

## Chapter 5

# Data Collection Methods

*Brian C. Harmon, Jennifer E. Nisengard, Kari M. Schmidt,  
and W. Bruce Masse*

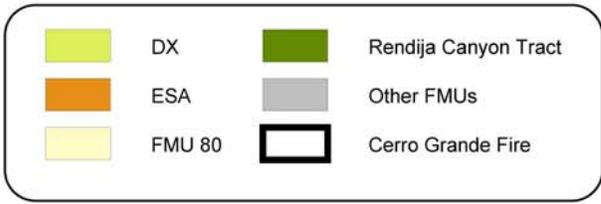
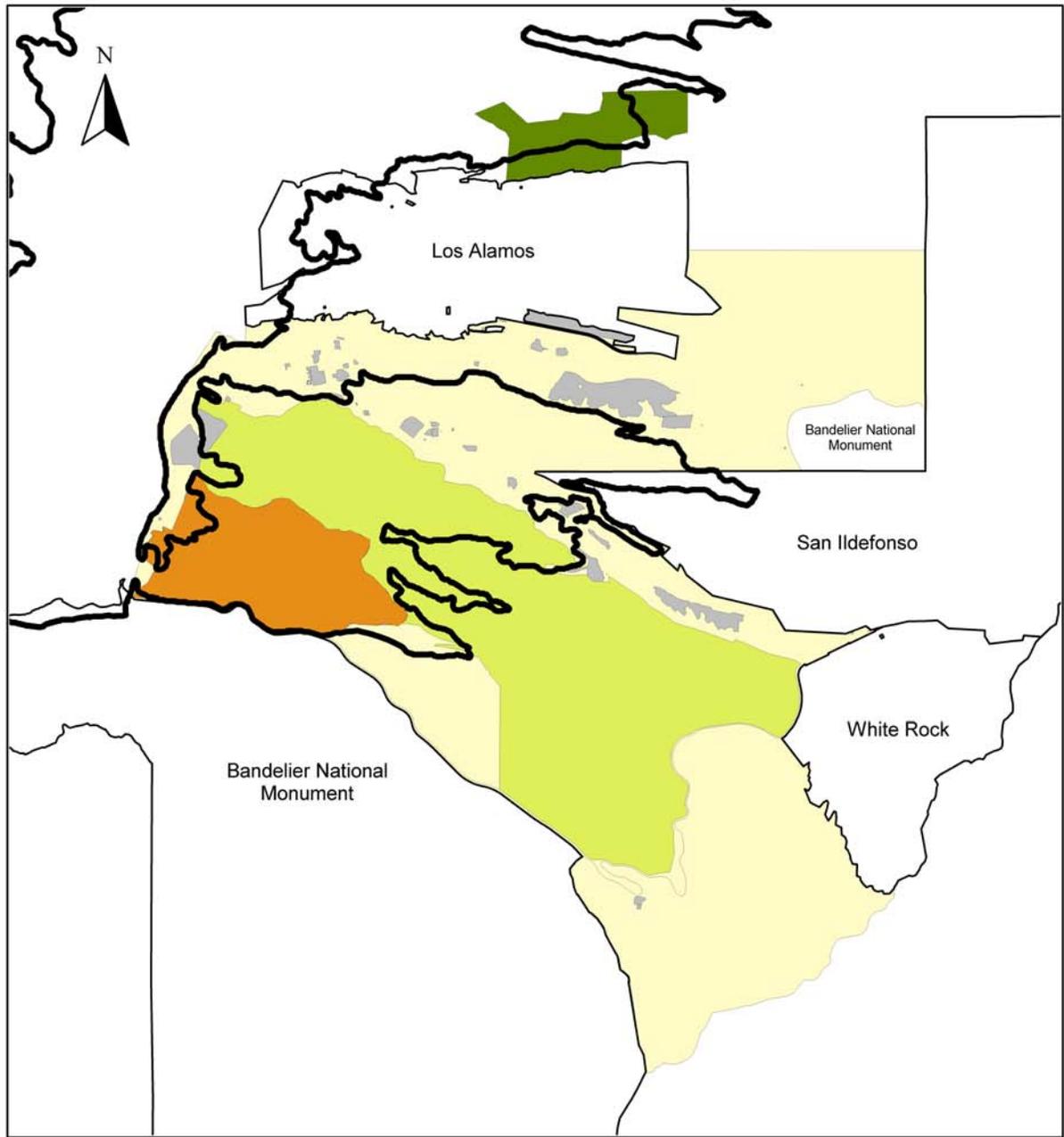
### FIELD PROCEDURES

