



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**



Environmental Management Cleanup Forum

LANL Legacy Cleanup: Aggregate Areas

Presented by

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SAFETY ♦ PERFORMANCE ♦ CLEANUP ♦ CLOSURE

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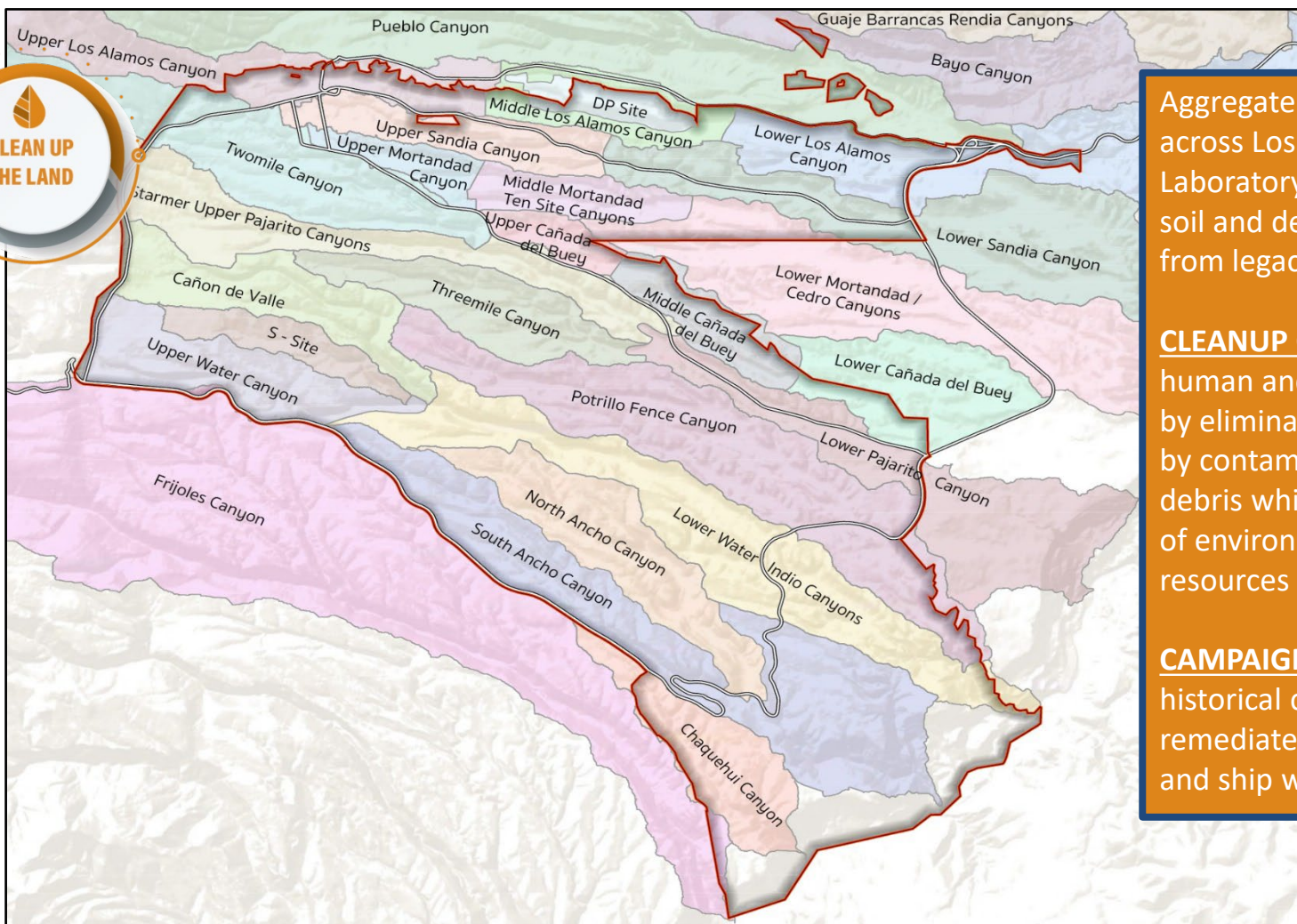
Los Alamos Legacy Cleanup Contract





Aggregate Areas: Overview

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Aggregate Areas are areas across Los Alamos National Laboratory (LANL) containing soil and debris contaminated from legacy operations

CLEANUP GOAL: Protect human and ecological health by eliminating hazards posed by contaminated soil and debris while being protective of environmentally sensitive resources

CAMPAIGNS: Characterize historical contamination, remediate sites as needed, and ship waste off-site





Aggregate Areas: Additional Details

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

Solid Waste Management Unit (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.

