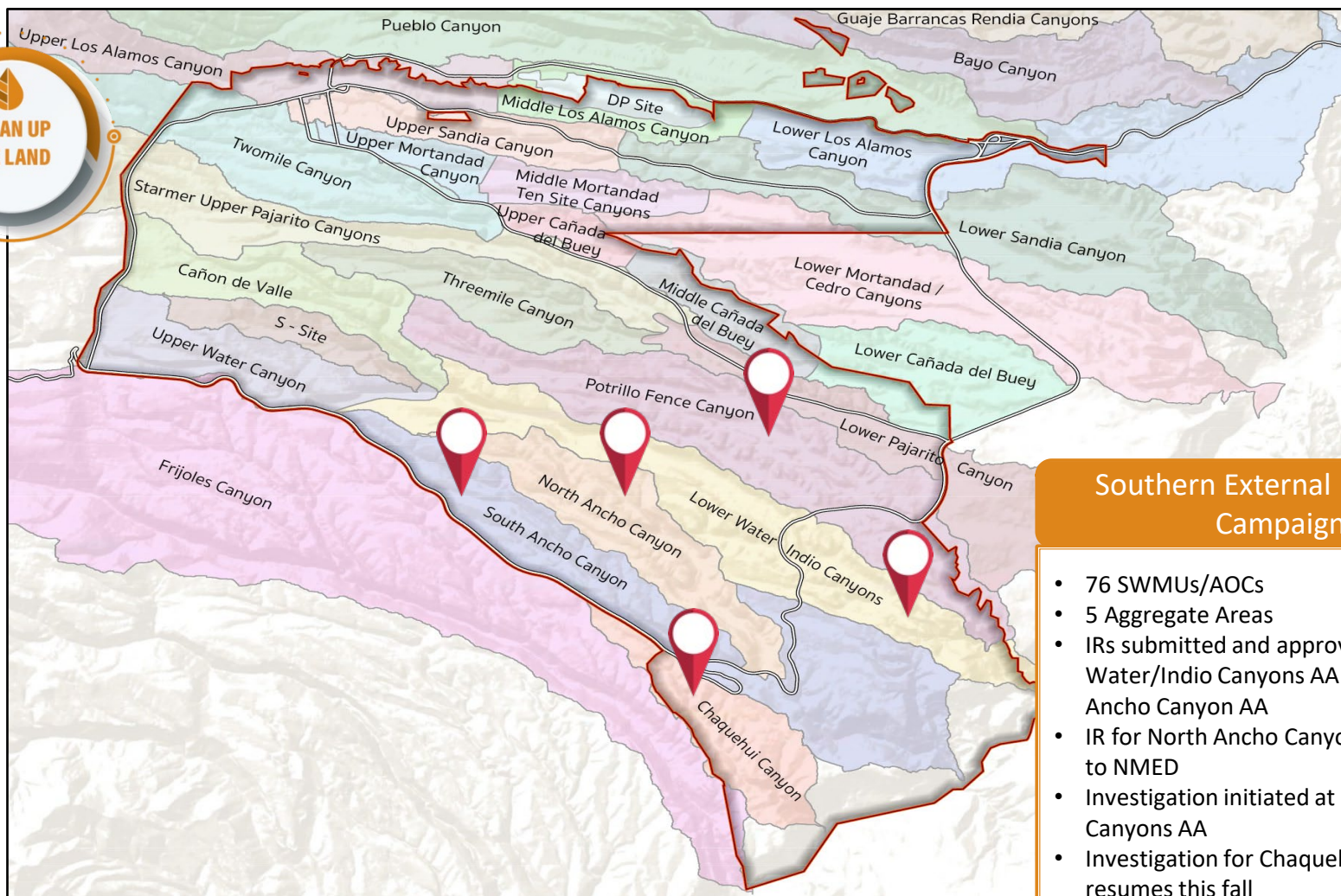






# Snapshot of Recent Work: Work Completed

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## Southern External Boundary Campaign

