Archaeological Survey of a Portion of the Antelope Gulch Locality, Fremont County, Colorado

by
Kevin D. Black
Principal Investigator

with a contribution by
Aaron Theis

for the
Colorado State Board of Land Commissioners
Denver, Colorado

Sponsored by
History Colorado
Office of the State Archaeologist of Colorado
Program for Avocational Archaeological Certification
Denver, Colorado

Colorado State Permits #2008–16, 2009–81, 2010–7, 2011–11

August 2013

Abstract

During the 2008–2011 field seasons, an archaeological survey was conducted northeast of Salida, Colorado as part of the training available in the Program for Avocational Archaeological Certification (PAAC). The project thus used volunteers largely from the Colorado Archaeological Society (CAS) already enrolled in PAAC, supervised and trained by the Assistant State Archaeologist from History Colorado. The inventory was completed on nearly 800 acres of state trust lands at the extreme southwestern edge of South Park, in the northwest corner of Fremont County, Colorado. The study tract encompasses an ecozone transitioning from open grassland to mixed conifer woodlands on the west side of Badger Creek, at elevations of 2695–2835 m. This area was intensively surveyed in part to train PAAC volunteers in archaeological inventory and mapping methods, but also to gather baseline data on the archaeological record surrounding Antelope Gulch site 5FN494, which had been the target of multiple episodes of vandalism and surface collecting in recent years.

As a result of the survey a total of 80 sites and 22 isolated finds (IFs) were recorded for the first time, including both American Indian and non-Indian materials. Historic period non-Indian sites comprise a mix of artifact scatters, prospect pits, camps, and cairns related to ranching, logging, mineral exploration, and utility line construction/maintenance. The more common prehistoric sites are mainly open lithic scatters, toolstone sources, and short-term camps typically dating to the Late Archaic or post-Archaic periods. Limited evidence for more ancient Archaic and Paleoindian period activity was found, post-dating 8600 BC. Features on project area sites are not common but include artifact concentrations, lithic workshop stations, stained soil, and fire-cracked rock (FCR) concentrations. Only one site contained a stone enclosure resembling the features interpreted as hunting blinds and tipi rings at Antelope Gulch. No prehistoric ceramics were encountered, although a few sites with pottery are known from the wider region. Burial of archaeological materials is most likely to occur in alluvial and colluvial deposits along the valleys of Antelope Gulch and other western tributaries of Badger Creek. However, sites on the ridges and benches above the drainages are exposed in much shallower soils such that some of the more ancient remains are at least partially exposed at the present surface.

Overall, human occupation of the project area has been quite intense, partly due to the presence of numerous small toolstone deposits, especially of iron-rich cherts or jasper. Some of these source materials resemble the widely known Trout Creek chert that outcrops in eastern Chaffee County. The chert and jasper sources in this part of central Colorado occur in geologically diverse circumstances, within sedimentary and igneous formations ranging in age from the Ordovician to mid-Tertiary periods. In

addition, many project area sites are located in visibly distinctive settings surrounding Antelope Gulch, sufficient to consider defining the zone as a cultural landscape. Although heavily weighted toward debitage-dominated lithic scatters, the Antelope Gulch project area has proven to be a good training ground for PAAC. Not only is the land well suited topographically for survey instruction, but the archaeological remains are very abundant. Several of the volunteer participants have earned PAAC certificates using their experience in site recording and mapping, and several others are nearing completion of the certification requirements.

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Colorado Office of Archaeology and Historic Preservation
CULTURAL RESOURCE SURVEY MANAGEMENT INFORMATION FORM

Please complete this form and attach a copy behind the Table of Contents of each standard survey report.

Federal acres of Potential Effect/Project: 0 Acres surveyed: N/A
State acres of Potential Effect/Project: 2873 Acres surveyed: 794 ac
Private acres of Potential Effect/Project: 0 Acres surveyed: N/A
TOTAL: 2873 TOTAL: 794 ac

Legal Location of Project *(add additional pages if necessary)*

Note: Only generalized subdivision ("quarter quarters") within each section is needed

Principal Meridian: N.M. Quad. map name(s) and date(s) Gribbles Park, CO (1994)
County: Fremont

Township: 51 North	Range: 10 East	Sec.: 11	¼s SE							
Township: 51 North	Range: 10 East	Sec.: 12	¼s SW							
Township: 51 North	Range: 10 East	Sec.: 13	¼s NW	& SW						
Township: 51 North	Range: 10 East	Sec.: 14	¼s NW	& NE	& SE					
Township: 51 North	Range: 10 East	Sec.: 24	¼s NE	of SE						
Township:	Range:	Sec.:	¼s	&						
Township:	Range:	Sec.:	¼s	&						
Township:	Range:	Sec.:	¼s	&						
Township:	Range:	Sec.:	¼s	&						

	Smithsonian Number	Resource Type				Eligibility				Management Recommendations						
		Prehistoric	Historical	Paleontological	Unknown	Eligible	Not Eligible	Need Data	Contributes to Natl Register District	No Further Work	Preserve/Avoid	Monitor	Test	Excavate	Archival Research	Other (specify on additional pages)
Sites	5FN2337	×						×			×		×			
	5FN2338	×	×				×			×						
	5FN2339	×				×					×		×			
	TOTALS	3	1	0	0	1	1	1	0	1	2	0	2	0	0	0
Isolated Finds	5FN2452	×					×			×						
	5FN2453	×					×			×						
	5FN2454	×					×			×						
	TOTALS	3	0	0	0		3			3						

Principal Investigator Name: Kevin D. Black Date July 25, 2013
(please print or type)

Principal Investigator's Signature

Colorado Office of Archaeology and Historic Preservation
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	Smithsonian Number	Resource Type				Eligibility				Management Recommendations						
		Prehistoric	Historical	Paleontological	Unknown	Eligible	Not Eligible	Need Data	Contributes to National Register District	No Further Work	Preserve/Avoid	Monitor	Test	Excavate	Archival Research	Other (specify on additional pages)
Sites	5FN2340	×					×			×						
	5FN2341	×	×				×			×						
	5FN2342	×					×			×						
	5FN2343	×					×			×						
	5FN2344	×				×					×		×			controlled surface collection
	5FN2345	×	×					×			×		×			tree-ring dating of peeled tree
	5FN2346	×						×			×		×			
	5FN2347	×					×			×						
	5FN2348	×				×					×		×			
	5FN2349	×	×				×			×						
	5FN2350	×	×					×			×		×			
	5FN2351	×					×			×						
	5FN2433	×						×			×		×			
	5FN2434	×	×					×			×		×			
	TOTALS	14	5	0	0	2	7	5	0	7	7	0	7	0	0	1
Isolated Finds	5FN2599	×					×			×						
	5FN2600	×					×			×						
	5FN2654	×					×			×						
	5FN2655	×					×			×						
	5FN2656	×					×			×						
	5FN2657		×				×			×						
	5FN2658	×					×			×						
	TOTALS	6	1	0	0		7			7						

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	Smithsonian Number	Resource Type				Eligibility				Management Recommendations						
		Prehistoric	Historical	Paleontological	Unknown	Eligible	Not Eligible	Need Data	Contributes to National Register District	No Further Work	Preserve/Avoid	Monitor	Test	Excavate	Archival Research	Other (specify on additional pages)
Sites	5FN2435	×					×			×						
	5FN2436	×	×					×			×		×			
	5FN2437	×					×			×						
	5FN2438	×						×			×		×			
	5FN2439	×					×			×						
	5FN2440	×	×					×			×		×			
	5FN2441	×					×			×						
	5FN2442	×						×			×		×			
	5FN2443	×					×			×						
	5FN2444	×	×					×			×		×			
	5FN2445	×	×				×			×						
	5FN2446	×	×					×			×		×			testing on prehistoric component only
	5FN2447	×				×					×		×			controlled surface collection
	5FN2448	×	×					×			×		×			testing on prehistoric component only
	TOTALS	14	6	0	0	1	6	7	0	6	8	0	8	0	0	3
Isolated Finds	5FN2670	×					×			×						
	5FN2671		×				×			×						
	5FN2672	×					×			×						
	5FN2673		×				×			×						
	5FN2674	×					×			×						
	5FN2675		×				×			×						
	5FN2676		×				×			×						
	TOTALS	3	4	0	0		7			7						

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	Smithsonian Number	Resource Type				Eligibility				Management Recommendations						
		Prehistoric	Historical	Paleontological	Unknown	Eligible	Not Eligible	Need Data	Contributes to National Register District	No Further Work	Preserve/Avoid	Monitor	Test	Excavate	Archival Research	Other (specify on additional pages)
Sites	5FN2449	×						×			×		×			controlled surface collection
	5FN2450	×						×			×		×			controlled surface collection
	5FN2451	×						×			×		×			controlled surface collection
	5FN2584	×	×				×			×						
	5FN2585	×					×			×						
	5FN2586	×					×			×						
	5FN2587	×					×			×						
	5FN2588	×						×			×		×			
	5FN2589	×					×			×						
	5FN2590	×					×			×						
	5FN2591	×						×			×		×			
	5FN2592	×	×				×			×						
	5FN2593	×					×			×						
	TOTAL	13	2	0	0	0	8	5	0	8	5	0	5	0	0	3
Isolated Finds	5FN2677	×					×			×						
	5FN2678	×					×			×						
	5FN2679		×				×			×						
	5FN2680		×				×			×						
	5FN2681	×					×			×						
	TOTAL	3	2	0	0		5			5						

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	Smithsonian Number	Resource Type				Eligibility				Management Recommendations						
		Prehistoric	Historical	Paleontological	Unknown	Eligible	Not Eligible	Need Data	Contributes to National Register District	No Further Work	Preserve/Avoid	Monitor	Test	Excavate	Archival Research	Other (specify on additional pages)
Sites	5FN2594	×	×				×			×						
	5FN2595	×					×			×						
	5FN2596	×					×			×						
	5FN2597	×	×			×					×		×			
	5FN2598	×				×					×		×			
	5FN2601	×						×			×	×	×			
	5FN2602	×						×			×		×			
	5FN2603	×	×				×			×						
	5FN2604	×						×			×		×			
	5FN2605	×						×			×		×			
	5FN2606	×					×			×						
	5FN2607	×					×			×						
	5FN2608	×						×			×		×			
	5FN2609	×						×			×		×			
	5FN2644	×					×			×						
	5FN2645	×					×			×						
	5FN2646	×	×				×			×						
	TOTAL	17	3	0	0	2	9	6	0	9	8	1	8	0	0	0
Isolated Finds																
	TOTAL	0	0	0	0		0			0						

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Sites

Smithsonian Number	Resource Type				Eligibility				Management Recommendations						
	Prehistoric	Historical	Paleontological	Unknown	Eligible	Not Eligible	Need Data	Contributes to National Register District	No Further Work	Preserve/Avoid	Monitor	Test	Excavate	Archival Research	Other (specify on additional pages)
5FN2647	×	×				×			×						
5FN2648	×						×			×		×			
5FN2649	×	×				×			×						
5FN2650	×					×			×						
5FN2651	×				×					×	×				
5FN2652	×	×				×			×						
5FN2653	×	×				×			×						
5FN2659	×					×			×						
5FN2660	×	×				×			×						
5FN2661	×						×			×		×			
5FN2662	×					×			×						
5FN2663	×				×					×		×			controlled surface collection and instrument map
5FN2664	×						×			×		×			controlled surface collection and instrument map
5FN2665	×						×			×		×			
5FN2666	×					×			×						
TOTAL	15	5	0	0	2	9	4	0	9	6	1	5	0	0	2

Isolated Finds

TOTAL	0	0	0	0		0			0						

Colorado Office of Archaeology and Historic Preservation

CULTURAL RESOURCE SURVEY MANAGEMENT INFORMATION FORM

(Continuation page)

Sites

Smithsonian Number	Resource Type				Eligibility				Management Recommendations						
	Prehistoric	Historical	Paleontological	Unknown	Eligible	Not Eligible	Need Data	Contributes to National Register District	No Further Work	Preserve/Avoid	Monitor	Test	Excavate	Archival Research	Other (specify on additional pages)
5FN2667	×					×			×						
5FN2668	×	×				×			×						
5FN2669	×	×				×			×						
5FN494	×				×					×	×		×		instrument map
5FN2152.1		×				×			×						
TOTAL	4	3	0	0	1	4	0	0	4	1	1	0	1	0	1

Isolated Finds

TOTAL	0	0	0	0		0			0						

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Acknowledgments

As is true of all PAAC projects, the success of the survey reported herein was primarily due to the field efforts of our 44 PAAC volunteers, all identified in the Introduction below. Their boundless energy, curiosity, and passion for the subject are to their great credit. Permission to survey the trust land parcel was generously granted by the State Board of Land Commissioners represented by district managers Kit Page and David Rodenberg, and by Glenn Everett of Everett Land & Cattle Co. in Salida, CO—the lease-holder for the property. Thanks are also due to Monica Weimer of the Bureau of Land Management in Cañon City, who provided shape files on land ownership boundaries in the area.