Area of Concern (AOC): Any area that is not a SWMU that may have had a release of a hazardous waste or hazardous constituent.



Southern External Boundary Aggregate
Area Campaign





Aggregate Areas: Consent Order Campaigns

Campaigns In Progress

Historical Properties Completion Campaign

SWMUs/AOCs: 75

Available field work complete – some work deferred

Supplemental Investigation Reports Campaign

SWMUs/AOCs: 190

Projected completion: 2022

Southern External Boundary Campaign

SWMUs/AOCs: 65

Pajarito Watershed Campaign

SWMUs/AOCs: 177

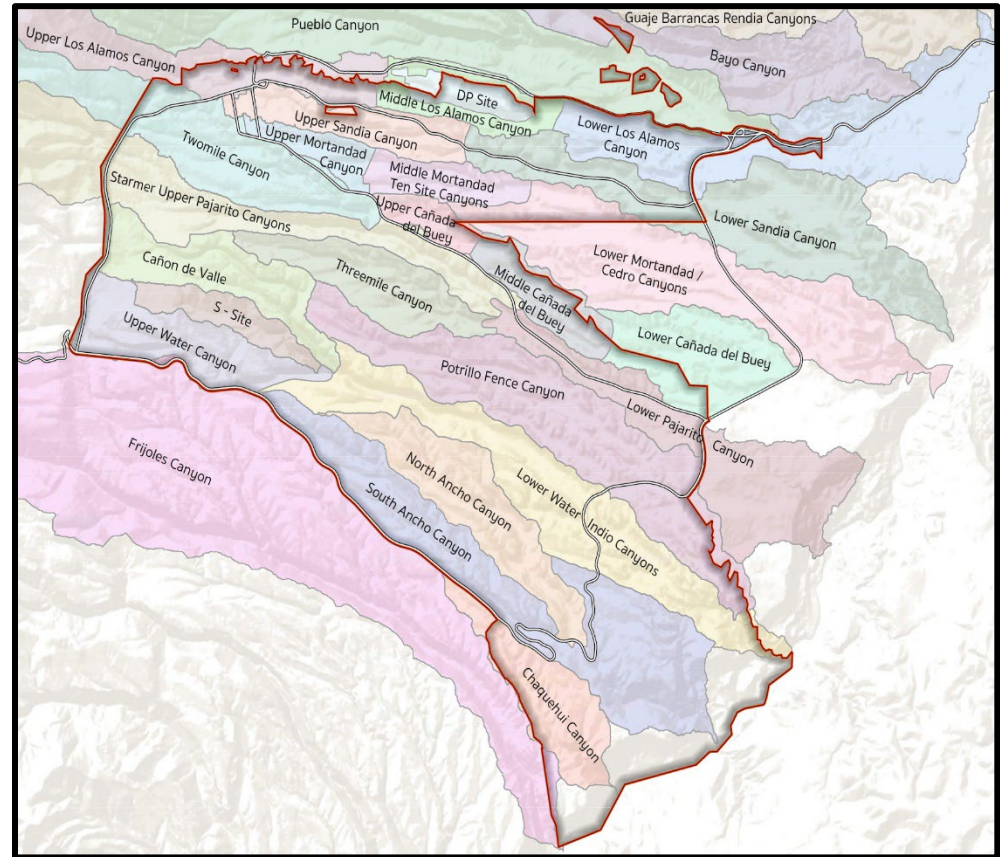
Future Campaigns

Sandia Canyon Watershed Campaign

SWMUs/AOCs: 49

Upper Water Watershed Campaign

SWMUs/AOCs: 255



Campaign Completed: Known Cleanup Sites (Above SSLs) Campaign





Work Scope: High Level Overview

1. Develop work control documents
2. Implement the investigation work plan
3. Conduct site characterization
4. Evaluate analytical data
5. Perform ecological and human health risk assessments
6. As necessary, remediate discrete areas of contamination
7. Containerize waste and transport it to a designated disposal facility
8. Prepare investigation reports