- 76 SWMUs/AOCs
- 5 Aggregate Areas
- IRs submitted and approved for Lower Water/Indio Canyons AA and South Ancho Canyon AA
- IR for North Ancho Canyon AA submitted to NMED
- Investigation initiated at Potrillo/Fence Canyons AA
- Investigation for Chaquehui Canyon AA resumes this fall

AA = Aggregate Area(s)

IR = Investigation Report

Work in some aggregate areas not shown



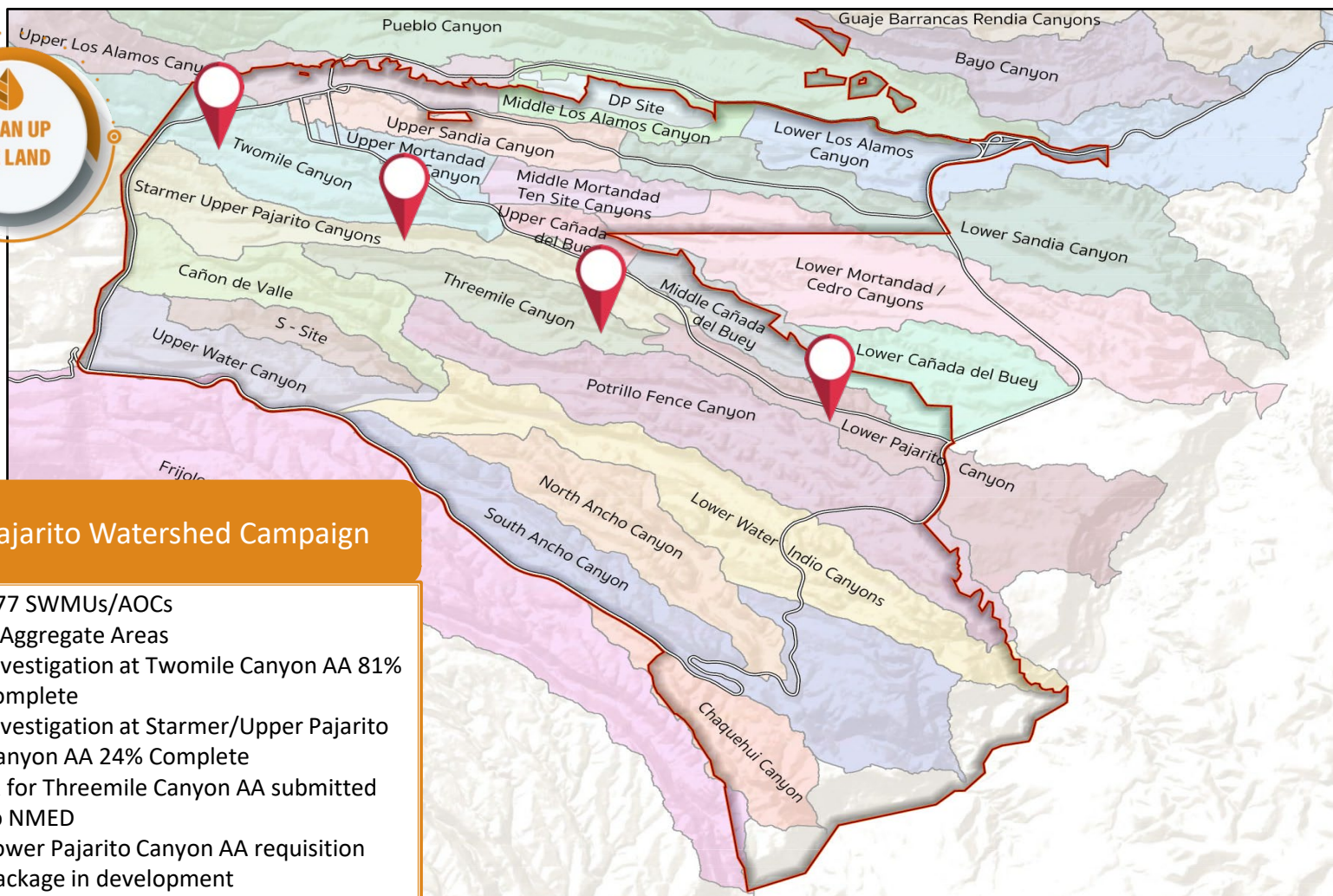


# Snapshot of Recent Work: Work Completed

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## Pajarito Watershed Campaign