Several PAAC volunteers provided project assistance in different ways. Nicole Castillo, Carolyn Camell-Coppin, Wilford Couts, Tom Doerk, Sydney Hays, Katherine McComb, Jim McMillian, Anne Robinson, Robert Rushforth, Dennis Schiferl, Wendy Schiferl, and Anna Troth helped with the lab work on collected artifacts in Denver. The Schiferls also examined mining claim records on file with the BLM in Cañon City, while Bruce Wahle provided very helpful information including references on area geology. OAHP staff member Aaron Theis produced the GIS maps, synthesized geological map data, served as a crew chief in the 2010–2011 field seasons, and also helped with the laboratory phase of the project. Archaeologist Mark Mitchell of the University of Colorado at Boulder and the Paleocultural Research Group supervised a field crew in 2009. Staff of the Colorado Geological Survey, particularly hydro-geologist Nicholas Watterson, provided maps and shape files on geological formations. Dr. James Hagadorn and Jeff Stephenson of the Denver Museum of Nature and Science identified lithic material samples and bison horn from 5FN2651, respectively. Thanks to all for their assistance on the project, as well as to those inadvertently omitted from this list.

Introduction

Every field season since 1991, an avocational training survey has been conducted for volunteers in the Program for Avocational Archaeological Certification (PAAC; Hand 1983), sponsored by the Office of the State Archaeologist of Colorado (OSAC), within the Office of Archaeology and Historic Preservation (OAHP) at History Colorado in Denver (e.g., Black 1997a). Most volunteers are members of the Colorado Archaeological Society (CAS), who receive credit toward the certification requirements in PAAC as a result of their participation on the survey. During the four field seasons of 2008–2011, the PAAC Summer Training Survey was conducted in the Antelope Gulch area of northwestern Fremont County, a 1,163 hectare (2,873 ac) tract of state-owned land in the mountains of central Colorado administered by the Colorado State Board of Land Commissioners (Figure 1). Although the area of contiguous state-owned lands here extends into the southern edge of Park County, our inventory occurred on a smaller core area of 321 ha (794 ac) centered on the well-known Antelope Gulch Stone Circles site, 5FN494. Legal location of the project area is T. 51 N., R. 10 E., Sections 11–14 and 24, New Mexico P.M. as depicted on the Gribbles Park, CO 7½' topographic map (USGS 1994).

As with previous PAAC inventories (see Black 1992, 1995, 1997b, 2000a, 2003, 2007, 2008a), the Antelope Gulch Survey (hereafter AGS) was designed both to provide training in archaeological surveying and mapping techniques to PAAC volunteers, and to gather baseline data on the archaeological record of a relatively poorly known part of the Colorado landscape. A total of 42 volunteers participated since the project was initiated, conducted in four sessions totaling 32 days of field work representing 229 person-days by the crew chiefs and volunteers. Selection of the specific AGS project area was based not only on its ownership status as a state trust property (which helps OSAC meet one of its statutory functions), but also because of multiple reports of vandalism in the area of the Antelope Gulch archaeological site (Tucker 2001).

The most recent such report was made by Becky Donlan, a volunteer with the U.S. Forest Service office in Salida and member of the San Luis Valley Archaeological Network (SLVAN). Aided by Poncha Springs resident Nick Standing Bear, Ms. Donlan had documented recent off-road vehicle tracks and evidence of disturbance (moving/removing rocks) of the few remaining stone circles at 5FN494. In late May 2007, she led the author on a field visit through the area, confirming the on-going nature of the impacts both to site 5FN494 and to the surrounding landscape. Follow-up conversations with Mr. Kit Page, district manager with the State Board of Land Commissioners, led to the installation of new signage and the closure of selected jeep trails leading into the Antelope Gulch site area (Figures 2–3). Although no

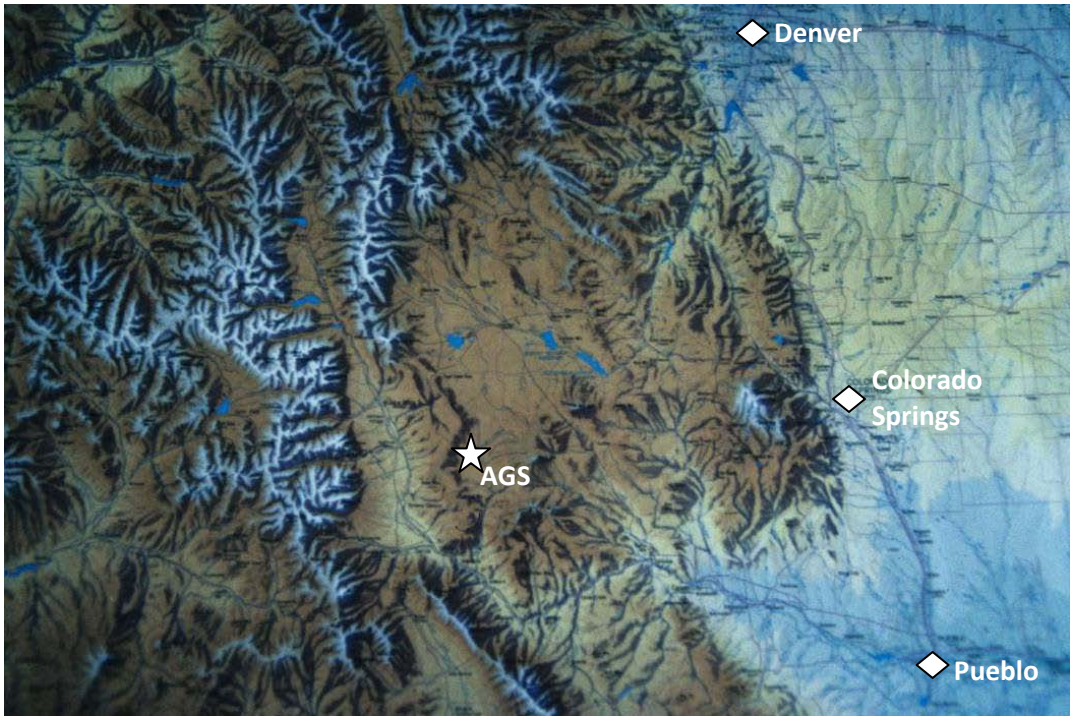


Figure 1. Map of a portion of Colorado centered on South Park showing the location of the Antelope Gulch Survey area; adapted from a state map by Raven Maps & Images (1992).

Figure 2. View of new off-road vehicle tracks ascending a ridge south of Antelope Gulch, May 31, 2007.

construction projects or other planned land-disturbing actions were known to threaten any part of the project area, it was hoped that the presence of our survey teams along with the new signage and road closures might help dampen the pace of illicit artifact collecting and other disturbances to the archaeological record. Present land use is dominated by stock grazing, but also includes the aforementioned recreational pursuits as well as gem collecting (especially for peridot; see 5FN2594 site description) and seasonal hunting—activities that have resulted in minor to moderate impacts to some of the archaeological sites observed.

Figure 3. View of new signage east of the Antelope Gulch site. Additional signs closing unauthorized jeep trails also were installed prior to our survey.

The AGS area is located about 21 miles (34 km) northeast of the town of Salida, on the west side of the valley of Badger Creek and just east of the intersection of Fremont County Roads 1B and 2 (Figure 4). Inventory was conducted on July 9–16 in 2008, June 16–23 in 2009, July 7–14 in 2010, and on June 21–28 in 2011. Survey and training was largely supervised by the author, who is Assistant State Archaeologist with OSAC and served as principal investigator on the project. Two other archaeologists, Mark Mitchell and Aaron Theis, served as crew chiefs in the last three seasons of the project. Dr. Mitchell, then a graduate student at the University of Colorado at Boulder and a principal investigator with the Paleocultural Research Group, supervised a field crew in 2009. Mr. Theis was a staff archaeologist with

OAHP and he supervised field crews in both 2010 and 2011. The work was conducted under the provisions of Colorado State Permits #2008–16, #2009–81, #2010–7, and #2011–43, issued in accordance with the "Historical, Prehistorical, and Archaeological Resources Act" of 1973 (amended 1990; C.R.S. 24–80–401ff).

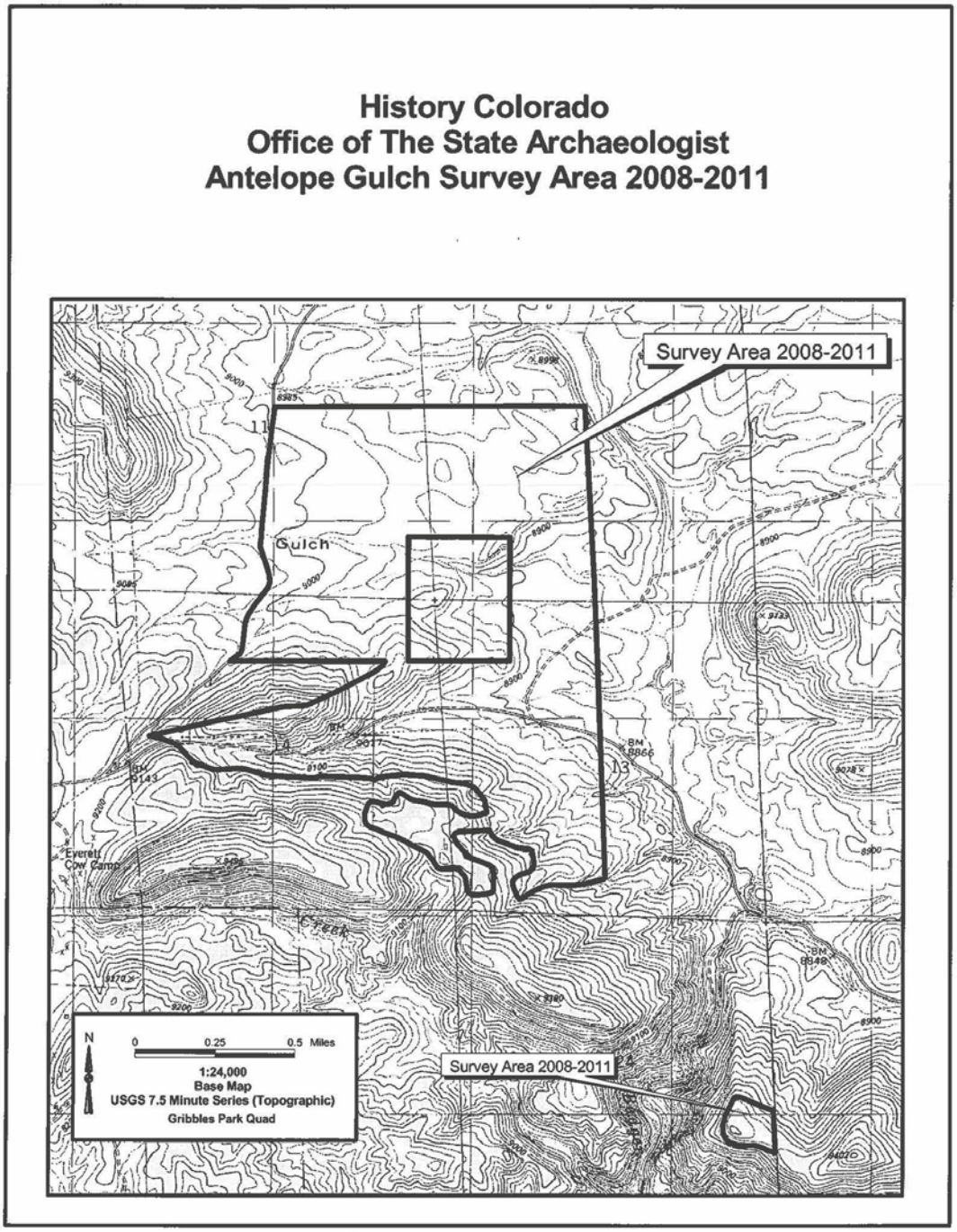


Figure 4. Map of the Antelope Gulch Survey area showing inventoried acreage. Fremont County Road 2 bisects the area east-west and Fremont County Road 1B adjoins the west boundary of the parcel. The rectangular zone in the center of the map was previously documented in Tucker (2001), and thus not comprehensively resurveyed by our crews in 2008–2011.