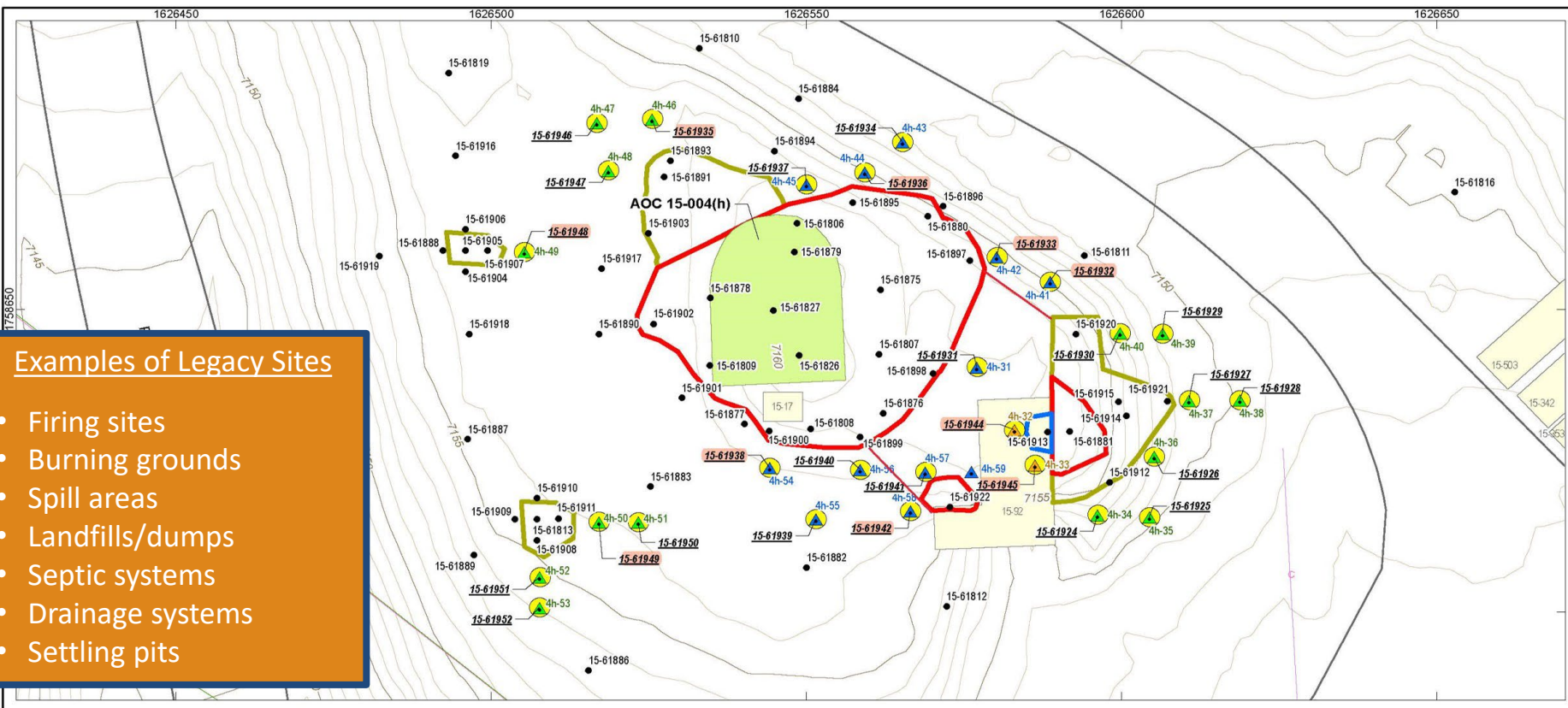


Chaquehui Canyon Aggregate Area
SWMU 33-010(f), Surface Debris





Deeper Examination: Lower Water Aggregate Area



Examples of Legacy Sites

- Firing sites
- Burning grounds
- Spill areas
- Landfills/dumps
- Septic systems
- Drainage systems
- Settling pits

- Existing sampling location
- ▲ Proposed sampling location
- ▲ Proposed sampling location, 9-ft bgs
- ▲ Proposed sampling location, 0.55 ft bgs
- TPMC provided sampling locations

