

# **ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES**

**ACOMITA DAY SCHOOL SITE  
294 PUEBLO ROAD  
PUEBLO OF ACOMA, NEW MEXICO**

**PREPARED FOR:**

**REMEDIATION OVERSIGHT SECTION  
NEW MEXICO ENVIRONMENT DEPARTMENT**

**May 2024**



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# ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES

## Acomita Day School, Pueblo of Acoma, New Mexico May 2024

### 1.0 Introduction & Background

This Analysis of Brownfields Cleanup Alternative (ABCA) has been prepared for the former Acomita Day School on the Pueblo of Acoma in New Mexico (Project Activity Code 51573149). Brownfields are properties that have previously been developed which may result in complication for reuse, redevelopment, or expansion by the presence of hazardous substances, pollution, or contamination. This ABCA report describes asbestos-containing materials (ACM) and lead-based paint (LBP) contamination issues associated with the Acomita Day School (site), applicable cleanup standards and laws, and evaluate the effectiveness, implementability, and costs of different cleanup options.

The Pueblo of Acoma plans to demolish all five buildings on the site and redevelop the property. This cleanup project is being undertaken by the NMED Brownfields Program and the Pueblo of Acoma. To ensure compliance with all applicable regulations the NMED and U.S. Environmental Protection Agency (EPA) will be the key regulatory agencies overseeing this project and will review all project documents prepared by SMA and any environmental cleanup work. The NMED is funding the preparation of this Analysis of Brownfields Cleanup Alternatives and the proposed cleanup work at the Acomita Day School Site. This ABCA outlines site cleanup alternatives evaluated by the NMED, EPA, and Pueblo of Acoma during the cleanup planning process. This ABCA will be available to the public for a period of 30 days. The final ABCA will include any comments received during the 30-day public comment period.

### 1.1 Site History

The buildings on the former Acomita Day School property are estimated to have been constructed in the 1920's or 1930's. The property was operated as a school from 1955 to 1998 when the school was taken over by the Head Start Program. The Head Start Program closed in 2004 and the buildings have remained vacant since that time. Some vandalism of the site buildings has occurred during their vacancy.

#### ***1.1.1 Previous Environmental Investigations and Available Information***

Reports, data, and information from previous environmental investigation activities completed to date at the site.

- *Phase I Environmental Site Assessment Vacant Former Acomita Day School* (AECOM, January 23, 2018): three recognized environmental conditions (RECs) or data gaps were



identified. Although considered unlikely, potential contamination was identified in the southwest building formally used as a printing press with potential for vapor intrusion and contamination migration via an on-site septic system. AECOM recommended asbestos and lead-based paint surveys be performed prior to building demolition.

- *Phase II Environmental Site Assessment Acomita Day School* (AECOM, December 2020): no chemicals of concern were identified from the printing press formally located in the southwest building. The investigation consisted of the collection and analysis of primary media of concern associated with a drain-line and an on-site septic system. Subsurface soil samples near the drain line and adjacent to the septic system as well as aqueous liquid from within the septic were collected by AECOM to determine if a release had occurred.
- *Pre-Demolition Asbestos Investigation Reports for Buildings - Cafeteria, Classrooms, Dispensary, Offices, and Printing Press* (ACME Environmental, Inc., October 2021): asbestos was identified in materials including plaster white VFT, linoleum flooring, roofing paper, and exterior stucco.
- *Lead-based Paint Inspection Reports for Buildings - Cafeteria, Classrooms, Dispensary, Offices, and Printing Press* (ACME Environmental, Inc., October 2021): lead-based paint was identified in all five buildings.
- *Limited Phase II Environment Site Assessment – Asbestos Containing Materials and Lead Based Paint Survey Acomita Day School* (SMA, December 2021): asbestos containing materials and lead based paint was identified in all five site buildings.