The 42 participating volunteers include 37 people affiliated with seven different chapters of the Colorado Archaeological Society (CAS), and all received PAAC credit for their efforts. By CAS chapter and SLVAN affiliation, these crew members are Tom Holland (Chipeta chapter, Uncompahgre Valley); Earl Beam, Melissa Bradley, Mary Ann Gabriel, Cathy Lamonski, Cleveland Stewart, and Anne Winslow (all of the Denver chapter); Gretchen Acharya, Robert Barron, Cheryl Damon, Tara Friend, Kris Holien, Katherine McComb, and John Wilson (from the Indian Peaks chapter, Boulder County); Bruce Wahle and Rae Todd (Northern Colorado chapter, Fort Collins-Greeley-Loveland); Michael Baum, Debbie Bloch, Laurie Lee, Terry Lee, Roland Lummis, Kathleen Meesey, Patrice Rhoades-Baum, and John Tesch (from the Pikes Peak chapter, Colorado Springs); Charles Booms, Georgine Booms, Tom Doerk, Carla Hendrickson, Warren Nolan, Dennis Schiferl, Wendy Schiferl, and Susan Simons (with the Pueblo chapter); Sydney Hays, Jim McMillian, Jack Niswanger, and Larry Scarbrough (Roaring Fork Valley chapter); Becky Donlan of Salida (with the San Luis Valley Archaeological Network); and unaffiliated volunteers Ian Anderson (Grand Junction), Jessica Gossett (Denver), Allison Kenney (Grand Junction), Cindy Souders (Arvada), and Anna Troth (Aurora). Nine of these individuals (Earl Beam, Cheryl Damon, Mary Ann Gabriel, Laurie Lee, Roland Lummis, Katherine McComb, Jim McMillian, Dennis Schiferl, and Wendy Schiferl) have earned 12 total PAAC certificates as a direct result of their field training, and several others are quite close to achieving certificates as well.

The training program called PAAC has been in existence since the late 1970s, through a cooperative agreement between OSAC and CAS. Training proceeds through several levels emphasizing surveying skills, artifact recognition and description, and laboratory work. Volunteers earn certificates through successful completion of sets of courses in combination with field survey or lab activities (Hand 1983). Currently there are thirteen courses offered in the program, all taught by the author in cities and towns throughout Colorado, primarily where CAS chapters exist. Course length ranges from eight to 25 hours. Participation on training surveys such as at the AGS, thus, counts toward the field work requirements for PAAC certification. Volunteers can earn at least six certificates: three in the survey "module," two in laboratory work, and one or more in "specialty" areas. The AGS project is the eighth PAAC training survey sponsored by OSAC, the others having been conducted at Dinosaur Ridge in Jefferson County, at the Heckendorf State Wildlife Area in Chaffee County, on the Blanco Trading Co. lease area in Montezuma County, around Trinchera Cave in Las Animas County, in the Tomahawk State Wildlife Area in Park County, at Pike's Stockade State Historical Monument in Conejos County, and in the Hermit Park Open Space property in Larimer County (Black 1992, 1994, 1995, 1997a, 1997b, 2000a, 2003, 2004, 2007, 2008a).

Effective Environment

Physiography and Topography

The AGS is located in and adjacent to the valley of Badger Creek at the extreme southwestern edge of South Park, where the elevated lands of the Arkansas Hills and Thirtynine Mile volcanic area converge. It is near the geographic center of Colorado, within the Southern Rocky Mountains physiographic province (Madole et al. 1987; Thornbury 1965:342–344). South Park is the *Bayou Salado* of early 19th century fur trappers (Simmons 2002), well known as a game-rich region to native residents and visitors alike since the beginning of documentary records. South Park is one of the largest of Colorado's intermountain valleys, mostly located within Park County but extending a short distance southward into Fremont County where the AGS project took place. It is the headwater valley of the South Platte River system, and its floor is an open, expansive area wrinkled by numerous low ridges and hills (Figure 5). Most of the terrain in the park slopes to the south and east with the South Platte River. However, the extreme southwestern portion of the park in the region of the AGS is drained by Badger Creek, which is a south-flowing tributary of the Arkansas River (Figure 6).

The drainage divide separating the South Platte River and Badger Creek basins is in the Agate Mountain area about 14.5 km (9 mi) north of Antelope Gulch. For many, the boundaries of South Park are equated with the South Platte drainage basin, thus excluding the AGS area around Badger Creek. Indeed, Tucker (2001:4–5) refers to this area informally as "Antelope Gulch Park" in a favorable comparison with nearby Herring Park to the northwest and Gribbles Park to the southeast. However, the topography of the drainage divide area north of the AGS is quite gentle for the most part, and the vegetation across the divide is a nearly uninterrupted grassland even on Agate Mountain at 3,049 m elevation (10,002 ft). The overall elevation range within the project area is 2,700–2,835 m (8,860–9,300 ft).

North of the survey area the route to the bulk of South Park is marked by a series of low, west- to southwest-sloping ridges and drainages on the east side of Badger Creek (see Figure 5), eventually reaching the drainage divide with north-flowing Agate Creek on the west flank of Agate Mountain. In other directions, the foothills of the two mountain ranges mentioned above are encountered. To the northeast and east, the Thirtynine Mile volcanic area is a zone of montane to subalpine hills and ridges reaching a maximum elevation on Black Mountain of 3,550 m (11,654 ft). Arcing west and south of the project area is the south end of the Mosquito Range, locally referred to as the Arkansas Hills. In its northern reaches between Fairplay and Leadville, the Mosquito Range has several peaks exceeding

Figure 5. The open grasslands of the southwestern corner of South Park are punctuated with small stands of aspen and pine, as seen from 5FN2592 south of Antelope Gulch. The view is to the northeast with the 5FN494 site area visible around the low cliff of Wall Mountain Tuff beyond the small trees in the foreground.

Figure 6. Badger Creek has cut an impressive canyon through the Arkansas Hills, seen from site 5FN2337. The view is to the south from the highest point surveyed in the project area.

3,960–4,270 m elevation (13,000–14,000 ft). However, near the AGS its Arkansas Hills section crests at significantly lower heights. Local high points are on Cameron Mountain to the west at 3,350 m (10,993 ft) and on Jack Hall Mountain to the south at 3,363 m (11,034 ft). The rugged, wooded region around the latter mountain presents a much more effective barrier to access the Arkansas River canyon than does the low divide north of the AGS into the South Platte drainage basin

The lower elevations within the AGS mostly lie on the west side of Badger Creek, which is the only perennial water course in the project area. The creek is drained by two east-flowing forks of Antelope Gulch and a sizable but unnamed east-flowing drainage parallel to Fremont County Road 2, both intermittent streams. Just below the confluence of its forks, the main course of Antelope Gulch makes a short plunge over the volcanic cliff within 5FN494; the resulting pool appears to be supplemented by a spring or seep at the base of the cliff since it remained filled with water even in the driest season during the survey. Numerous small, ephemeral washes drain the wooded uplands south and west of County Road 2, generally in a northeast direction into Badger Creek. At the southeast corner of the AGS in the SE¼ of Section 24, we surveyed a small detached parcel of land on the crest of a ridge high above Badger Creek where it cuts a canyon southwestward into the Arkansas Hills. This was the highest elevation area in our survey (Figure 6).

While the low cliff of Wall Mountain Tuff at the Antelope Gulch site may be the best-known landform in the area (Figure 5), the terrain immediately northeast of this cliff also displays some distinctive topographic features. Here, as one approaches the bluff overlooking Badger Creek (Figure 7), the grassy steppe to the west gives way to a series of low, rounded, mound-like bedrock knolls separated by flats with either very shallow soils or exposed bedrock slicks. Like the cliff at 5FN494, these rock exposures are of Wall Mountain Tuff and seem to have been a focus of prehistoric cultural activity in their own right (Figure 8; see Results chapter).

Climate

South Park's combination of encircling mountainous terrain and high elevations result in a relatively cold, dry climate. The nearest weather stations of relevance to the AGS are at Antero Reservoir, Guffey, and Hartsel, with the former station perhaps most relevant in terms of its topographic position within South Park. Records at these three stations show that January is both the coldest and driest month, July is the warmest, and August is the wettest (Western Regional Climate Center 2012). Hartsel's 38 year long record ends in 1966 so its averages reflect neither the wetter-than-normal 1980s nor the recent drought of the late 1990s–2000s. Also, the station at Guffey does

Figure 7. Just beyond the northeast edge of the survey area, the grassland steppe west of Badger Creek terminates at a low bluff. The view is to the north looking upstream along the creek.

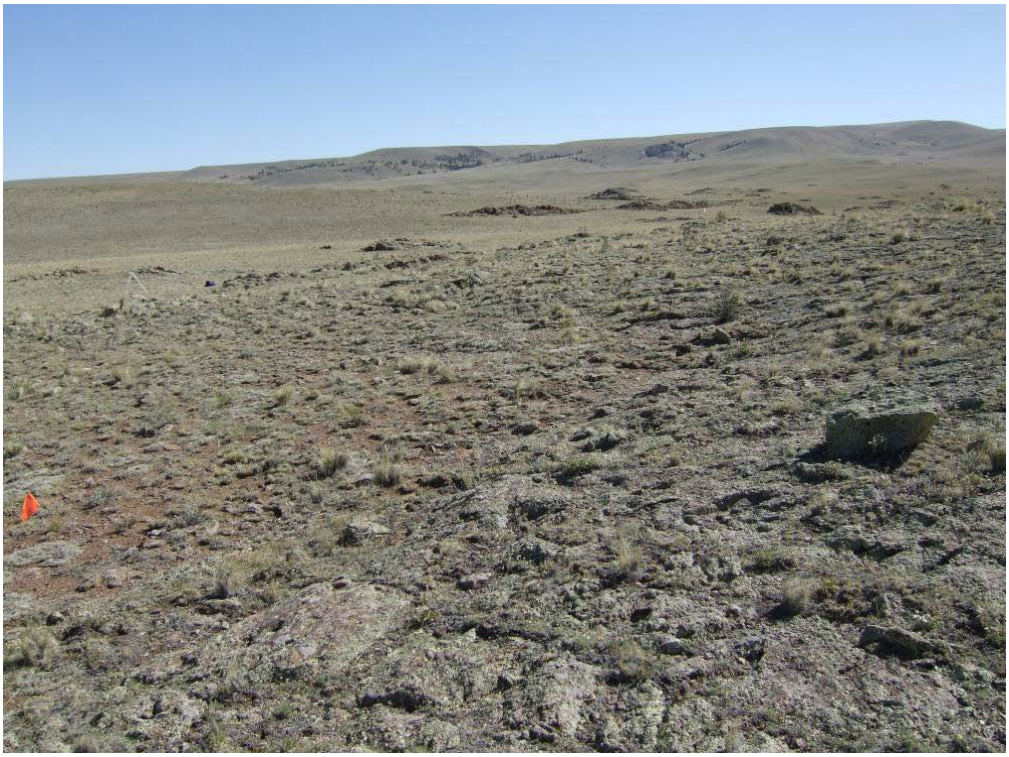


Figure 8. Near the Antelope Gulch site, bedrock exposures of Wall Mountain Tuff range from the slickrock-like expanses seen in the foreground to low, rounded knolls visible in the distance. The view is to the north-northeast from site 5FN2660.

not include temperature records. However, data for the 1961–2005 period at Antero Reservoir document annual precipitation of 25.6 cm (10.1 in), peaking in August at 5.7 cm (2.25 in) but with a meager .5 cm (.2 in) in January; annual snowfall is 118 cm (46.6 in) with a maximum of 253.5 cm (99.8 in) falling in 1964–65. The mean high temperature is 24.5° C (76.2° F) in July with a mean low of -19.5° C (-3.1° F) in January. High temperatures in mid-summer virtually never exceed 32° C (90° F). The length of the "growing season"—if such an expression can be used in a high mountain valley—is brief even in good years. Chances are 50–50 that the last day below 0° C (32° F) in the "spring" will occur as late as July 1; the first freeze in the "fall" usually arrives before the end of August.