- 0.5-ft. excavation depth
- 2-ft excavation depth
- 5-ft excavation depth
- SWMU 15-004(h)

- Paved road
- Electric line
- Sewer line
- Communication line

- Index contour, 5-ft interval
- Terrain contour, 1-ft interval

- 0-1 ft bgs or refusal
- 0-1 bgs, 2-3 bgs, 4-5 ft bgs
- 0-1 ft bgs, 2-3 ft bgs, 4-5 ft bgs, 6-7 ft bgs, 8-9 ft

DISCLAIMER: This map was created for work processes associated with the LLCC. All other uses for this map should be confirmed with NGB staff.



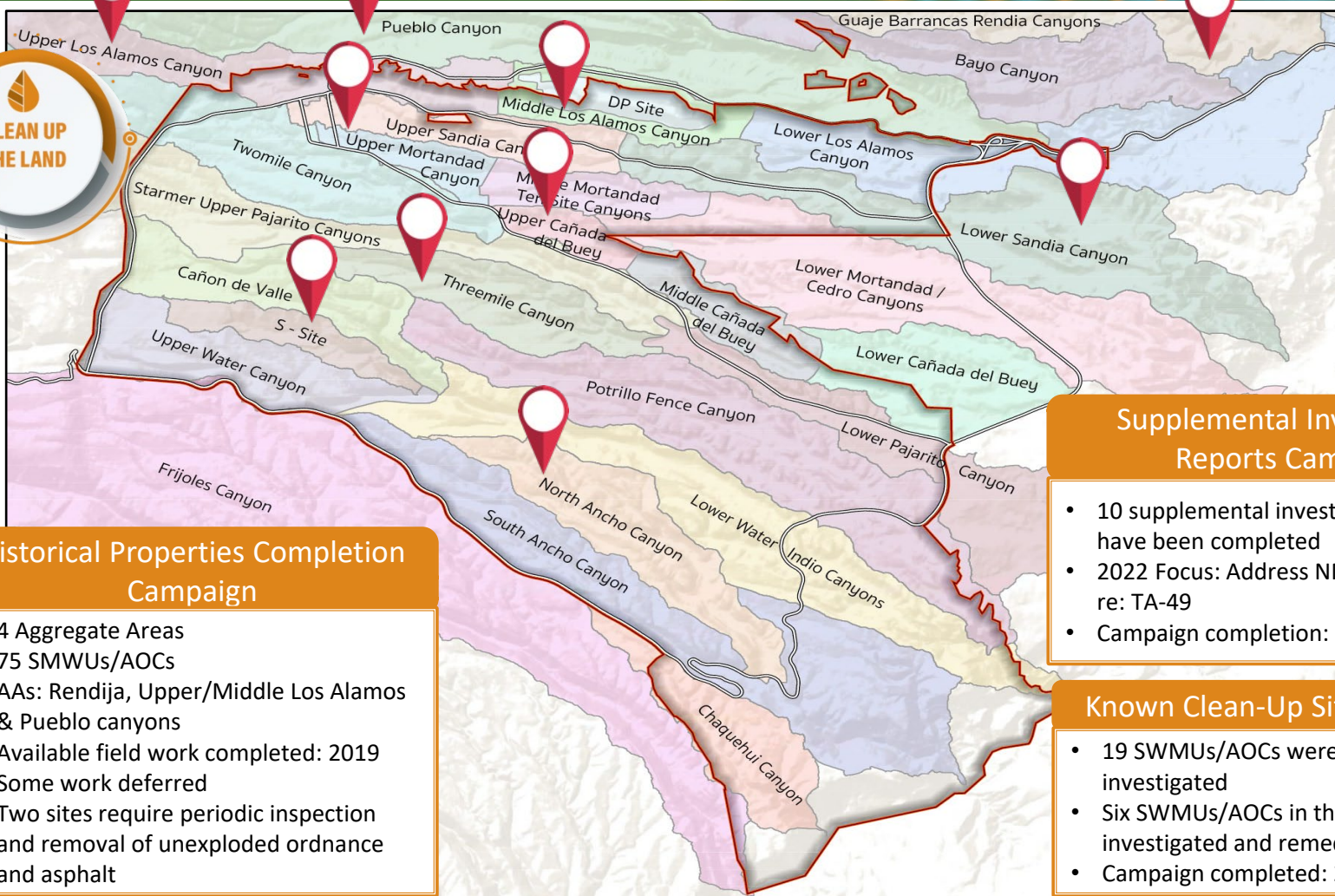


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Snapshot of Recent Work: Work Completed