To document the fire, fire suppression, and rehabilitation impacts and to record rehabilitation recommendations, archaeologists from the Cultural Resources Management Team (CRMT) visited all known archaeological sites on DOE/LANL lands within or near the burn area (Figures 4.2 and 5.1) and within the staging areas used for fire suppression efforts (it should be noted that about 5% of the sites could not be relocated during the study). Before the fire, some of the areas that were subject to burning had not been subject to archaeological survey. Fortunately, we were able to survey these areas as part of the Wildfire Hazard Reduction Project (Vierra 2002). The size of the assessment and survey crews was an average of four to five people, although crew size did vary from week to week. Surveyors were spaced at 20-m intervals and, during the course of the CGFA Project, all areas within the burned zone were intensively surveyed; all previously unrecorded cultural sites were documented.

The project areas were divided into four sections, DX, ESA, FMU-80, and the Rendija Canyon Tract (Figure 5.1). Some of LANL's technical areas straddle these sections and cultural sites were evaluated based on GPS data. Some of the technical areas did not have sites situated within their boundaries; the locations of all of the technical areas are included in the specific maps of the management areas even if there were no sites assessed within them.

Field crews assessed the damage caused by the fire to these sites, as well as damage caused by fire suppression and rehabilitation activities. The CGFA Project form was used by the CRMT to guide site fire assessments. The data gathered from this assessment are currently being used to plan rehabilitation and mitigation for impacted sites and to create a baseline for future monitoring. In the following sections, we discuss the methods used to conduct site assessments, our findings about the impacts, and our plans for future rehabilitation and mitigation (Harmon et al. 2001; Nisengard et al. 2002).

Four techniques/tools were used to document fire impacts, including GPS equipment, photography, existing site forms, and the CGFA Project form. The perimeter of the majority of revisited and newly recorded sites was recorded using a Trimble GPS backpack unit (model number 33302-51). Small sites consisting of very few artifacts were recorded as points, and trails, stairs, and cavates were recorded as linear features. There were a small number of sites that could not be recorded with the Trimble units because they were too close to cliff faces or were in dense ponderosa pine forests.



Scale 1:85,000

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Management Team

**Figure 5.1.** Map of areas included in the CGFA Project.

Digital photographs were taken at each of the sites to create a visual record of the damage caused by the fire. These photographs will allow for a visual baseline for comparison as site monitoring begins. At the onset of the project, assessment teams took only one photograph of each site, but it was later decided that there should be two shots of each site, taken from different perspectives.

Existing site forms and their associated site maps were used in the field when they were available. The maps were particularly important when visiting sites that were subject to moderate and severe burning. Impacts to the site were noted on the existing maps (i.e., the locations of stump holes and snags).

The CGFA Project form (Figure 5.2) was the primary tool used to guide the assessment. The form was based on one originally created for the same purposes and used by the Burned Area Emergency Response (BAER) Team. Some modifications to the form were made to meet our specific needs. Such changes included more specific cultural affiliation choices, specification of site types, and the addition of more places to include comments for specific observations and recommendations. The form breaks cultural affiliation into specific dates and periods associated with this area of the Pajarito Plateau. Site type can be broken into 20 categories; definitions for these categories are detailed in the final section of this chapter.

The core of the form consists of a checklist, largely unmodified from the original BAER form, for evaluating the burn severity in the immediate site vicinity, damage to the site caused by the fire, and the kinds of suppression and rehabilitation impacts present at sites. Fire severity was judged using the list of criteria shown in Figure 5.2. For example, partially burned duff, a lack of ladder fuel consumption, and no canopy burning characterize a low-burn area. A moderate-burn area is characterized by consumption of duff and ladder fuels, as well as isolated instances of crown burns. Severely burned areas were locations in which the duff, crown, and canopy were completely consumed. Figures in Chapters 7 through 11 provide examples of low, moderate, and severely burned sites.