Geology and Geoarchaeology

The geology of the AGS region is of particular interest given the number of native toolstone sources encountered on the survey (Black 2009a, Black and Theis 2011); see Wallace et al. (1999:1–5) for a succinct summary of regional geology. Much of South Park consists of a huge syncline called the South Park Basin, geologically continuous with the east side of the Mosquito Range (Scarbrough 2001:3). The southernmost extent of this syncline approaches, but does not extend into, north-western Fremont County in the AGS area (Scarbrough 2001:Figure 1). Proterozoic and Paleozoic strata are most widely exposed in the rugged terrain that surrounds this topographically low syncline, in a roughly U-shaped distribution within the Arkansas Hills to the west and south, merging with the Front Range to the east in the Pikes Peak region (Scott et al. 1978). Many Paleozoic formations are exposed in the AGS, particularly south of Antelope Gulch. Although Proterozoic rocks are entirely absent within our surveyed area, the nearest exposure is just a few hundred meters south of the AGS along Steer Creek. Similarly, Mesozoic deposits are uncommon in the immediate AGS area, largely limited to the Whitehorn Granodiorite, an Upper Cretaceous intrusion through Paleozoic rocks that extends to within 1 km of the west edge of the AGS (Wallace et al. 1999:4).

Intensive—and extensive—volcanic activity is the hallmark of much of the Cenozoic record in this region, presented in detail by McIntosh and Chapin (2004). They describe the "central Colorado volcanic field" as a series of late Eocene and Oligocene eruptive centers and associated deposits extending from the Sawatch Range on the west to the Wet Mountains and northern Sangre de Cristo Range on the south, to the Castle Rock area on the east. In the period ca. 38–29 mya, a nearly continuous mantle of mostly extrusive igneous materials covered the region, subsequently eroded into a patchy distribution within which the Thirtynine Mile volcanic area is the largest remnant (McIntosh and Chapin 2004:205). However, the Wall Mountain Tuff—a late

Eocene ignimbrite originating from an as-yet uncertain caldera in the Sawatch Range —is perhaps the most widespread individual formation, occurring as far northeast as western Elbert County and Douglas County where it was used as a building stone known as Castle Rock rhyolite (McIntosh and Chapin 2004:Figure 2B; Murphy 1995:16; Thorson 2006, 2011:40). The Wall Mountain Tuff holds a prominent place in the archaeology of the AGS for a number of reasons discussed in the Results section of this report, most obviously in forming a low cliff that some have interpreted as a bison jump feature at the Antelope Gulch Stone Circles site (Figure 5; Tucker 2001).

The youngest volcanic materials in the region are considered part of a separate episode of rift volcanism, locally represented by basaltic lava flows in the Herring Park area that date to late Miocene times ca. 8.5 mya (McIntosh and Chapin 2004:211; Wallace et al. 1999:5, 7). A tiny knoll of similar basalt—too small to appear on the map of Wallace et al. (1999)—is within the AGS just south of Antelope Gulch. In modern times, both the Herring Park flows and the knoll in the AGS have been the target of rock hounds in pursuit of gem-quality peridot (Rhoads 2002; see site description for 5FN2594 in this report). The most recent geological strata in the AGS consist of gravelly Pleistocene pediment deposits around Antelope Gulch in the northwest portion of the AGS, as well as Holocene alluvium and colluvium along Badger Creek and its major tributaries (Wallace et al. 1999:4).

Although the sample size from survey coverage is far from ideal, a number of the geological formations in the south half of South Park into the adjoining mountains at least as far south as the Arkansas River canyon contain documented source locations of a variety of knappable toolstones including agate, chert, chalcedony, petrified wood, and quartzite (Black 2000b, 2004; Black et al. 2003). Best known is Trout Creek chert, a yellow-brown to dusky red jasper that outcrops in the Manitou or Fremont formation (both Ordovician) in at least two landslide blocks just west of South Park (Chambellan et al. 1984; Heinrich 1984; Keller et al. 2004:22–23; Wallace and Keller 2003). For many archaeologists working in the Rocky Mountain region, the Trout Creek deposits (5CF84) represent the preeminent toolstone source of jasper in central Colorado. However, both the results of the present inventory and other recent work show that the geoarchaeological landscape in this part of the state is a far more complicated place than previously appreciated. For example, primary quarries focused on extensive outcrops of petrified wood recently have been documented in the Three-mile Gulch area of eastern South Park (Bender 2003; Bender and Friedman 2008, 2009; Bender et al. 2003; Friedman et al. 2003). Some of that material is so thoroughly silicified and oxidized that it is difficult to distinguish from other jaspers on macroscopic, visual evidence alone (e.g., Black et al. 2003; Simmons et al. 2005).

In Table 1, a list of the formations present in the AGS region is given regarding both the currently known and prospective occurrences of toolstone sources. For jasper alone, at least six different formations have documented archaeological sites with utilized toolstone exposures; five of the six are in primary, bedrock contexts. These diverse geological occurrences suggest the possibility that, for example, the process of silica replacement in carbonate rocks of Ordovician age (Manitou and Fremont formations) and in extrusive igneous deposits of the Eocene (Wall Mountain Tuff) is linked to a common origin such as regional hydrothermal activity (Lovering 1972:35–36; Bruce Wahle, personal communication 2010).

A sizable number of geological reports have described the presence of cherty deposits in various parts of central Colorado, but the archaeological relevance of those documents has been underexplored (e.g., see any of the local geologic mapping documents of the Colorado Geological Survey such as Wallace et al. 1999; also Banks 1970; Cappa and Scarbrough 2001; Gerhard 1974; Sweet 1961). Especially useful is the detailed overview of "jasperoid" by Lovering (1972), which he defines as follows: "(1) jasperoids are composed predominantly of silica, which in most places is in the form of aphanitic to fine-grained quartz, and (2) jasperoids form by replacement of the enclosing rock. For this study, I return to Spurr's definition (1898) by restricting the usage of the term "jasperoid" to mean "an epigenetic siliceous replacement of a previously lithified host rock." Jasperoid, thus defined, excludes syngenetic or diagenetic forms of silica, such as primary chert and novaculite" (1972:3).

For geologists the rock color is of only minor interest, as jasperoid can range from white to shades of gray, black, brown, orange, red, and yellow. The more vivid hues are due merely to the presence of oxidized iron, which may comprise as little as 0.1–1.0 percent of the rock (Lovering 1972:7; Luedtke 1992:6). However, the archaeological evidence both in this report and from previous work makes it clear that rock color mattered to prehistoric flintknappers (and modern rockhounds!), probably due more to aesthetic properties than to mundane matters of utility. The colorful jaspers of the AGS region constitute a much higher percentage in flaked stone assemblages than the widely available and seemingly very useful gray cherts found in nearly adjacent outcrops.

One other geological topic of local interest is the occurrence and distribution of economic quantities of metallic ores. Although the AGS area lies outside of major mining districts such as Whitehorn to the west and Cripple Creek farther to the east, the Historic period events in those districts did have some spill-over effects in and around the AGS. Numerous prospect pits dot the landscape as mineral exploration expanded beyond the zones of initial discovery. The Results chapter below describes many such prospects documented by our survey crews. Just north of the AGS project

Formation	Age	Toolstone Confirmed	Toolstone Possible	Reference(s)
Pediment gravels	Pleistocene	jasper	chert	this report; Wallace et al. 1999, 2000
Dry Union	Pliocene & Miocene	—-	chert, quartzite	Keller et al. 2004
Antero	Early & Middle Oligocene	—-	chert, jasper, petrified wood	Wallace and Keller 2003; Wallace et al. 1999
Tallahassee Creek Conglomerate	Early Oligocene	—-	chert, petrified wood	Wallace and Keller 2003
Wall Mountain Tuff	Late Eocene	jasper, obsidian	chert	this report
Sangre de Cristo	Lower Permian	—-	quartzite	Wallace et al. 1997
Minturn	Middle Pennsylvanian	—-	chert, jasper	Lovering 1972
Sharpsdale	Middle Pennsylvanian	chert	quartzite	this report; Wallace et al. 1997, 1999
Kerber	Lower Pennsylvanian	chalcedony, jasper, quartzite	—-	this report
Leadville	Lower Mississippian	chert, jasper	quartzite	this report; Banks 1970; Keller et al. 2004; Wallace and Keller 2003; Wallace et al. 1997, 1999
Chaffee: Dyer	Upper Devonian	chalcedony, chert	—-	this report; Keller et al. 2004; Wallace and Keller 2003; Wallace et al. 1997, 1999
Chaffee: Parting	Upper Devonian	—-	quartzite	Keller et al. 2004; Wallace and Keller 2003; Wallace et al. 1997, 1999
Fremont	Upper & Middle Ordovician	jasper	chalcedony, chert	this report; Keller et al. 2004; Wallace et al. 1997, 2000
Harding	Middle Ordovician	—-	quartzite	Wallace and Keller 2003; Wallace et al. 1997, 1999, 2000
Manitou	Lower Ordovician	jasper	chert	Gerhard 1974; Heinrich 1984; Keller et al. 2004; Wallace and Keller 2003; Wallace et al. 1997, 2000
Sawatch	Late Cambrian	—-	quartzite	Wallace and Keller 2003

Table 1. Potential and confirmed toolstone host rocks of the Arkansas Hills region. This compilation generally covers the area from Chubb Park on the north to the Arkansas River canyon on the south. Formations that occur in this region but are currently not known or suspected to contain toolstone sources are not shown.

area along the Fremont County–Park County border, silver-copper ores were mined at a small scale in the Kerber and Sharpsdale formations (Wallace et al. 1999:15–18). Both are sedimentary "red bed" formations containing intervals of brightly colored siltstone, shale, arkose, sandstone, and orthoquartzite in shades of red and purple. Mineral patents issued there and in the Whitehorn district reached a numerical peak in 1899–1908 (Schrader 2000), within a more general mining period of 1895–1930.