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Historical Properties Completion Campaign

- 4 Aggregate Areas
- 75 SMWUs/AOCs
- AAs: Rendija, Upper/Middle Los Alamos & Pueblo canyons
- Available field work completed: 2019
- Some work deferred
- Two sites require periodic inspection and removal of unexploded ordnance and asphalt

Supplemental Investigation Reports Campaign

- 10 supplemental investigation reports have been completed
- 2022 Focus: Address NMED comments re: TA-49
- Campaign completion: 2022

Known Clean-Up Sites Campaign

- 19 SWMUs/AOCs were previously investigated
- Six SWMUs/AOCs in three AAs were investigated and remediated
- Campaign completed: 2019

AA = Aggregate Area(s)
Work in some aggregate areas not shown



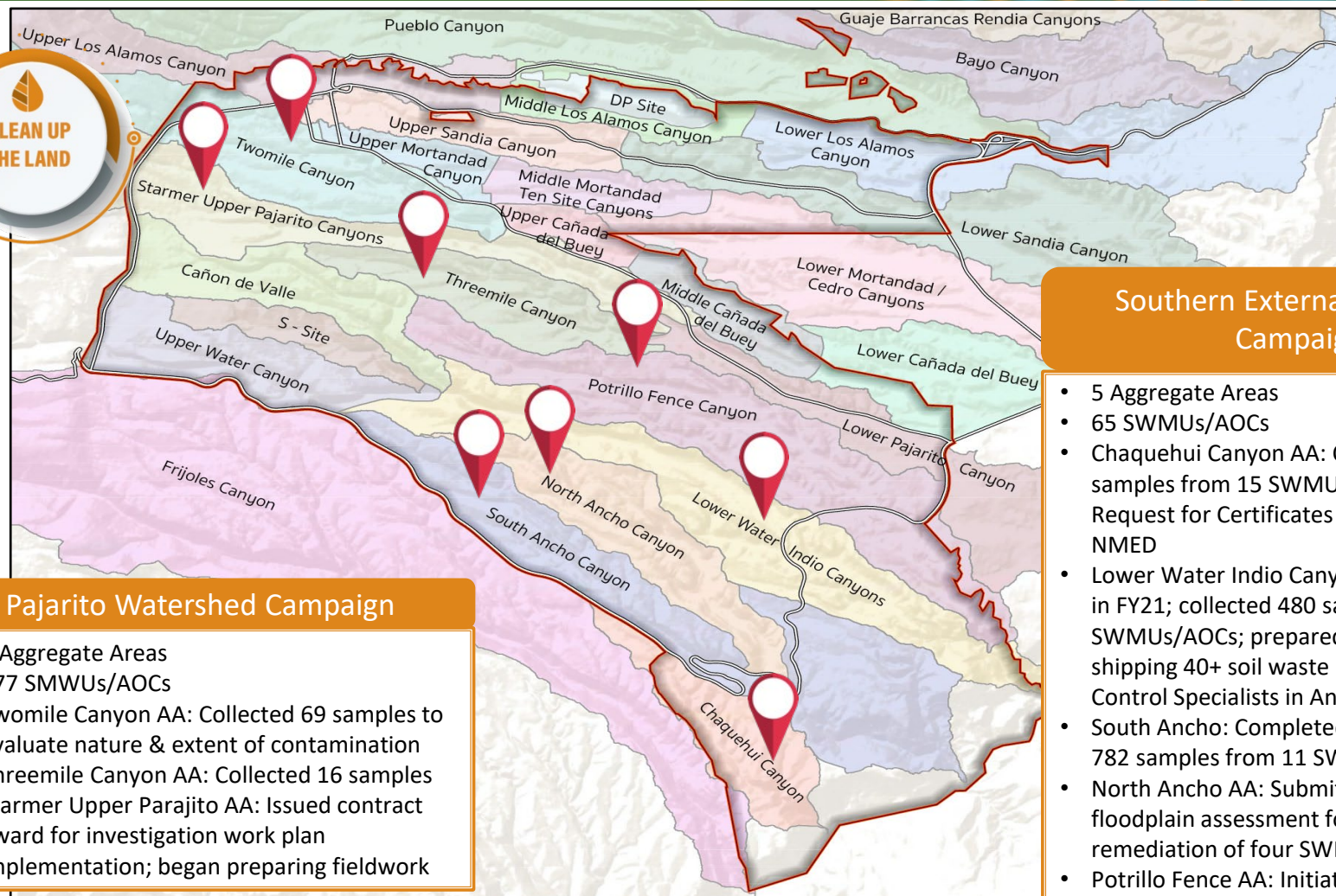
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Snapshot of Recent Work: FY21-22