## **1.2 Site Location**

The former Acomita Day School is located on Pueblo Road approximately 0.55 miles southwest of the intersection of Pueblo Road and Indian Service Route 25 in the Acomita area of the Pueblo of Acoma (herein referred to as “the Site”). The site consists of approximately 1.1 acres of land developed with five buildings and two sheds. Surrounding properties include residences, agricultural fields, and undeveloped land. According to the U.S. Geological Survey (USGS) 7.5-minute topographic map for Cubero, New Mexico, the site is located in Section 33, Township 10 North, Range 7 West, NMPM, at approximately 6,040 feet above mean sea level (amsl). Regional topography slopes gently to the northwest in the site vicinity.

### **1.2.1 Project Goals (site reuse plan)**

The Pueblo of Acoma plans to demolish all five site buildings to allow for redevelopment. There are currently no plans to redevelop the site for residential use or child-occupied facilities.

## **2.0 Current Environmental Concerns**

### **2.1 Asbestos Regulations**

The Occupational Safety and Health Administration (OSHA) has defined asbestos as naturally occurring mineral fibers that include chrysotile, amosite, crocidolite, tremolite, anthophyllite, actinolite, and any of those minerals that have been chemically treated and or altered. These fibrous silicate minerals were added to building materials for their thermal insulation, chemical stability, and high tensile strength properties. Asbestos minerals were added to cement pipes, brake shoes, duct insulation, flooring, mastic, gaskets, spray-applied textures, blown-in insulation, wiring insulation, taping compounds, packing materials, roofing shingles, roofing felt, ceiling panels, and other building products (OSHA, 2022).

The disturbance or dislocation of ACM may cause asbestos fibers to be released into the building's atmosphere, thereby creating a potential health hazard to workers and building occupants. Exposure to airborne asbestos fibers appears to be associated with asbestosis, lung cancer, and mesothelioma (U.S. EPA, 2022a and 2022b).

EPA National Emission Standards for Hazardous Air Pollution (NESHAP), Asbestos Hazard Emergency Response Act (AHERA), NMED, and OSHA regulations require inspection of commercial properties before any renovation or demolition to determine the presence of ACM, including friable ACM and Category I and II non-friable ACM as defined in 40 CFR, Part 61, Subpart M, Section 61.145.

Friable ACM, Category I and II ACM in poor condition, or Category I and II ACM that becomes friable during renovation or demolition and is present in quantities greater than 160 square feet, 260 linear feet, or 35 cubic feet are subject to the regulations pertaining to removal and disposal.

NMED requires that asbestos removal contractors comply with the remediation and 40-hour contractor supervisor training requirements of the NESHAP, 40 CFR 61 Subpart M, and to have a GB-98 general contractor's license and a GS-29 special contractor's license from the New Mexico Regulation & Licensing Department (NMRLD) Construction Industries Division.

### **2.2 LBP Regulations**

Lead is a natural occurring inorganic malleable heavy metal that can be highly toxic to humans if absorbed into the body, especially in young children. The primary cause of human exposure to lead is from deteriorating old lead-based paint (LBP). OSHA regulations in 29 CFR 1926.62 and 29 CFR 1910.1025 lists the permissible exposure limit (PEL) for workers to lead at a construction of 50 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) of air averaged over an 8-hour period. Engineering and work practice controls are prescribed in 20 CFR 1926.62 to reduce and maintain exposure to lead at or below the PEL or reduce exposure to the lowest feasible level with supplemental respiratory protection.

In accordance with EPA LBP regulations 40 CFR Part 745, which apply to residential properties



and child-occupied facilities, the site is exempt from EPA regulations as the site is planned for demolition.

### 2.3 Cleanup Standards

Based on the *Limited Phase II Environment Site Assessment* report (SMA, December 2021), each of the five buildings contained ACM and LBP. Approximate quantities and concentrations of ACM and LBP are summarized in Table 1 and 2 below.