Soils and Vegetation

Soils within the AGS are somewhat variable owing to the diverse bedrock, vegetation cover, and topographic settings. Area soil types have been mapped and described in detail by Wheeler et al. (1995); these data also are on-line at websoilsurvey.nrcs.usda.gov. Although a large number of soil types have been mapped in the AGS region, only four of those soils cover extensive acreage within the project area. Developed on almost all of the wooded terrain south and southwest of Antelope Gulch is the Herakle-Rock Outcrop complex, mostly on moderate to steep slopes of 15–45%. Herakle soils are typically shallow and well-drained, and as the name suggests, bedrock outcrops are not uncommon. Generally, these soils represent in situ weathering of limestone and dolomite. Total soil depth averages 40–45 cm with a thin (5 cm) topsoil of rocky, brown loam. The extensive forests in the southern portion of the AGS area are mixed conifer woodlands dominated by Douglas-fir along with Rocky Mountain juniper, ponderosa and piñon pines in drier areas; Engelmann spruce, blue spruce, and aspen in more moist habitats; and a diverse understory that includes common juniper, snowberry, gooseberry, wax currant, kinnikinnick, shrubby cinquefoil, wild rose, fringed gentian, Fremont's geranium, elkweed, pasque flower, bluebells, and grasses such as Arizona fescue and mountain muhly.

On the south-facing slopes just north of County Road 2, and on the open interfluvial ridges and ridge slopes below the forests west of County Road 2, Wheeler et al. (1995) mapped the Rentsac variant channery loam. Like the Herakle soils, these are shallow and rocky deposits derived from weathering of underlying limestone and dolomite, as well as from colluvium off the slopes above. Gradients are generally less than 25%. The well-drained Rentsac soils are 45-50 cm thick with a rocky, brown loam topsoil layer about 15-20 cm thick over a very rocky, light brown loam subsoil. Grassland species native to this zone include Arizona fescue, western wheatgrass, Indian ricegrass, mountain muhly, blue grama, and needle-and-thread. Our survey crews also observed diverse forbs—particularly in the wetter field seasons—such as mountain ball cactus, snakeweed, wild flax, phlox, fleabane daisy, western wallflower, and Indian paintbrush. Scattered clumps of fringed sage are present locally.

The "high and dry" plains both north and south of Antelope Gulch have soils that can also be described as shallow and well-drained, but have weathered either from sedimentary red beds or from tuffs. The soil in these areas is defined as the Chittum sandy loam (Wheeler et al. 1995:31), characterized by reddish brown sandy loam or grayish-brown silt loam topsoil about 10 cm thick over a sandy or silty clay loam subsoil. Profile depth is up to 25 cm, but soils thin considerably near the bedrock exposures (see Figure 8). Vegetation here includes many of the same species found on Rentsac soils, along with additional plants suited to the more xeric conditions. The common grasses are Arizona fescue, mountain muhly, prairie junegrass, western wheatgrass, and Indian ricegrass. In addition to the wildflowers listed above, others noted in drier settings include groundsel, penstemon, locoweed, and biscuitroot. Prickly pear cactus and narrowleaf yucca are not uncommon in these areas, and fringed sage dots the zones with deeper soils. In areas near Antelope Gulch where bedrock outcrops are widespread, patches of mountain mahogany and shrubby cinquefoil also occur.

As one would expect, the thickest sediment accumulations with the potential for deeper burial of archaeological materials are in the alluvial deposits bordering portions of Antelope Gulch and the unnamed drainage along County Road 2, as well as in toe slopes and alluvial fans. This soil is the Morset loam, on average a 150 cm thick deposit with 20 cm of brown loam topsoil, and deep subsoil layers that range from lighter brown to gray brown clay loam, loam, and sandy clay loam. The vegetation cover on these alluvial soils tends to be denser, and can include wetland species such as wild iris and various sedges in better preserved bottomlands lacking incised arroyos. Typical grasses are western wheatgrass (dominant), Arizona fescue, blue grama, and needle-and-thread. Rabbitbrush is a common colonizing shrub in the actively eroding arroyos that have developed in a few alluvial environments.

Arroyo cuts in at least two areas within the AGS have exposed profiles characteristic of the Morset soils. Near site 5FN2662 on Antelope Gulch, the head of a gully has revealed a well-developed soil with clearly defined A-B-C horizonization indicative of some antiquity; the profile includes a 25 cm thick topsoil and 35 cm reddish-brown B horizon over a deep, rocky subsoil (Figure 9). Along the unnamed drainage just south of County Road 2, an even deeper cut by an arroyo near 5FN2447 presents another useful profile with a readily discernible buried soil (Figure 10). Although no artifacts or cultural features were observed in either cutbank, the potential for intact buried archaeological materials is apparent in these areas.

Figure 9. This profile along Antelope Gulch is exposed at the head of an arroyo and shows 60 cm of well-developed soil above the very rocky subsoil. The tape measure is extended to 1.0 m.

Figure 10. Northeast of 5FN2447, this arroyo cut has revealed a 27 cm thick buried soil representing the former position of an ancient surface. The total depth here is 1.5 m.

Fauna

As expected given both the vegetational diversity in the AGS and its relatively remote location from major land developments, a wide range in fauna was observed during the four seasons of the survey. Apart from extirpated predators such as wolves and grizzly bears, virtually every major game animal represented in excavated archaeological samples in the region was spotted during the inventory. Birds, lagomorphs, and rodents were seen in great numbers and diversity including a variety of falcons, hawks, gray and piñon jays, crows, ravens, Clark's nutcrackers, flickers, hummingbirds, mountain bluebirds, cliff swallows, dusky grouse, wild turkeys, tree and ground squirrels, pocket gophers, cottontail rabbits, and both black-tailed and white-tailed jackrabbits. Also seen—in the flesh or with obvious signs—were badgers, coyotes, red foxes, elk, mule deer, pronghorn, black bear, and mountain lion. Mostly, survey areas were too distant from perennial water sources—and climatic conditions too dry overall—for gnats and mosquitoes to be more than a minor nuisance.

Environmental Constraints

Overall, there were few natural environmental constraints endured on the AGS. Weather-related delays were both brief and infrequent, with only a couple days of cumulative time lost to heavy or persistent rain over the course of four field seasons. Ground visibility was good to excellent over most of the project area, with the exception of the more densely wooded areas south of County Road 2. Steep slopes exceeding 30º occur in the larger block of state-owned lands surrounding the AGS such as on the canyon sides along Badger Creek and north of Steer Creek, but were not a factor within our survey area. Impacts from stock and game animal grazing and trampling were of a minor nature, and there was no evidence of concentrated damage to any archaeological sites from those threats. Rodent burrowing, on the other hand, is widespread and is a noticeable impact to specific site areas such as at 5FN2345 and 2585. Significant erosion due to gullying is confined to the main stem of Antelope Gulch and the unnamed tributary of Badger Creek south of County Road 2.

Modern and late historic cultural impacts to the archaeological sites in the AGS were more widespread and visible, however. The recent episodes of vandalism at the Antelope Gulch Stone Circles site, 5FN494, already have been described in the Introduction section above and earlier impacts were reported by Tucker (2001:15). Guidebooks marketed to tourists that highlight favorable areas to collect artifacts in the region only exacerbate the problem (McKinney and McKinney 1987:31, 46). Generally speaking, sites near 5FN494 appear to have suffered more "collateral damage" from artifact collectors visiting Antelope Gulch, i.e., they contained fewer

diagnostic projectile points or other formal tools and more small flake piles as leftovers of collecting activity, than did the sites more distant from 5FN494. Unauthorized off-road vehicle use, possibly related to the collecting (Figure 2), seems to have been halted at least temporarily by the new signage installed by the State Board of Land Commissioners following up on our May 2007 field visit. Other collecting activity from "rock hounds' seeking gem-quality peridot and jasper have left their marks in the form of excavation scars resembling mineral prospect pits and, at 5FN2594, the cumulative damage from years of moving and breaking open basalt nodules (using rock hammers) in the search for peridot. Most of the jasper collecting appears to be concentrated along and near the ridge between County Road 2 and Antelope Gulch.

Land surveys to mark corner positions on the cadastral grid left behind corner caps at section corners and centers in Sections 11, 12, 13, and 14 within the AGS. Dates are not listed on most of the caps but one at the common corner of those four sections on a ridge south of Antelope Gulch dates to 1940. Other survey caps are of aluminum rather than brass and clearly of more recent vintage. In addition, weathered ranch fences and a major transmission line using a twin pole support system cross the AGS. The latter utility line roughly parallels the position of a long-abandoned telephone line (see 5FN2152.1 site description), and related line maintenance activities have included utility trucks driving off-road creating a two-track jeep trail meandering cross-country underneath and adjacent to the line. Also, the effects of Historic period logging operations are visible throughout the wooded portions of the AGS in the form of hundreds, if not thousands, of saw-cut tree stumps. No doubt there were at least surficial land disturbances associated with tree removals, perhaps using sleds with chains and winches to move the logs through the forest and load them onto trucks or wagons. However, the modern forest floor appears to have largely healed from such wounds even if the negative impacts to shallow archaeological deposits remain. Finally, traffic on the two county roads through the AGS continues to leave a general scatter of litter along both routes, as well as less frequent overnight camping evidence. Figure 11 depicts the modern features noted in the survey area.

Existing Data and Literature Review

A search of files at the Office of Archaeology and Historic Preservation in Denver conducted prior to the first field season on April 22, 2008 revealed that several small scale projects had been done in the vicinity of the AGS, only one of which had been completed inside our project area. Eight sites and four isolated finds were previously documented in or near the AGS during these projects. The Antelope Gulch Stone Circles site, 5FN494, was first formally recorded and mapped in 1985–87

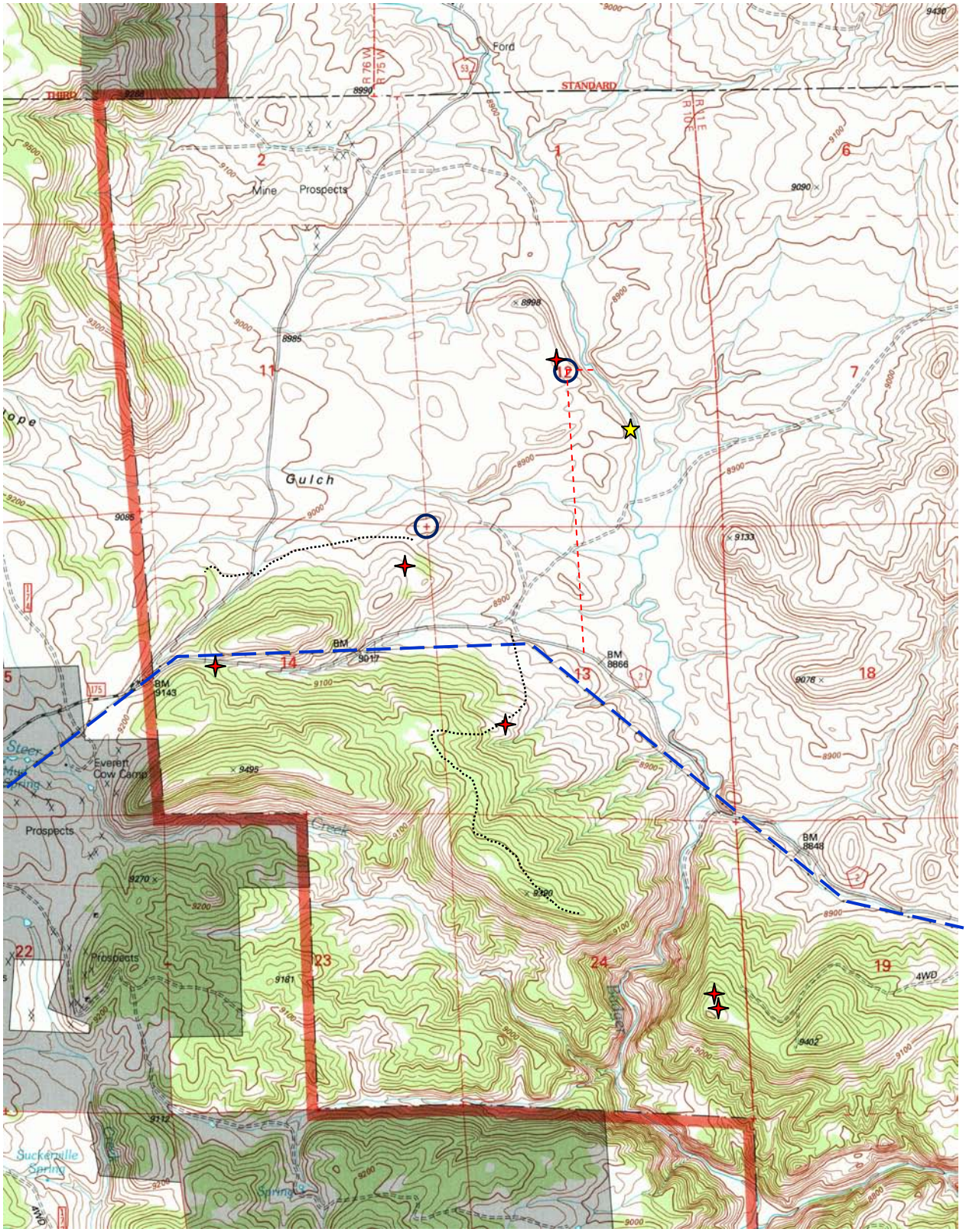


Figure 11. Distribution of modern features in the project area; county roads are not highlighted.
Key: Camp rings &/or trash ✦ High voltage lines — — Fence - - - - -
Badger Creek Ranch ★ Survey caps ○ Jeep trails .....

by crews from the now-inactive Royal Gorge Chapter of CAS as a chapter project (Tucker 2001). A primary goal of their work was to evaluate the low cliff at the site as a possible bison jump feature, based on a previous discovery of bison horn from the spot. Their survey did not find supporting evidence for such a feature. However, they did map 13 spaced stone circles or tipi rings both below the cliff along the gulch (Figure 12) and further south along the eastern foot of a ridge. They also documented a couple of probable hunting blinds on a rocky ledge of that same ridge, overlooking the gulch (Figure 13).