- 177 SWMUs/AOCs
- 4 Aggregate Areas
- Investigation at Twomile Canyon AA 81% complete
- Investigation at Starmer/Upper Pajarito Canyon AA 24% Complete
- IR for Threemile Canyon AA submitted to NMED
- Lower Pajarito Canyon AA requisition package in development



AA = Aggregate Area(s)

IR = Investigation Report

Work in some aggregate areas not shown



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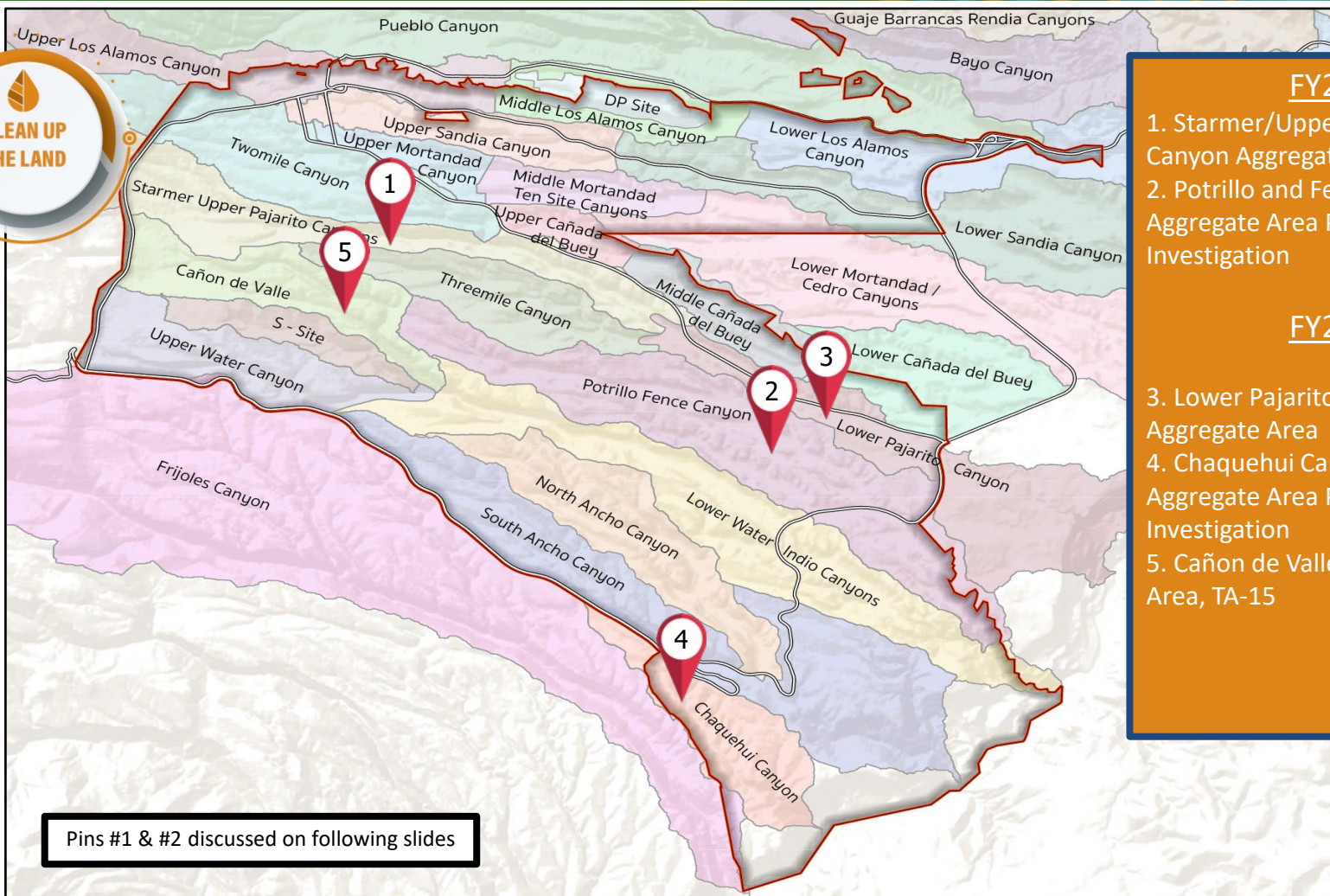