Fire impacts to sites consist of cracking and/or spalling of masonry, smoke or soot staining on masonry, stump and/or root holes on or adjacent to masonry, stump and/or root holes elsewhere on the site, loss of architectural wood due to the fire, fallen trees on masonry, dead but standing trees (snags) that have the potential to damage structures, and snags present elsewhere on the site. Some of these impacts can be easily mitigated, while others represent threats that may result in future damage to site features. Still others are useful in documenting the specific areas of the site that were exposed to fire.

Cracked or spalled masonry results in an increased susceptibility to erosion and deterioration. Although there is little that can be done to mitigate this impact, it is important to document the presence of such damage for two reasons. First, it creates a baseline for future site monitoring, and second, it provides information on the location and intensity of the fire at a given site.

Smoke or soot staining is largely a temporary effect; in fact, visits to several sites one year after the initial fire assessment revealed that a great deal of soot and smoke staining had been washed away by rain and snow. The utility of recording smoke and soot staining lies in its potential, like that of spalled masonry, to indicate the distribution and intensity of fire on a site.

Stump holes are the casts of tree trunks and root systems that are left in the ground when a tree is totally consumed by fire. Stump holes create avenues for erosion and present a potential for the mixture and contamination of surface and subsurface deposits. The filling of stump holes can easily mitigate these impacts.

The danger of snags or partially burned trees on most sites is not so much that they will fall onto the remains of structure; in the few instances in which this was observed there was no, or minimal, damage.

**CERRO GRANDE FIRE**  
**LOS ALAMOS NATIONAL LABORATORY POST-FIRE SITE INSPECTION RECORD**

**SITE:** No: LA \_\_\_\_\_ Temp or other No: \_\_\_\_\_ Bldg. # \_\_\_\_\_ TA # \_\_\_\_\_  
Recorder(s) \_\_\_\_\_ Date of Inspection \_\_\_\_\_  
UTM (GPS) Z13 \_\_\_\_\_ E \_\_\_\_\_ N Elev.: \_\_\_\_\_ USGS Quad: \_\_\_\_\_

**SITE DESCRIPTION**  
Site Period: Unidentified \_\_\_; Archaic \_\_\_; Pueblo \_\_\_; Homestead \_\_\_; Manhattan/Cold War \_\_\_  
Site Type: Roomblock \_\_\_; 1-3 Room Structure \_\_\_; Artifact Scatter \_\_\_; Agriculture \_\_\_; Homestead \_\_\_;  
Road/Trail/Stairs: \_\_\_; Historic Trash \_\_\_; Manhattan/Cold War Structure \_\_\_; Other: \_\_\_  
Features Present: \_\_\_\_\_  
Previously Unidentified Features Present: \_\_\_\_\_  
List wood/organics (if known to be present): \_\_\_\_\_  
Were they burned? Yes \_\_\_; No \_\_\_; Partial \_\_\_  
Comment \_\_\_\_\_  
Physical/environmental hazards, if any: \_\_\_\_\_

**VANDALISM PRESENT:** YES \_\_\_ NO \_\_\_ If yes, RECENT \_\_\_ OLD \_\_\_ UNKNOWN \_\_\_

**SITE BURN SEVERITY** [Note: Map, photograph and describe affected areas of site]  
\_\_\_ None  
\_\_\_ Low (duff partially consumed, none to little ladder fuels burned, no canopy burned)  
\_\_\_ Moderate (duff consumed, ladder fuel burned, isolated crown burn or torching)  
\_\_\_ Severe (duff, ladder and crown completely consumed)