Ridge top exposures of bedrock west and south of the main site area were said to exhibit procurement activity targeting raw materials ranging from "dark gray to black chert" to "banded light gray and black [chert]…known locally as bull's eye agate" (Tucker 2001:7). However, although our survey documented comparable chert procurement activity in Leadville Limestone outcrops on the ridge slope above County Road 2 (see 5FN2592 and 2593 in Results section below), we could not verify the CAS observations on the crest of the ridges. Instead, it appears either that the CAS crews were mislead by accumulations of natural angular debris on the ridge tops, or were not very precise in describing where the "quarrying" had occurred. One other aspect to the CAS project at 5FN494 was the effort to examine artifacts from the site and surrounding area in private collections. Tucker (2001:Figures 1–2) illustrates examples of projectile points, bifaces, and other flaked stone tools that for the most part are comparable to the artifacts found on our survey. Other private collections from the area were documented in more detail in a multi-year effort by Royal Gorge Chapter members (Tucker 1999).

Another small project near the AGS involved the documentation of 5FN777, recorded just outside the southeast corner of our survey area by Elbert Hardin of the BLM–Cañon City District in 1974 (OAHP site files data). Because this site was described as a source of "red, white, and blue chalcedony" toolstone, we made a brief attempt to relocate the site in the 2008 season en route to the high ridge surveyed in the SE¼ of Section 24. The location of 5FN777 was shown on OAHP maps in a large area on the northeast slope of the ridge east of Badger Creek, but our hike up this slope through the east edge of Section 24 failed to find any native deposits of chalcedony or any other toolstones. The more likely location of this site is on adjacent BLM property in the NW¼ of Section 19. Several geological formations are mapped on the ridge slope that could be the host rock for the chalcedony: Fremont Dolomite on much of the upper and middle slope, the Dyer Dolomite member of the Chaffee formation on the lower slope, and Leadville Limestone at the foot of the slope (Wallace et al. 1999). In addition to the toolstone, an informant showed Mr. Hardin two projectile points diagnostic of the Archaic period found "approx. 2 feet down in an arroyo bank" mapped in the NW¼ of Section 19.

Figure 12. In the foreground is one of the few remaining spaced stone circles at 5FN494, shown in this southwest view by PAAC volunteer Terry Lee.

Figure 13. USFS volunteer Becky Donlan at a possible hunting blind at 5FN494, looking north.

USDA Forest Service personnel recorded site 5FN893 just west of the AGS in Sections 14–15 along with 11 other cultural resources during a 295 ac survey in 1988 (Riddle and Kane 1990). The site is described as an open lithic scatter or "seasonal camp" of jasper, chert, chalcedony, and obsidian covering a 200 m NE-SW × 50 m NW-SE area. The northeast limit of the site was defined at a fence just east of the property boundary between US Forest Service and state-owned lands. However, our survey did not extend westward to that fence line to be able to better define the full extent of the site on state lands.

In three separate, small surveys on BLM lands just east of the AGS in Section 13, Monica Weimer (1994a, 1994b, 1995) recorded single prehistoric sites on each project. Sites 5FN1200 and 1201 are both open lithic scatters with chert debitage and rare flake tools. Site 5FN1200 also exhibits quartzite flakes and cores, as well as purple and yellow chert cores. Nearby, on a low ridge of Leadville Limestone just east of Badger Creek is 5FN1211, the "Badger Creek Quarry Site," a procurement area for gray and brown chert similar to what our survey documented at 5FN2592–2593. We made a brief visit to this site in 2008, and observed numerous cores and raw materials in solid colors rather than the more distinctive, banded "bull's eye agate" variety mentioned above. Just to the east in Sec. 18, Weimer (2000) surveyed another small BLM parcel where she recorded 5FN1752, an isolated flake resembling Trout Creek chert

Yet another small survey took place along seven separate fence segments in four BLM sections just east of the AGS (Weimer 2002). Three isolated finds (IFs) and one site, all prehistoric, were recorded. The IFs are 5FN1851, 1852, and 1854; each is represented by chert debitage. Site 5FN1853 is a small lithic scatter similar to 5FN1200 with flakes and cores of chert and quartzite. Three other nearby projects are relevant to the current survey, two of which involved proposed land exchanges in the Gribbles Park area southeast of the AGS. Beardsley and Bargielski (1990) reported on a survey of more than 1,900 ac of BLM land in multiple parcels near the Stirrup Ranch, where they documented 13 sites and six IFs. One of those sites, 5FN883, is a multi-component historic and prehistoric resource that includes a procurement area for "Manitou Springs chert" similar to Trout Creek source material (the Manitou Springs label more likely should be Manitou formation). Among the artifacts recorded is a projectile point of the Hanna type, in the McKean technocomplex of Middle Archaic age.

Bevilacqua and Wunderlich (2006) describe a survey of 720 ac—partly overlapping the area inventoried by Beardsley and Bargielski (1990)—in which they recorded 24 sites and 15 IFs of mostly prehistoric age. Among their 24 sites is 5FN2134, a prehistoric open camp exhibiting a thermal feature associated with ash, charcoal, FCR, burned bone, a burned mano, and burned ceramic sherds. Two dozen

potsherds in and near this feature were identified as representing two vessels of probable Apachean manufacture, possibly of the Ocate Micaceous type dating to ca. AD 1550–1750. In addition, diagnostic arrow points found on this site dated another component to the Developmental period of AD 150–1000.

More directly relevant to the AGS project, however, is the fact that their survey also documented four lithic sources, of which one (5FN883, described above) was re-recorded and tested. The other three sources documented at 5FN2130, 5FN2131, and 5FN2138 yielded evidence for the procurement of colorful chert cobbles that, like 5FN883, resemble the Trout Creek source materials from 5CF84. Bevilacqua and Wunderlich (2006:99–103) note that three of those four sources are mapped near the geologic boundary of the Badger Creek tuff (Oligocene) and Quaternary pediment deposits. They speculate that the chert may originate in the Manitou formation and that subsequent erosion incorporated the chert into the pediment gravels as a secondary deposit. That the chert originated in Oligocene tuffs was considered possible but less likely in their interpretation of the physical evidence. The AGS results reported in this volume, however, lend more credence to the latter option.

Finally, northwest of the AGS just over the Park County boundary is the enigmatic site 5PA2427, referred to in some local circles as a "Spanish Fort." This is an extensive grouping of 18 stacked stone enclosures occupying the crest and slopes of a volcanic knoll southeast of Herring Park on USDA Forest Service land. The enclosures are of various sizes and shapes—some are rather amorphous, others crescentic to circular or rectangular. An especially large stone circle occupies the crest of the knoll, but shows definitive evidence of recent modifications including the use of rock-lined hearths and movement of much of the rock in the encircling feature. Detailed mapping and small scale test excavations have been completed here (Lindsey 2008; Lindsey et al. 2008; Segin 2004). Of particular interest is the effort to date logs present in a couple of the features as possible construction elements. One tree-ring date of AD 1183 from a timber in the largest enclosure is of questionable accuracy, as a second date fell in the range of AD 1650–1750. Lichen dating showed only modern results (Lindsey et al. 2008:14–20). The smaller features on the slopes of the knoll resemble other similar-sized enclosures interpreted as hunting blinds at 5FN494 (Figure 13) and elsewhere in the mountains, but the much larger circular feature remains unexplained.

Since the first historic context on the Colorado mountains appeared nearly 30 years ago (Mehls 1984), significant new research has occurred on Historic period activities in the South Park region, particularly by Front Range Research Associates, Inc. through the work of Laurie Simmons and Thomas Simmons. Their context for the multiple property listing, "Historic Ranching Resources of South Park, Colorado"

(Simmons and Simmons 1999a) is a very useful overview of ranching properties. In related work, they recorded site 5PA2481, located north of the AGS and documented as part of an extensive reconnaissance project in the southwestern portion of South Park (Simmons and Simmons 2003). This is the Mulock IM Ranch, located on the east bank of Badger Creek about 1 km east of 5PA2427 and exhibiting the ruins of the ranch house and a number of outbuildings. The book by Virginia Simmons (2002) provides a much broader overview of history throughout the entirety of South Park, and is an excellent complement to the work of Simmons and Simmons (1999a, 2003). Table 2 summarizes the previously recorded sites and IFs of relevance to the current project.

Site	Name	Type: Period(s)	NRHP Eligibility	Reference(s)
5FN494	Antelope Gulch	open architectural: Archaic, Developmental	eligible	Tucker (2001)
5FN777	none	open quarry: Archaic	potentially eligible	Hardin (1974)
5FN883	none	open camp and jasper quarry: Middle Archaic; ditch and retaining walls: historic	Listed on SRHP*	Beardsley and Bargielski (1990); Bevilacqua and Wunderlich (2006)
5FN893	Antelope Camp	open lithic: prehistoric	potentially eligible	Riddle and Kane (1990)
5FN1200	none	open lithic: prehistoric	not eligible	Weimer (1994a)
5FN1201	none	open lithic: prehistoric	not eligible	Weimer (1994b)
5FN1211	Badger Creek Quarry	open quarry: prehistoric	not eligible	Weimer (1995)
5FN1752	none	IF: prehistoric	not eligible	Weimer (2000)
5FN1851	none	IF: prehistoric	not eligible	Weimer (2002)
5FN1852	none	IF: prehistoric	not eligible	Weimer (2002)
5FN1853	none	open lithic: prehistoric	not eligible	Weimer (2002)
5FN1854	none	IF: prehistoric	not eligible	Weimer (2002)
5FN2134	none	open camp: Ceramic and Protohistoric periods	Listed on SRHP*	Bevilacqua and Wunderlich (2006)
5PA2427	none	open architectural: prehistoric? or historic	eligible	Lindsey 2008; Lindsey et al. 2008; Segin 2004
5PA2481	Mulock IM Ranch	cattle ranch: historic	need data	Simmons and Simmons (2003)

Table 2. Sample of recorded sites in the vicinity of the Antelope Gulch project area (*SRHP = State Register of Historic Places).