**Table 1. Summary of Asbestos Containing Material Results by Building**

Building	Building Material	Approximate Area (ft <sup>2</sup> )	Asbestos Type	Percent Asbestos
Cafeteria	Plaster System (interior)	2,500	Chrysotile	2
	12"x12" Floor tiles w/ mastic	1,600	Chrysotile	2,3
	Exterior Stucco	2,000	Chrysotile	2
Classrooms	Exterior Stucco	4,200	Chrysotile	2
	Roofing Paper w/ Tar	1,800	Chrysotile	4
Dispensary	Linoleum Flooring	500	Chrysotile	22
	12"x12" Floor tiles w/ mastic	50	Chrysotile	3,3
	Roofing Paper w/ Tar	1,000	Chrysotile	3
Offices	Roofing Paper w/ Tar	1,800	Chrysotile	2
Printing Press	Exterior Stucco	2,250	Chrysotile	4
	Roofing Paper w/ Tar	1,400	Chrysotile	4

**Table 2. Summary of Lead-Based Paint Results by Building**

Building	Painted Material	Lead (mg/cm <sup>2</sup> )
Cafeteria	Interior walls and ceiling	1.6
	Interior and exterior window components	7.3-17.5
	Interior door	19.3
	Baseboards	1.1 - 9.6
Classrooms	Interior walls	1.0 – 12.1
	Exterior walls	3.7
	Interior and exterior window component	1.0 - 15.8
	Interior and exterior door and doorway components	1.4 - 5.1
	Front porch components	8.2
Dispensary	Rafters/joints	1.0
	Interior and exterior window components	1.4 - 1.7
	Exterior door components	3.9 - 12.8
	Exterior canals and fascia	14.5

Offices	Exterior window components	4.7 - 8.4
	Exterior door components	10.5
	Front porch ceiling	6.5
Printing Press	Interior and exterior window components	5.6 - 20.1
	Interior and exterior door components	6.6 - 16.2
	Exterior fireplace components	1.0
	North kitchen wall	1.1
	Baseboards of Room #2	14.0
	Door jamb of shed	2.9

## 2.4 Cleanup Standards for Major Contaminants

The US EPA has jurisdiction over demolition and remediation activities on Native American lands. The Pueblo of Acoma anticipates federal standards for recreational use will be sufficient for cleanup standards. Cleanup activities will be overseen by the New Mexico Environment Department Ground Water Quality Bureau (NMED GWQB).

## 2.5 Laws & Regulations Applicable to the Cleanup

Laws and regulations that are applicable to this cleanup include the Brownfields Revitalization Act, Asbestos Hazard, Emergency Response Act (AHERA), NESHAP, and OSHA worker protection requirements apply including contractor and employee training, notice of intent, protection of workers and the public.

## 3.0 Evaluation of Cleanup Alternatives

To address contamination at the site, three different alternatives were considered including Alternative 1: No Action, Alternative 2: Implementation of an Operations and Maintenance (O&M) program, Alternative 3: Abatement. In accordance with EPA requirements each alternative is evaluated using the following criteria:

- Short-Term Effectiveness: Addresses the effects of the alternative during the construction and implementation of remedial action objectives (RAO). Under this criterion, alternatives are evaluated for their effects on human health and the environment during implementation of the remedial action.
- Long-Term Effectiveness and Permanence: Addresses the risks that remain at the site after the RAO have been met. Ther primary focus of this evaluation is the extent and effectiveness of controls used to manage the risk posed by treatment residuals or untreated wastes.
- Implementability: Addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials that may be required



during its implementation. The following factors were considered: technology construction ability, monitoring requirements, equipment availability, and regulatory agency approvals.

- Costs: Intended for planning purposes to compare cost estimates.

To satisfy NMED GWQB and EPA requirements, the success, feasibility, and costs of each alternative was considered before selecting a recommended cleanup alternative. The following alternatives were considered:

1. No action
2. Implementation of an Operations and Maintenance (O&M) program
3. Abatement

### **3.1 Alternative 1 - No Action**

Under this alternative, no action would be undertaken to reduce exposure to ACM and LBP. The building on the site would remain in the current state of disrepair.