<b>FIRE EFFECTS AT SITE</b>	<b>YES</b>	<b>NO</b>	<b># or %</b>	<b>COMMENT</b>
Cracking/spalling on masonry.....	___	___	___	___
Smoke/soot damage on masonry .....	___	___	___	___
Stump/root holes on or adjacent to masonry.....	___	___	___	___
Additional Stump/root holes in site area.....	___	___	___	___
Loss of architectural wood/features.....	___	___	___	___
Fallen tree(s) on walls or rubble.....	___	___	___	___
Snags/partial burned trees that can damage structures	___	___	___	___
Additional snags/partial burned trees in site area	___	___	___	___
Other _____	___	___	___	___

**SUPPRESSION IMPACTS TO SITE:** YES \_\_\_ NO \_\_\_ Handline \_\_\_; Dozer line/firebreak: \_\_\_; Tree falling: \_\_\_; Drop point/safety zone \_\_\_; Retardant drop impact/staining \_\_\_; Cache/Camp \_\_\_; Vehicle ruts \_\_\_; Other \_\_\_\_\_; Comments \_\_\_\_\_

**EROSIONAL THREATS TO SITE :** None \_\_\_ Low \_\_\_ Moderate to High \_\_\_ SLOPE \_\_\_\_\_ %  
Erosion threat: Active gully/rilling/scouring (depth and extent) \_\_\_\_\_ Stumphole/burned log erosion \_\_\_  
Pedestalling \_\_\_ Duff absent \_\_\_ Other (describe) \_\_\_\_\_  
Comments \_\_\_\_\_

**REHABILITATION AT SITE:** YES \_\_\_ NO \_\_\_ Describe: \_\_\_\_\_

**RECOMMENDED PRESERVATION TREATMENT AND/OR DATA RECOVERY**  
\_\_\_ NO TREATMENT \_\_\_ MONITOR \_\_\_ TREATMENT \_\_\_ DATA RECOVERY  
Describe recommended treatment (Directional falling; straw bale; root hole filling; Excelsior matting; wattles; etc.): \_\_\_\_\_  
Describe recommended data recovery \_\_\_\_\_

Estimated Cost of Treatment/Data Recovery \$ \_\_\_\_\_  
**PHOTOS:** \_\_\_\_\_ **GPS:** \_\_\_\_\_ **Additional comments on back ?** Yes \_\_\_ No \_\_\_

Figure 5.2. CGFA Project form.

The fact that there are only a few Ancestral Pueblo sites with standing masonry means that snags pose a significant threat at these sites. The greatest potential for damage from snags arises from these trees falling over and pulling up their roots, which can displace masonry, disturb subsurface deposits, and create avenues of erosion. Finally, if snags are left in place, they remain potential fuel for future fires. Removing snags from the vicinity of sites eliminates their threat to masonry and site stability.

The increased potential for erosion (due to the burning off of duff and vegetation) is a significant impact for fire-damaged sites, and an attempt was made to qualitatively assess such potential. Ultimately, this category proved to be one of the most difficult evaluative tasks, in that it was not possible to develop a set of measures that could be consistently applied by the various field teams. Based on several factors, including general degree of slope and the degree of overall vegetation loss, we divided erosional impacts into three categories: none, low, and moderate to high.

Cultural resources were also potentially impacted by fire suppression and rehabilitation activities, such as dozer lines cut for firebreaks, tree felling, and staging area activities. Evidence of these disturbances was recorded. Finally, if the fire or other impacts revealed previously unrecorded artifacts or features associated with a site, these were noted.

Taking all of the above factors into account, the team then made an in-field assessment of what kind of treatment, if any, would be recommended at a particular site. These recommendations included such things as directional tree felling, root hole filling, snag removal, straw wattle placement to reduce erosion, future monitoring, and data recovery. These recommendations are subject to continuing re-evaluation.

In the course of conducting fire assessments and performing other projects in burned areas, new sites were discovered. Some of these sites were in previously non-surveyed areas, and others were revealed when the fire burned away duff and dense vegetation. These newly identified sites were assessed in the same manner as the previously recorded sites, although some additional data were collected. A short site form was created to facilitate recording of new sites in the burn areas (Figure 5.3). The form allowed for a site sketch to be drawn and for a brief description of the site. These sites will be recorded fully using official New Mexico Laboratory of Anthropology forms in the future; the data will be subsequently submitted to the New Mexico Cultural Resources Information System.