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Pajarito Watershed Campaign

- 4 Aggregate Areas
- 177 SMWUs/AOCs
- Twomile Canyon AA: Collected 69 samples to evaluate nature & extent of contamination
- Threemile Canyon AA: Collected 16 samples
- Starmar Upper Parajito AA: Issued contract award for investigation work plan implementation; began preparing fieldwork

Southern External Boundary Campaign

- 5 Aggregate Areas
- 65 SWMUs/AOCs
- Chaquehui Canyon AA: Collected 1,851 samples from 15 SWMUs/AOCs; prepared Request for Certificates of Completion to NMED
- Lower Water Indio Canyons AA: Completed in FY21; collected 480 samples from 6 SWMUs/AOCs; prepared and began shipping 40+ soil waste bins to Waste Control Specialists in Andrews, TX
- South Ancho: Completed in FY21; collected 782 samples from 11 SWMUs/AOCs
- North Ancho AA: Submitted to NMED floodplain assessment for sampling and remediation of four SWMUs
- Potrillo Fence AA: Initiated project preparedness review

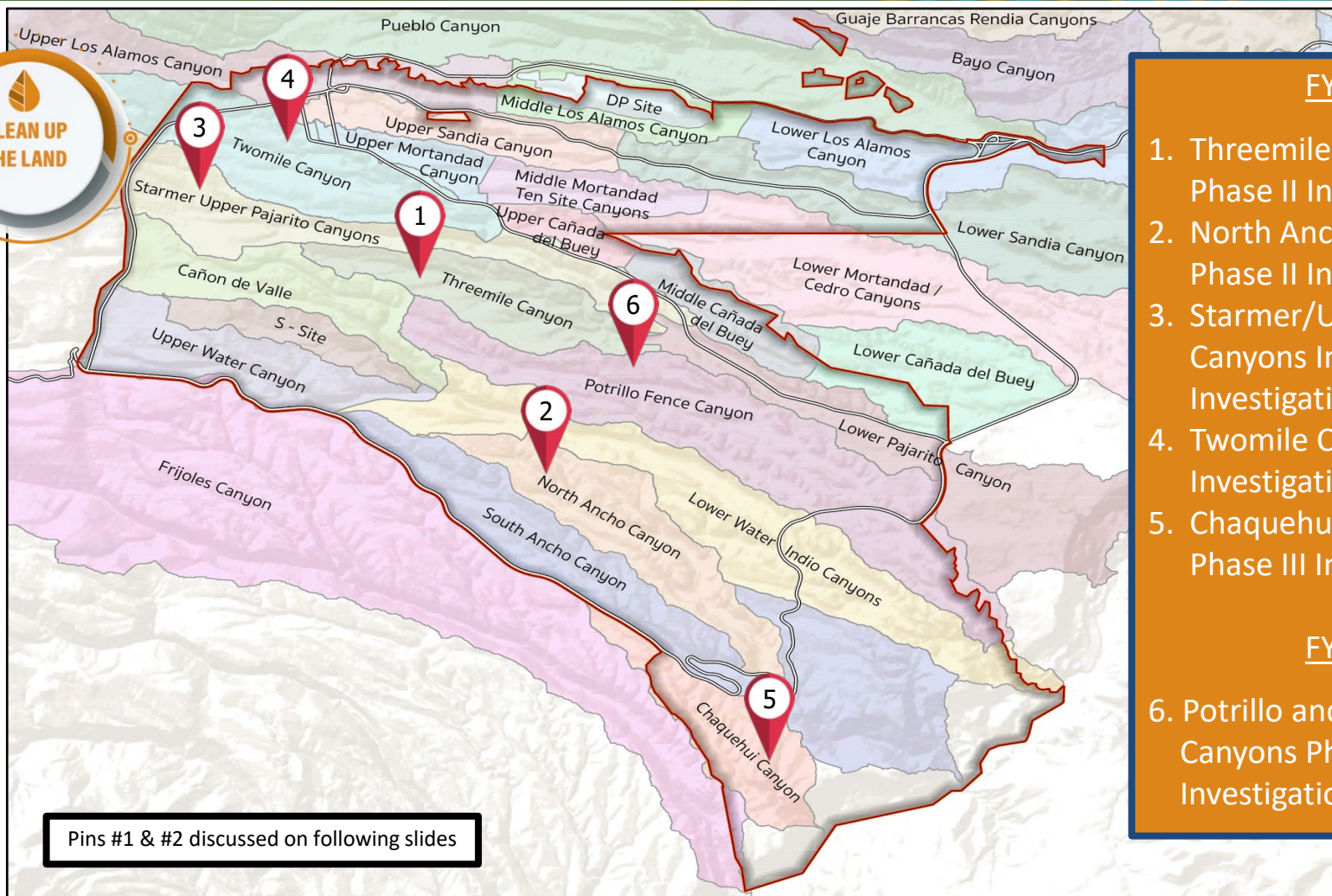
AA = Aggregate Area(s)