#### ***3.1.1 Short-Term Effectiveness***

There is no short-term effectiveness associated with this alternative. Future workers for all construction and demolition tasks would be exposed to unacceptable risks.

#### ***3.1.2 Long-Term Effectiveness***

There is no long-term effectiveness associated with this alternative. Potential exposure risks would not be mitigated.

#### ***3.1.3 Implementability***

There would be no required actions or technology necessary to implement this option. This alternative would result in no administrative burden. No permits or approvals would be required. Because site risks are not mitigated under the No Active alternative, regulatory acceptance would not be achieved, and the buildings would not be demolished to allow future redevelopment.

#### ***3.1.4 Costs***

There are no costs associated with this alternative.

### **3.2 Alternative 2 - Implementation of an ACM and LBP O&M Program and Partial Abatement**

This alternative would leave all ACM and LBP in place and monitored to ensure ACM and LBP degradation does not occur. An O&M Program is a formulated plan of training, cleaning, work practices, and surveillance to maintain ACM and LBP within buildings in good conditions. The goal

is to minimize exposure of all building occupants to related hazards.

### **3.2.1 Short-Term Effectiveness**

To accomplish this objective, EPA [Setting up an Asbestos Operations and Maintenance \(O&M\) Program | US EPA](#) recommends that an O&M program includes:

- Maintain ACM and LBP in good condition
- Ensure proper cleanup of contaminants previously released
- Prevent further releases of contaminants
- Monitor the condition of ACM and LBP

Impacts during implementation of an O&M program would include possible exposure of workers within the buildings to ACM and LBP.

### **3.2.2 Long-Term Effectiveness**

An ACM and LBP O&M program and partial abatement would not be an effective treatment for the site because several buildings are in poor condition. This alternative assumes that only minimal inspection and maintenance is required (i.e., flooring, plaster, stucco, painting, etc.)

### **3.2.3 Implementability**

The administrative burden of implementing this alternative would be high. This alternative would require significant amounts of staff time to oversee ongoing O&M program activities at the site. Although an O&M program could be implemented, the Pueblo of Acoma does not intend to redevelop the site for reuse.

### **3.2.4 Costs**

The cost of implementing an O&M program has not been detailed. Given the conditions of the five site buildings, especially concerning the cafeteria building, significant initial costs are anticipated. The O&M program activities could be performed by trained staff at the site, and material costs to maintain the integrity of the ACM and LBP are low, annual O&M costs are likely to be less than \$2,000 per year when considering both materials and labor. Costs the first year would be substantially higher, while trending downward for several years after the initial assessment. Estimated cost for 30 years of O&M at \$2,000 per year total \$60,000.

## **3.3 Alternative 3 – Abatement**

The Abatement alternative would require the removal of all ACM and LBP. Prior to the demolition of any building, all ACM and LBP materials would be transported and disposed of at a licensed disposal facility.

### **3.3.1 Short-Term Effectiveness**

Adverse impact to human health and the environment during implementation can be avoided given that the contractor will be required to comply with all health and safety requirements for demolition and renovation projects, which are overseen by NESHAP, OSHA, and the State of New Mexico including air monitoring, temporary pressure differential and air circulation system implementation, installation of temporary enclosures, use of respiratory protection, use of decontamination units, and site cleaning and decontamination.

### **3.3.2 Long-Term Effectiveness**

Abatement will provide long-term permanent effectiveness. All identified ACM and LBP material will be removed from the site, eliminating the potential health hazard to building occupants, visitors, and demolition workers.

### **3.3.3 Implementability**

This alternative is easily implemented using currently available construction technology and equipment. A qualified contractor will be retained to complete the removal, disposal, and encapsulation.