There was no attempt to address the issue of fire damage to surface artifacts, such as pottery and chipped stone, although severe damage to artifacts was sometimes noted on the assessment forms. Our general impression is that noticeable alteration of artifacts was restricted to a small number of sites in areas of moderate- or severe-burn intensity.

## ARCHAEOLOGICAL SITE TYPES

The following section provides detailed descriptions of each of the site types used during the CGFA Project. There are 20 categories, although some of them were lumped together on the assessment and new site forms. Categorical divisions between sites are made on the basis of site size, morphology, and the nature of the associated artifact assemblages. Chapters 7 through 11 include data tables and discussions that relate to these terms, some of which are used interchangeably (e.g., fieldhouse and one- to three-room structure).

**Lithic scatter:** Limited to clusters of chipped stone tools and/or pieces of chipped stone produced during the manufacturing of chipped stone tools.

**CERRO GRANDE FIRE ASSESSMENT PROJECT  
NEW SITE RECORDING SHORT FORM**

**SITE:** No: LA \_\_\_\_\_ Temp or other No: \_\_\_\_\_ Bldg. # \_\_\_\_\_ TA # \_\_\_\_\_  
 Recorder(s) \_\_\_\_\_ Date of Inspection \_\_\_\_\_  
 UTM (GPS) Z13 \_\_\_\_\_ E \_\_\_\_\_ N Elev.: \_\_\_\_\_ USGS Quad: \_\_\_\_\_

**TOPOGRAPHIC SETTING:** Mesa top: \_\_\_; Mesa slope: \_\_\_; Ridge Top \_\_\_; Ridge Slope: \_\_\_; Cliff/Talus Slope: \_\_\_; Other: \_\_\_ Comments on topographic setting: \_\_\_\_\_

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**VEGETATION:** Piñon/Juniper: \_\_\_; Ponderosa Pine: \_\_\_; Open: \_\_\_ Comments on vegetation: \_\_\_\_\_

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**SITE DESCRIPTION**

**Site Period:** Unidentified Prehistoric \_\_\_; Archaic \_\_\_; Unid. Pueblo \_\_\_; Coalition \_\_\_; Late Coalition/Early \_\_\_; Classic \_\_\_; Classic \_\_\_; Unid. Historic \_\_\_; Homestead \_\_\_; Manhattan \_\_\_; Cold War \_\_\_; Unidentified \_\_\_; Other \_\_\_\_\_

**Site Type:** Small Roomblock \_\_\_; Complex Pueblo \_\_\_; 1-3 Room Structure \_\_\_; Lithic Scatter \_\_\_; Artifacts Scatter \_\_\_; Cavate \_\_\_; Road/Trail/Stairs: \_\_\_; Historic Structure \_\_\_; Historic Trash \_\_\_; Other: \_\_\_\_\_

Features Present: \_\_\_\_\_

Previously Unidentified Structures: \_\_\_\_\_

**Comments:** \_\_\_\_\_

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Physical/Environmental hazards, if any: \_\_\_\_\_

**VANDALISM PRESENT: YES \_\_\_ NO \_\_\_** If yes, RECENT \_\_\_ OLD \_\_\_ UNKNOWN \_\_\_

**SITE BURN SEVERITY** \_\_\_ None; \_\_\_ Low (duff partially consumed, none to little ladder fuels burned, no canopy burned); \_\_\_ Moderate (duff consumed, ladder fuel burned, isolated crown burn or torching); \_\_\_ Severe (duff, ladder and crown completely consumed).  
 Comments on site burn severity: \_\_\_\_\_

**FIRE SUPPRESSION IMPACTS TO SITE: YES \_\_\_ NO \_\_\_** Handline \_\_\_; Dozer line: \_\_\_; Tree falling: \_\_\_; Drop point/safety zone \_\_\_; Dozer line \_\_\_; Retardant drop impact/staining \_\_\_; Cache/Camp \_\_\_; Vehicle ruts \_\_\_; Other \_\_\_\_\_; Comments \_\_\_\_\_