Look Ahead: FY22-23 Field Starts

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Pins #1 & #2 discussed on following slides

FY22

1. Threemile Canyon Phase II Investigation
2. North Ancho Canyon Phase II Investigation
3. Starmer/Upper Pajarito Canyons Initial Investigation
4. Twomile Canyon Initial Investigation
5. Chaquehui Canyon Phase III Investigation

FY23

6. Potrillo and Fence Canyons Phase II Investigation



3 SWMUs/AOCs

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

Initial Investigation: 26 samples



Additional Details:

- **AOC 15-008(g), Surface Disposal Site**: Four locations resampled from depth intervals of 0.0–0.5 ft and 2.0–2.5 ft below ground surface (bgs). Two new locations, same depth interval. Hand auger.
- **SWMU 15-009(b), Septic System**: Two new locations sampled from depth intervals of 0.0–1.0 ft and 1.0–2.0 ft bgs. Hand auger.
- **SWMU 15-010(b), Septic System**: Pump liquid, if any, from 900-gallon tank. Sample four locations beneath drainline, tank inlet, tank outlet. Place one borehole adjacent to the tank or angled to sample under tank at two depths; one at the base and five feet below. Fill tank and cap drainlines.

Schedule:

- Self-performed investigation: February 2022
- Field investigation: Fall 2022 (following Mexican Spotted Owl work pause)
- Progress Report Summarizing Field Work Implementation: 9/30/22 (Consent Order milestone)
- Investigation Report and Risk Assessment: 9/30/23 (Consent Order target)

Clearance Required: Sites are located within Weapons Facility Operations; require a clearance or escort





Detailed Look Ahead: North Ancho Canyon Phase II Investigation

6 SWMUs/AOCs

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

Initial Investigation: 635 samples (estimated)



Additional Details: Plug and abandon (P&A) 18 boreholes (SWMU 39-001[a] & SWMU 39-001[b])

- 13 are 2-inch PVC 45° angled boreholes. No screens. No construction information.
- 1 borehole was cut during the 2009 excavation of SWMU 39-001(a). Needs only minor over-coring and to dress the surface.
- 5 are vertical wells. 2 have well construction information. 4 are 4-inch PVC. 1 is 4-inch stainless steel
- Mitigate overhead power lines and a transformer fence to P&A three angled boreholes

Schedule:

- Investigated two SWMUs/AOCs: February 2022
- Procurement: FY22 Q3
- Investigate third site: Summer 2022
- Progress Report Summarizing Field Work Implementation: 9/30/22 (Consent Order milestone)
- Phase II Investigation Report: 6/30/23 (Consent Order target)





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, and fire
- Pandemic restrictions