The NMED Solid Waste Bureau (SWB) regulations require that all waste ACM (more than 1% asbestos) should be disposed of at a special waste landfill, which requires removal of ACM and separation from non-asbestos materials. NESHAP guidelines must be followed. When ACM are to be removed, the following procedures should be adhered to:

- Comply with requirements for asbestos demolition and renovation projects, which are overseen by NESHAP, OSHA, and the State of New Mexico.
- Retain the services of an independent analytical testing laboratory or consulting firm to monitor the performance of the abatement contractor, the completeness of the removal work, and air quality before, during and after the removal work, ensuring the contractor meets project is compliant with EPA and OSHA standards.
- Conduct a final visual inspection and air clearance sampling prior to occupying the work area.
- Document and store all correspondence documents from the abatement contractor and the testing laboratory.
- Notify local, state, and federal air pollution officials by letter prior to ACM removal, as required by the NESHAP regulations.

Considering the number of impacted buildings, the administrative burden of implementing this

alternative is considered moderate to high. Oversight and documentation from the NMED and the Pueblo of Acoma is required during and after the cleanup process. Project management of document review and storage, abatement contractor coordination and oversight, and site inspections are required to comply with EPA standards.

### 3.3.4 Costs

The cost of the abatement is estimated at approximately \$385,990.00. This cost includes construction costs implemented by the abatement contractor.

## 4.0 Recommended Alternative

The considered alternatives are summarized in Table 3 below. The recommended alternative is Alternative 3, abatement. The no action alternative is not an option because ACM and LBP have been identified in the all five site buildings, and no action would not allow redevelopment of the site. The administrative burden of implanting Alternative 2 would be high. This alternative would require significant amounts of staff time to oversee continued O&M activities. Given that several buildings are in dilapidated conditions and will no longer be suitable for human occupancy, Alternative 2 will still require the abatement significant quantities of ACM and LBP materials.

Alternative 3 is feasible as there is a manageable administrative burden and will yield significant environmental and human health benefits through elimination of hazards from the site prior to redevelopment.

**Table 3. Evaluation Criteria for Considered Alternatives**

Alternative	Short-Term Effectiveness	Long-Term Effectiveness	Implementability	Costs
No Action	None: future site workers exposed to unacceptable risk	None: future residents and visitors would be exposed to unacceptable risks associated with ACM, and LBP.	Easily implemented, as no action is taken. Because site risks are not mitigated under the No Action alternative, regulatory acceptance would not be achieved, and the site would not be able to be redeveloped.	None
Long-Term O&M	Ongoing impacts during implementation of an O&M program would include possible ACM, and LBP exposure to	Moderate: Long term effectiveness would only be attained if very active monitoring was performed and localized mitigation (sealing, etc.) was performed	The administrative burden for implementing this alternative would be high. This alternative would require significant amounts of staff time to	\$60,000

	workers within the building.	by highly trained personnel.	oversee ongoing O&M activities at the site.	
Abatement	Alternative poses the greatest short-term risks unless all work is performed by a certified contractor implementing all appropriate requirements.	This alternative would provide the greatest long-term effectiveness and permanence, as all ACM and LBP would be removed.	Routinely implemented at sites throughout the U.S. by certified asbestos contractors.	\$385,990.00