# FY23-24 Field Starts

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## FY23

1. Starmer/Upper Pajarito Canyon Aggregate Area
2. Potrillo and Fence Canyons Aggregate Area Phase II Investigation

## FY24

3. Lower Pajarito Canyon Aggregate Area
4. Chaquehui Canyon Aggregate Area Phase III Investigation
5. Cañon de Valle Aggregate Area, TA-15

Pins #1 & #2 discussed on following slides





# Detailed Look Ahead: Potrillo and Fence Canyons Aggregate Area

## Southern External Boundary Campaign

### 9 SWMUs/AOCs

Work Scope: Implement NMED-approved Phase II Investigation Work Plan

Phase II Investigation: 562 samples



### Additional Details:

- **Additional sampling** to define nature and extent as needed according to the supplemental investigation report
- **Complete corrective actions** identified in the Phase I investigation report, including excavation of soil with elevated risk to construction workers and ecological receptors

### Schedule:

- Investigated 4 SWMUs/AOCs in FY23
- Complete investigation of 5 SWMUs/AOCs in FY24/early FY25
- Complete excavation of soil near Firing Site E-F in FY24/early FY25
- Progress Report Summarizing Field Work Implementation: 9/29/23
- Progress Report Summarizing remaining 5 SWMUs/AOCs: 9/30/24
- Phase II Investigation Report: 1/31/25

Challenges: SWMUs/AOCs are within Weapons Facility Operations requiring coordination with schedules for core mission activities. Large volume of excavation at multiple SWMUs. Chronic Beryllium Disease Prevention Program controls. Depleted uranium shrapnel area. Some sites are also subject to cultural restrictions (State Historic Preservation Officer) and Mexican Spotted Owl restrictions.







## Pajarito Watershed Campaign

### 32 SWMUs/AOCs

Work Scope: Implement NMED-approved Investigation Work Plan

Initial Investigation: 2507 samples



### Additional Details:

- **Sampling in TA-18 and TA-27**: Sampling will target Manhattan Project and Cold War Era plutonium operations located in Pajarito Canyon.
- **Septic systems**: Several septic systems will be sampled. After sampling, tanks will be examined for damage, and tanks and drainlines will be abandoned in place by filling with concrete.
- **Boreholes**: Two deep boreholes drilled to ~200 ft below ground surface to evaluate potential perched water and contaminant migration. If sufficient perched water is found, NMED will provide guidance on installing monitoring wells.

### Schedule:

- Field investigation: November 2023
- Progress Report Summarizing Field Work Implementation: 9/30/24
- Investigation Report and Risk Assessment: 9/30/25

Challenges: Sites are located within Manhattan Project National Historical Park, requiring coordination with Triad and National Park Service personnel. Certain areas are also subject to floodplain restrictions, Mexican Spotted Owl restrictions, and Southwestern Willow Flycatcher restrictions.