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





3,925

Number of samples taken

92

Number of SWMUs/AOCs investigated

22

Number of SWMUs/AOCs remediated

2,938

Cubic yards remediated (equals 10,792 55-gallon drums)

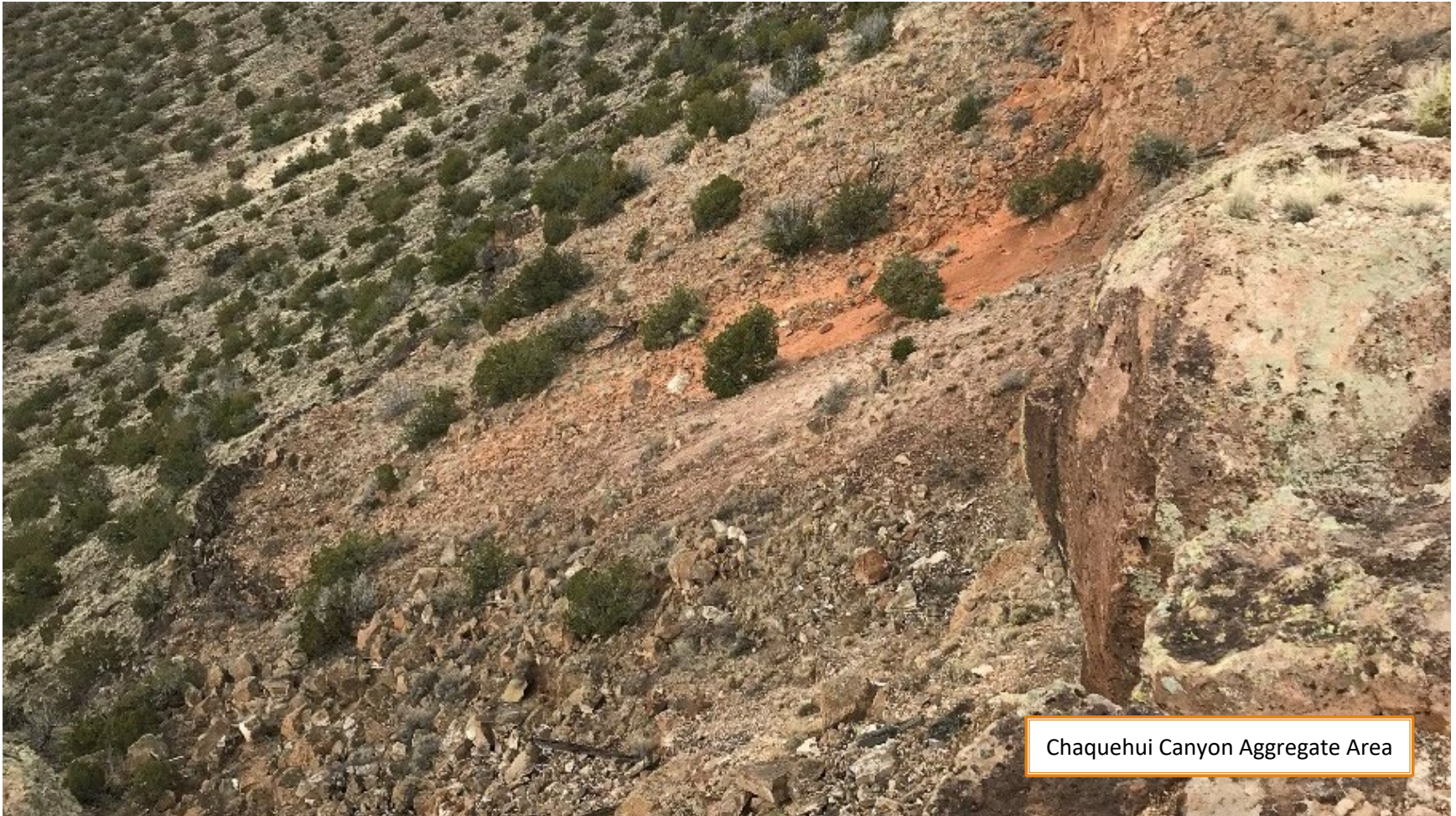




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Our Goal: Clean Up The Environment & Protect The Land and Water



Chaquehui Canyon Aggregate Area



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