## 5.0 References

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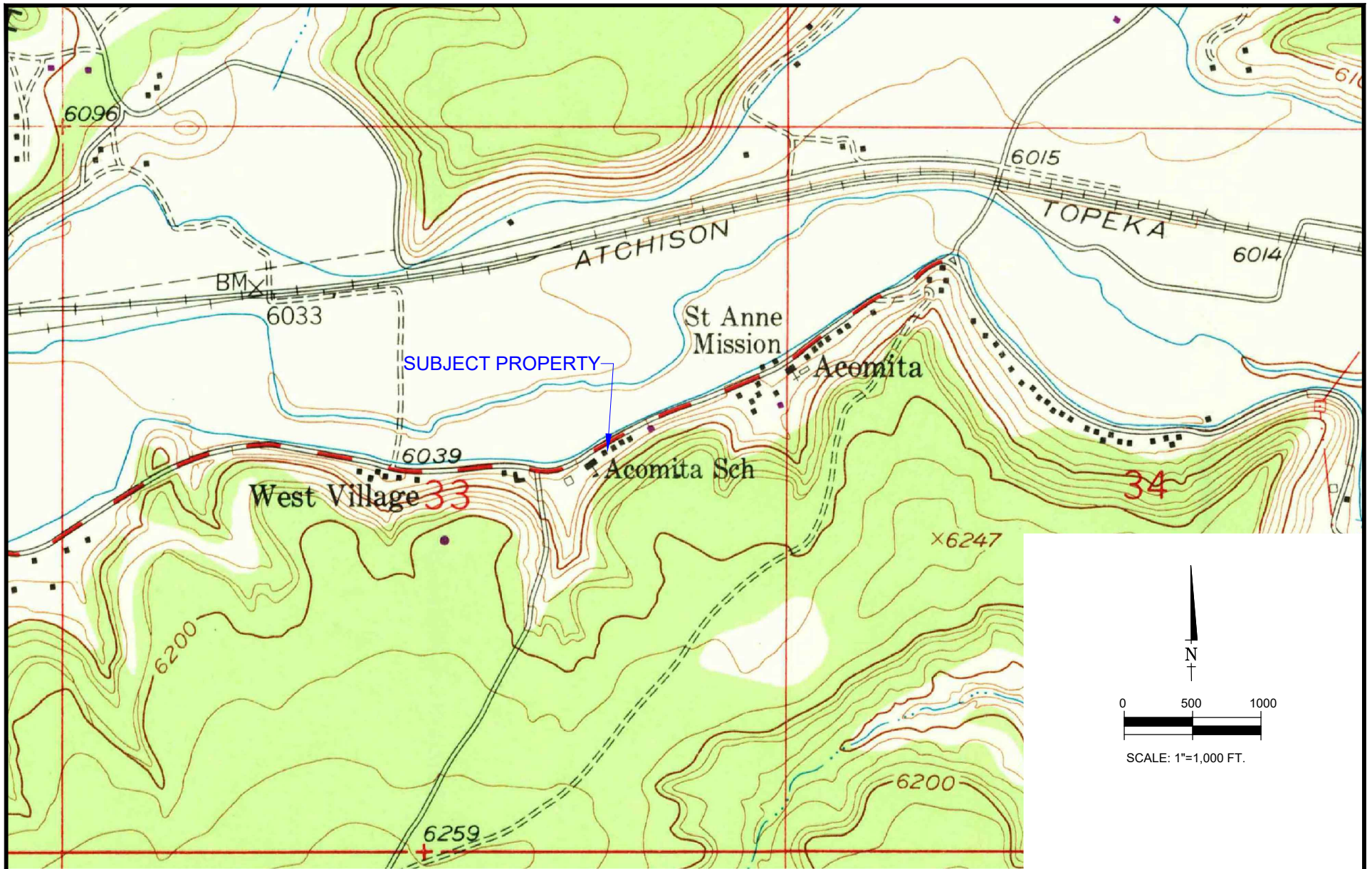
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# Figures



Basemap from Cubero, NM, USGS Quadrangle (1971)



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## ACOMITA DAY SCHOOL - VICINITY MAP

Drawn AJE	Checked SAM	Approved SAM
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Date: FEBRUARY 2024

Scale: Horiz: 1" = 1,000'  
Vert: NA

Project No: 1432164

Sheet: **FIGURE 1**



Aerial Photo Courtesy of Google Earth (Image date: 4/7/2019)



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**ACOMITA DAY SCHOOL - ASBESTOS DATA**

Drawn AJE	Checked SAM	Approved SAM
Date: FEBRUARY 2024		
Scale: Horiz: 1" = 500' Vert: NA		
Project No: 1432164		
Sheet: <b>FIGURE 2</b>		