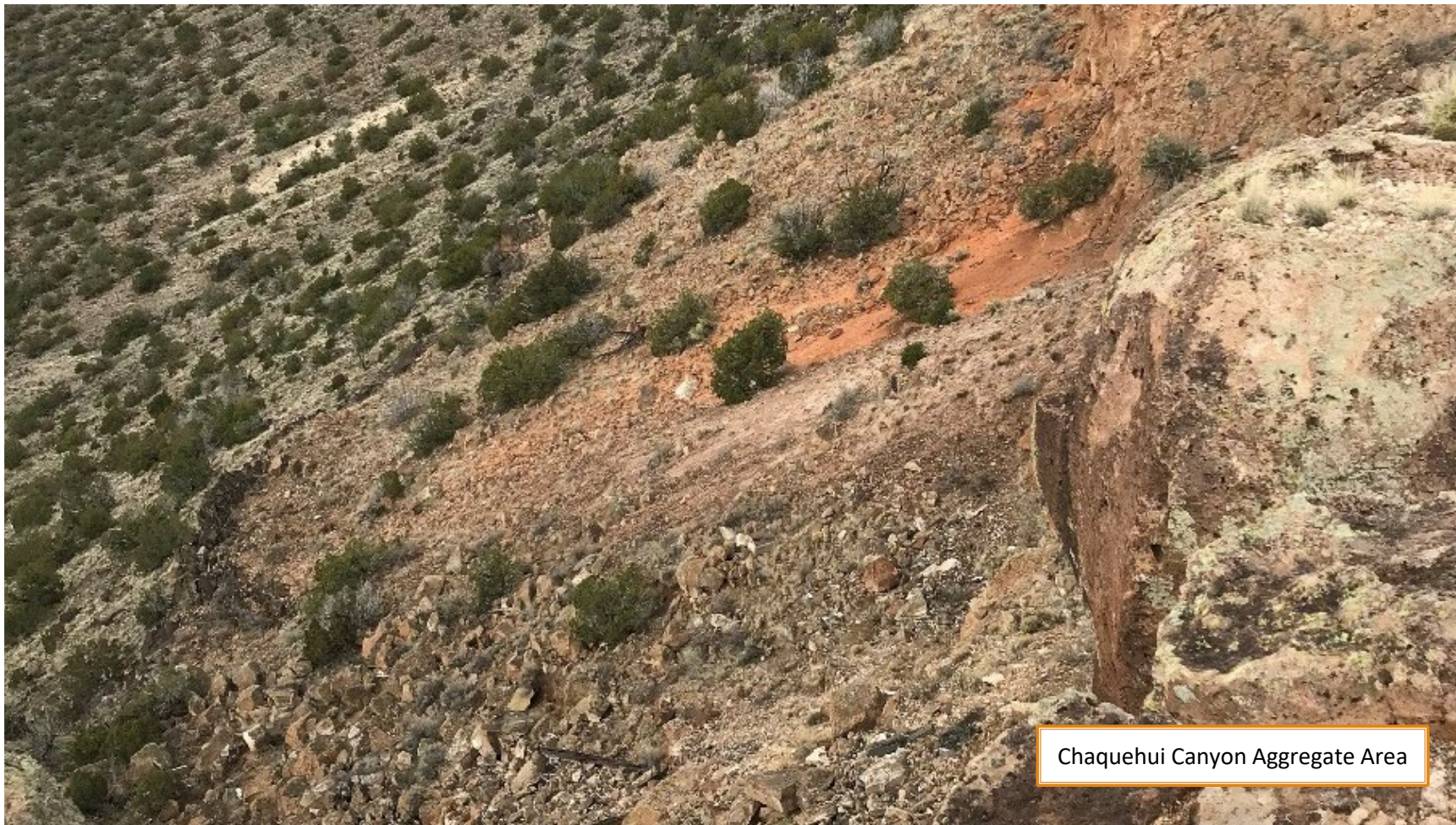




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# Our Goal: Clean Up The Environment & Protect The Land and Water



Chaquehui Canyon Aggregate Area



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