Because of the availability of comprehensive, relatively up-to-date contexts on both the prehistoric and historic eras by Gilmore et al. (1999), Simmons (2002), Simmons and Simmons (1999a), and Zier and Kalasz (1999), a detailed overview of the cultural history of the AGS region is unnecessary. Instead, this summary will focus on the more specific evidence of past human activity represented by the sites and projects mentioned above. The earliest archaeology documented is the Paleoindian stage, ca. 11,500–7,800 BP (Zier 1999a). Although no Paleoindian sites were known from the Badger Creek drainage basin prior to the AGS project, evidence of Paleoindian activities is widespread farther north in the Platte River basin in South Park, best represented as diagnostic projectile points in private collections rather than in detailed archaeological studies (e.g., Nelson 1969; Nelson and Breternitz 1970; Potts 1934). Our survey at Antelope Gulch found a single artifact diagnostic of this era, comparable to the results on a handful of other survey projects in the upper Arkansas River basin (Zier 1999a:Figure 5-1). The lack of large-scale excavations in the AGS region hampers our ability to compare the activities of Paleoindians here with those elsewhere in the mountains or western plains. Thus, the usual conclusion that the large spear points diagnostic of Paleoindian occupations are indicative of a big-game hunting strategy is not only speculative, but does little to advance our understanding of local adaptive strategies.

The Archaic stage in the Arkansas River Basin is described by Zier (1999b), and is commonly subdivided into the Early Archaic (7,800–5,000 BP), Middle Archaic (5,000–3,000 BP), and Late Archaic periods (3,000–1,850 BP). As is true for most prehistoric time periods in the South Park region, there are no large data sets from controlled excavations to inform us on the specific activities of nomadic groups in the immediate AGS area. However, several test excavation projects have included work on Archaic components, and a few large block excavations have been completed farther afield in the Upper Arkansas River basin. The latter involved studies at the Dead of Winter site in Lake County (Buckles 1978), Runberg in Chaffee County (Black 1986), and Draper Cave in Custer County (Hagar 1976), all of which yielded evidence of Early or Middle Archaic period camp-related activities. In addition, Draper Cave contained one of the earliest human burials known from this region, a Middle Archaic interment of a young adult male with 38 flaked stone knives in association (Finnegan 1976; Hagar 1976). Test excavations at the Trout Creek quarry and several sites in the Cyprus Mines' Hanson project area northwest of Cañon City are worthy of note for their Archaic stage contents in proximity to the AGS (Chambellan et al. 1984; Engleman and Shea 1980).

In a general sense, Archaic stage sites are more common and widespread in the South Park–Upper Arkansas region than are those of the Paleoindian stage, and there appears to be a significant increase in site densities during the Late Archaic period. This

trend is seen in the results from the AGS project (see Results section below), but it is unclear whether the rise through time in site frequency is due to better preservation of younger sites, an actual increase in population, increased mobility in the Late Archaic resulting in more sites being created by the same number of people, or some combination of factors. Excavated Late Archaic components in the central mountains are few in number, but include some of the same sites with earlier Archaic deposits such as the Trout Creek quarry, Runberg, and three sites in the Hanson project area (Black 1986; Chambellan et al. 1984; Engleman and Shea 1980). Artifact assemblages are not significantly different from Early or Middle Archaic sites, but frequencies do display a shift toward slightly more common ground stone artifacts. Bone, shell, and other perishable items are uncommon in any of the Archaic periods in the central mountains, and architectural features have yet to be described from the area unlike other mountain settings west of the Continental Divide or on the western plains.

Late Prehistoric stage archaeology represents post-Archaic activities characterized by bow-and-arrow and (rarely in the mountains) ceramic technologies (Kalasz et al. 1999); in the Arkansas River Basin it is divided into the Developmental (AD 100–1050), Diversification (AD 1050–1450), and Protohistoric periods (AD 1450–1725). Sites with artifacts diagnostic of these ages are particularly common in the Colorado mountains as a whole (and in the AGS results), but once again there are too few large-scale excavation projects of such components to provide much insight into cultural activities in the AGS region. The reverse is true downstream in southeastern Colorado, where current evidence indicates that bow-and-arrow technology was in use by AD 100–400, followed by the introduction of cord-marked ceramics about AD 600 (Kalasz et al. 1999:Table 7–1). Radiocarbon date frequencies basin-wide rise significantly at 2000–1800 BP (ca. AD 1–250), with a peak in chronometric dates occurring a bit later at 1200–800 BP (ca. AD 800–1250; Kalasz et al. 1999:Figure 4–2, Appendix A). Certainly, major changes associated with the more sedentary lifestyle based on corn horticulture is a factor in the population rise suggested by the much higher date frequencies, but these changes happened only in localized areas in the canyons and plains of southeastern Colorado, not in the mountainous AGS region. There are indications that the rock enclosures found at 5FN494 and 5PA2427 have their origins in the Developmental or Diversification periods, but the data available are insufficient to be certain.

As defined by Kalasz et al. (1999:250), the Protohistoric period of AD 1450–1725 bridges the prehistoric and historic eras, and its bracketing dates mark episodes involving Southern Athapaskan bands (Apache). The early date of AD 1450 represents the approximate time when Apishapa archaeology is no longer found and the first Apachean sites appear; a cause-and-effect relationship is possible but unproven. By AD 1725, Spanish activity in the Arkansas River Basin is on the increase

and Apachean bands have been pushed south and west by Comanche incursions. Unfortunately, the archaeology of the AGS region is largely silent on this entire period. Both South Park and the upper Arkansas River valley were part of the homeland of the Ute tribe, specifically its Tabeguache (Taviwach) band although other bands such as the Muache and Sabuagana used the area from time to time (Callaway et al. 1986:337–339; Simmons 2000:18). In the eighteenth century some newly-equestrian Ute groups, particularly the Muache, became allied with the Jicarilla Apache in part to enhance resistance to Comanche raids. The incursion of tribes such as the Apache, Arapaho, Cheyenne, Comanche, and Kiowa into the Utes' mountain stronghold reflected the widespread appeal of places like South Park for hunting, raiding, and spiritual activities. Conflicts with the native Utes inevitably arose, particularly in the nineteenth century as competition increased for dwindling resources such as bison.

Evidence of Protohistoric use of South Park first came to light in the work of Potts (1934) and Renaud (1945), as summarized by Simmons (2002:22–24). One such site is 5PA100, a low hogback ridge just north of Garo locally known as the "Indian Fort," which is reputed to be a site where the Utes defended their turf against trespassing tribes as well as being used as a burial site (Renaud 1945; Simmons 2002:24, 35). Simmons (2002:27) mentions another battle site somewhere near Hartsel, where Utes and Arapahos fought just before John C. Fremont's expedition arrived in South Park via Hoosier Pass in late June 1844 during their return trip from California (Jackson and Spence 1970:717–719).

Sites 5PA569, 5PA570, 5PA2168, and 5PA2199 are scarred tree localities in South Park (Black 2004:25, 38; Clark 1999:332), and complement the evidence for harvesting of inner bark of ponderosa pine at 5FN2345 in the AGS. Many bark harvesting sites in Colorado have been dated to the first half of the nineteenth century (e.g., Martorano 1988, 1999), but the scarred trees in South Park and the AGS are as yet undated. Also, the possible Protohistoric period age of at least some stone enclosure sites in the region bears repeating, e.g., 5PA1300 and 5PA2427 (Lindsey 2008; Lindsey et al. 2008; Weimer 1999, 2009), and the use of most major mountain passes in the region as nodes in the Indians' trail routes through the mountains is likewise noteworthy (Simmons 2002:25–26). A notable local example of the latter is the modern road route called the "Ute Trail" connecting Salida with the AGS area on Chaffee County Road 175 (which follows Ute Creek) and Fremont County Road 2.

The Historic period activities of non-Indian groups in the AGS region largely involve ranching, logging, transportation and utility routes, and mining. There are very few documented sites anywhere in the region directly attributable to Spanish explorations. However, de Anza's 1779 expedition may have followed the Ute Trail

directly through the AGS en route to the Pikes Peak region where they engaged the Comanche in several battles (Carson 1998; Kessler 2001; Scott 1975:Sheet 2). Physical evidence of early fur trade activity is also hard to come by. No trading posts were built in the AGS region, and the trappers' brief camps have yet to be identified. Of course, the trappers and traders—as well as contemporary explorers such as Pike in 1806–1807 and Fremont in 1844 and 1845—used the Indians' trail system, much of which has been obliterated by modern road development.

The gold rush brought the first substantial wave of settlers into South Park in 1859–1860 (Simmons 2002:62–76). However, both gold placer development and later lode mining for precious metals focused in the mountainous edges of the park rather than in the open expanses around the AGS. The closest mining developments to the AGS were late 19th and early 20th century workings for gold, silver, copper, iron, and granite in the Cleora (later named Cameron) and Whitehorn districts to the west of the AGS, and in the unnamed locality on the Fremont County-Park County boundary immediately north of the AGS (Wallace et al. 1999:15–18). The communities of Cable City, Calumet, Cameron, Manoa, Turret, Venice, and Whitehorn emerged as a result (Scott 1975:Sheet 1). Turret endures today as a residential village while the others are ghost towns. The county boundary mentioned above dates to the early days of Colorado Territory in November 1861 (Noel et al. 1994:15–16).

The major iron deposits at Calumet near Turret were first quarried in 1880–1881, with a Denver & Rio Grande Railroad spur in service through 1901. Precious metals mining began around 1897, perhaps as a consequence of the major gold discoveries at Cripple Creek in 1891 (Brown 1968:375–378; Campbell 1972; Dixon 1995; Everett and Hutchinson 1963:161–165; Schrader 2000; Scott 1975:Sheet 1; Sprague 1953). In the AGS, our survey indicated only scattered prospecting at several sites and IFs, with no development of any significance. Related activity involved the large number of rock cairns and/or claim markers our crews recorded, especially north of Antelope Gulch. Those with wooden claim posts appear to post-date 1960, and mining claim records support the interpretation of Cold War-era uranium prospecting ca. 1965–1978.

The ranching business followed closely on the heels of the gold rush into South Park (Everett 1966). The demand for beef in the mining districts provided the primary incentive for cattle ranching in the Colorado mountains, and the natural grasslands of South Park were immediately recognized as quality grazing territory. The rise of cattle ranching in South Park during the 1860s included long-distance drives from Texas, in large part because of Civil War era interruptions in shipments to the east (Simmons and Simmons 1999b:E1–E3). By the 1870s, sheep ranching was on the rise in South Park, and the 1880s saw a peak in herd numbers of both cattle and sheep. For

example, by 1883 the IM Ranch just north of the AGS grazed some 8,000 head of cattle in the area from Cañon City to South Park (Simmons and Simmons 2003:10).

Although the Poncha Toll Road to Cañon City was in operation along the Ute Trail from 1861 to 1875 (Scott 1975:Sheet 1), the far southern portion of South Park around the AGS was more remote than the rest of the Park. Thus, most local ranches were not established here until after the land survey for T. 51 N., R. 10 E. was approved in December 1881. However, the IM Ranch mentioned above was an important exception, established in 1872 by Ira Mulock—a recent arrival from New York—just over the Park County line (Simmons and Simmons 2003:10). Within the township, the earliest land records date to 1890—purchases of 160 acres along Badger Creek in Sections 13 and 24 by William Pyle, and another of 160 acres along Willow Creek just southwest of the AGS in Sections 22 and 27 by Chauncey Edson Mulock (Ira's son, also from New York, according to U.S. census records). Table 3 provides a list of all such land transactions in the AGS area, from records accessed on-line at www.glorecords.blm.gov. Our survey found only minor evidence of the ranching industry in the form of scattered camp debris and old barbed wire fences.

Brown (1968:375) mentions the existence of records for extensive logging operations in the Turret area of Chaffee County by 1885, and our survey results likewise point toward widespread logging in the AGS during the Historic period. As noted previously, there are countless numbers of rotting stumps present throughout the wooded sections of the AGS that remain as the primary evidence of past logging. At least one camp recorded on the survey, at 5FN2350, is believed to be associated with this industry.