**EROSIONAL THREATS TO SITE : None \_\_\_ Low \_\_\_ Moderate to High \_\_\_**

**Erosional Threat:** Duff absent: \_\_\_; Pedestalling: \_\_\_; Active gully/ rilling/scouring (depth and extent) \_\_\_\_\_  
 Stump hole/burned log erosion \_\_\_; Other: \_\_\_\_\_

**Comments on Erosional Threats:** \_\_\_\_\_

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Photos: \_\_\_\_\_ GPS: \_\_\_\_\_ Additional Comments on Back? Yes \_\_\_ No \_\_\_

**Sketch Map:**

**Figure 5.3.** CGFA Project new site recording form.

**Artifact scatter:** Includes a combination of ceramic sherds, chipped stone, and/or ground stone artifacts, but lacks identifiable surface structural remains or evidence of pit structures.

**Pit structure:** Presumed habitation sites with evidence (e.g., depressions) of one or more structures built entirely or partially underground.

**One- to three-room structure/Fieldhouse:** The remains of a small surface structure constructed of adobe, jacal, or masonry. This site typically consists of square to rectangular-shaped rock alignments, with individual units being no more than 3 m in length. The majority of these sites are identical to what many researchers term fieldhouses. Also included in the one- to three-room structure category is one example of a single unusually large rectangular structure, along with several smallish structures that are unusual due to the presence of upright stones or because of their location. Some of these “unusual” structures may represent shrines or other purposes not directly related to agriculture.

**Pueblo roomblock:** The remains of a contiguous, multi-room habitation structure (four or more rooms with no enclosed plaza) constructed of adobe, jacal, or masonry. In several cases, somewhat amorphous mounds containing evidence of stone rubble but no distinct alignments were included in this category.

**Plaza pueblo:** Contains one or more pueblo roomblocks that partially or completely enclose a plaza. Plaza pueblos typically are much larger (in both room numbers and site size) than single pueblo roomblock sites.

**Cavate:** Consists of a room carved into a cliff face within the Bandelier Tuff geological formation. The category includes isolated cavates, multi-roomed contiguous cavates, and groups of adjacent cavates that together form a cluster or complex.

**Rockshelter:** An overhang, indentation, or alcove formed naturally in a rock face or large boulder, or alternatively, a partly enclosed area created by rock falls leaning against a rock face or large boulder, and which exhibits evidence of human use. Rockshelters generally are not of great depth, in contrast to caves.

**Water control feature:** A device (e.g., stone check dams) that controls the flow of water, particularly runoff.

**Garden plots:** Small, formal agricultural areas, often bounded with cobbles and containing gravel mulch (e.g., grid gardens and/or terraces). This site category typically consists of square to rectangular-shaped rock alignments, with individual units being more than 3 m in length (in contrast with one- to three-room structures, defined above).

**Rock feature:** Includes typically isolated examples of rock piles, amorphous rock concentrations, and/or upright stones.

**Tipi/wickiup ring:** A circular arrangement of rocks representing the residue from a dismantled tipi or wickiup.

**Rock/log enclosure:** A small area enclosed by loosely stacked rock or log alignments (e.g., corral or lambing pen). These are distinguished from one- to three-room structures by the nature of the stacking methods and often by the presence of historic artifacts in and around the enclosure.

**Petroglyph/rock art:** A design or set of symbols scratched, pecked, or scraped into a rock or plastered surface. Petroglyphs are distinguished from historic and modern graffiti.

**Stairway:** A set of two or more steps carved into a steep section of tuff bedrock, typically associated with trails.

**Trail:** Prehistoric or historic path defined by use-wear or cutting into bedrock or soil surfaces.

**Game pit:** Cavity dug down into the tuff bedrock presumed to have been used as a passive hunting drop site for larger game animals (e.g., deer) or as concealment from which to lure and trap birds.

**Wagon trail:** Rutted trail formed as a result of historic wagon use.

**Historic structure:** A building or other structure constructed after AD 1593 (but most typically in the Los Alamos area constructed after about AD 1900).

**Historic artifact scatter/trash scatter:** A concentration of items produced and deposited after AD 1593 (but most typically in the Los Alamos area deposited after about AD 1900).