Finally, the utility lines that cross the project area today have their origins in the Historic period. At the end of the 19th century, the American Telephone and Telegraph Co. was expanding its long distance telephone service westward to San Francisco. By 1899 their lines had reached Denver (AT&T Corp. 2012), and apparently shortly thereafter local lines were being built in the mountains. At site 5FN2152.1, our survey crews recorded several utility pole stumps and broken glass insulators that appear to predate 1925. A 5-wire high voltage power line now crosses the AGS in an east-west orientation that intersects the older line. The power line may have been installed in the late 1950s since it appears on the 1959 edition of the USGS 15′ topographic map for Black Mountain, but it is not shown on the adjacent USGS 15′ topographic map for Cameron Mountain dating to 1956.

Table 3. Early land records in the AGS region.

Name(s)	Legal Location: most in NM P.M., T51N, R10E (Size)	Issue Date	Land Record (Legal Basis)
Edson Mulock	S½ of SE¼ of Sec. 22; SE¼ of SW¼ of Sec. 22; and NE¼ of NE¼ of Sec. 27 (160 ac)	June 19, 1890	C.E. #1192; BLM Serial # COCOAA 035913; (1820 Act)
William C. Pyle	E½ of SE¼ of Sec. 13; and E½ of NE¼ of Sec. 24 (160 ac)	June 19, 1890	C.E. #1174; BLM Serial #COCOAA 035912; (1820 Act)
Cameron Mines Land and Tunnel	NW¼ of SW¼ of Sec. 25 and NE¼ of SE¼ of Sec. 26 (9.97 ac)	October 10, 1903	BLM Serial #COCOAA 035966; (1866 Act, mineral patent–lode)
Charles B. Eddy and J. A. Eddy	Sec. 22 (37.146 ac)	October 10, 1903	BLM Serial #COCOAA 035964; (1866 Act, mineral patent–lode)
E. L. Terney	Sec. 15 and Sec. 22 (10.24 ac)	May 3, 1904	BLM Serial #COCOAA 035993; (1866 Act, mineral patent–lode)
Hannah Isebel Craig	S½ of NW¼ + NE¼ of SW¼ + 3 lots in Sec. 22; and SW¼ of NW¼ & NW¼ of SW¼ of Sec. 23 (301.57 ac)	June 16, 1920	H.E. #756854 (1862 Act)
Marion D. Shelton	SE¼ of SW¼ of Sec. 1; W½ of NE¼ and NE¼ of NW¼ of Sec. 12 (160 ac)	March 3, 1921	H.E. #798397 (1862 Act)
Ralph Davis, assignee of Paul Walton	SE¼ of Sec. 12 (160 ac)	February 15, 1922	Patent #849053 (1877 Desert Lands Act, as amended 1891)
Mabel Reigel Brown	SE¼ + E½ of SW¼ + SE¼ of NW¼ + 3 lots in Sec. 31 in 6th PM, T15S, R75W; S½ of SE¼ + 4 lots in Sec. 1; and NE¼ of NE¼ of Sec. 12 (631.93 ac)	April 17, 1933	Patent #1062858 (1916 Stock-Raising Act)
Earl Walls Mays	SE¼ of Sec. 23; NW¼ of Sec. 25; and N½ of Sec. 26 (640 ac)	August 12, 1938	Patent #1098430 (1916 Stock-Raising Act)
Lee Anna Everett	W½ + W½ of SE¼ + 1 lot in Sec. 15; NE¼ of NW¼ + NW¼ of NE¼ + 1 lot in Sec. 22; and N½ of NW¼ of Sec. 23 (629.76 ac)	February 25, 1941	Patent #1110520 (1916 Stock-Raising Act)
*State of Colorado	SW¼ of SW¼ of Sec. 1; Sec. 2; Sec. 11; SW¼ & S½ of NW¼ & NW¼ of NW¼ of Sec. 12; W½ of Sec. 13; Sec. 14; NE¼ of Sec. 23; NW¼ & S½ & W½ of NE¼ of Sec. 24 (approx. 2,940 ac)	September 18, 1952	Patent #1136463 (land exchange re: 1934 Taylor Act)

Key to Table 3: *****this was a small portion of a federal exchange of land with the state totaling 17,942.79 ac in Fremont and Park Counties; C.E. = cash entry, sale of public land under federal act of 1820; H.E. = homestead entry, patent on public land under federal act of 1862.

Statement of Objectives

The primary objective of the AGS inventory was to provide supervised field experience for participants in PAAC, as described in the Introduction to this report. Both the field surveying time and site recording experience count as credit toward certification, in two of the six PAAC modules. A second objective was to document as many cultural resources as could be found in the project area, in keeping with one of the objectives of OSAC to inventory land in Colorado, as defined in state law (C.R.S. 24-80-405d). Although there are no publicized plans for development of the AGS, the reported incidents of recent vandalism at 5FN494 also influenced the decision to survey in the surrounding area in order to gather baseline data on cultural resources that can inform and guide future management decisions affecting the parcel. Finally, the survey was intended to add to the very limited database on South Park regional archaeology, generally to explore settlement and lithic landscape topics within a confined portion at the south edge of the park. See Gilmore et al. (1999), Zier and Kalasz (1999), and Simmons and Simmons (1999a, 1999b) for overviews of prehistoric and historic events as known immediately prior to the present survey.

Based on the limited data available at the beginning of the project in 2008, in combination with more general data on mountain archaeology from the author's own experience as well as that summarized in Gilmore et al. (1999), Zier et al. (1999), and Simmons and Simmons (1999a), there was a general expectation that prehistoric site density would be higher both in gentle terrain adjacent to the east-flowing tributaries of Badger Creek and in transitional forest–grassland settings, but lower in heavily wooded areas and in higher terrain farther from the drainages. Open lithic scatters and short-term camps were the primary site types anticipated, with lower expectations rockshelters, habitations, and architectural sites. The prospects for lithic sources and tipi rings were uncertain—previously documented at 5FN494 and in scattered sites east and south of the AGS but of unknown frequency elsewhere. Rock art being entirely unknown in South Park, we expected no new discoveries on this survey. For the Historic period, there was a limited expectation for 18th–19th century Indian encampments with such evidence as metal arrow points, worked glass, and scarred trees. Non-Indian sites were expected to mainly represent the ranching and mining industries with minor evidence for logging, railroading, or other activities anticipated.

Among the research questions of interest at the start of the inventory were:

- Is there any evidence for Paleoindian use of this distant portion of South Park?
- Is there a higher-than-average density of Early Archaic sites at AGS as seen in the Upper Gunnison Basin and Front Range?

- Is there any significant difference in the prehistoric record of the AGS compared to the main portion of South Park north of the Arkansas–Platte River divide?
- Can the prehistoric use of Trout Creek chert be distinguished from tool-making in similar jaspers known to occur in South Park and the Arkansas Hills?
- What evidence for non-local exchange will be found at AGS, such as in obsidian?
- What kind of prehistoric ceramics will be found at AGS, if any?
- Is there any evidence from archaeological sites adjacent to the Antelope Gulch Stone Circles site that the cliff at 5FN494 functioned as a bison jump?
- How prevalent is the vandalism of archaeological sites in areas surrounding the Antelope Gulch Stone Circles site, 5FN494?
- What is the earliest evidence of non-Indian activity in the survey area?
- What is the historical context for the mining features shown in Sections 2 and 11 near the Park County line on the 1994 USGS topographic map for Gribbles Park?
- What are the dominant Historic period activities in the AGS?

Methods

The cultural resources survey of the AGS was accomplished using standard pedestrian tactics to cover the 794 ac (321 ha) block. Inventory transects generally followed ground contours along the narrow ridge crests, ridge slopes, benches, and throughout the forested sections of the AGS. In the lowlands north of and along Antelope Gulch, and on the west side of Badger Creek, sweeps were oriented to the cardinal directions. Crew size ranged from two to six persons (usually three or four), mostly supervised by the author. A second crew was supervised by Mark Mitchell of PaleoCultural Research Group (Broomfield, CO) on June 20–21, 2009 and thereafter by Aaron Theis of OAHP on July 9–14, 2010 and June 21–28, 2011. Spacing between crew members was maintained at 15 m (50 ft), except where closer spacing was needed while inspecting road cutbanks, arroyos, rock outcrops, and other terrain of special interest. In contrast, portions of the steepest slopes (> 25°) in heavily wooded areas south of CR 2 were surveyed with the crew spacing at 20 m. The gap in survey coverage from the south edge of Section 13 through the north half of Section 24 shown in Figure 4 is primarily due to an intervening parcel of federally-owned (BLM) land and to the presence of the steep canyon walls of Badger Creek (Figure 6). The total inventory coverage of 794 ac was computed by Aaron Theis using QGIS version 1.7.

Sites were defined as loci with artifacts and/or features having any of the following characteristics: artifact scatters covering areas more than 30 m in diameter; diverse artifacts indicating the occurrence of multiple activities; any discovery in a

context suggesting the presence of buried cultural material; any prehistoric feature; or any combination of these. Isolated finds (IFs) were defined as loci exhibiting a low diversity artifact scatter or a feature in a confined area less than 30 m in diameter, indicative of a single brief activity with no evidence of buried remains. Modern materials less than 50 years old were not recorded, but the locations of modern dumps, campfire rings, utility lines, fences, survey caps, and other features are noted in Figure 11. Most recorded sites were assigned temporary field numbers starting with the prefix AGS, followed by a year code and a consecutive number. Thus, AGS–08–1 was the first site recorded in 2008, while AGS–10–42 was the 42nd site overall recorded on the project during our third field season in 2010. Isolated finds were similarly numbered with the addition of an IF code with the consecutive number, e.g., AGS–09–IF1. Sites and IFs recorded by the crews of Mark Mitchell and Aaron Theis were temporarily numbered beginning with #101, such as AGS–09–102.

Recording procedures were paced to emphasize volunteer training in filling out forms, drawing sketch maps, and illustrating tools. Manual methods were preferred over the "high tech" recording options widely employed today in order to teach the volunteers the underlying concepts involved in mapping and completing inventory forms. Toward that end, mapping was done with a Brunton compass and tape measure (or by pacing distances when using the tape was not practical), and the compass was typically mounted on a tripod. The tripod is a visual marker for the mapping station shown in many of the site photographs, which was arbitrarily positioned at or near the center of each site. No semi-permanent physical tags such as rebar or incised metal tags were used to mark datum points at any site or IF. All site sketch maps were drawn in reference to true north, using a magnetic declination adjustment of 9º east. The precise declination changed from 9º 25′ east in May 2008 to 9º 3′ east in June 2011 as calculated for the center of the project area using the National Geophysical Data Center's declination calculator on-line at http://www. ngdc.noaa.gov/geomag-web/. Collection of artifacts was limited to a burned bone fragment, a bison horn sheath, lithic material samples, and flaked stone tools including diagnostic projectile points likely to be picked up by "arrowhead hunters," totaling 88 items.

After the first field season, it was evident that the most common prehistoric site types were open lithic scatters (or chipping stations) and lithic sources ("quarries"), dominated by debitage with few or no tools present. In order to maximize the information gathered on debitage characteristics at each site, as well as to standardize the collection of those data by volunteers with a wide range of experience (from absolutely none to many years), a debitage inventory form was utilized as modified from similar forms devised on previous PAAC Survey projects. This form emphasized material type distinctions and flaking stages, as indicated during the first season of

work and updated as needed (Figure 14). It was used as a supplement to the standard OAHP forms filled out at each site (see Appendix III).

All sites and IFs were plotted on the USGS 7.5' topographic map for Gribbles Park, Colorado (1994) based on UTM coordinates determined using simple handheld receivers such as the Garmin GPS II Plus model, which yield uncorrected coordinate values. The GPS units were calibrated to the 1927 North American Datum (NAD 27) to correspond to the grid lines shown on the 1994 quad map. At least one photograph was taken at each site, and at a few IFs, using Kodak T-Max 100 black-and-white print film and/or color digital cameras. Both film and digital images are stored at the OAHP office in Denver, the latter in OAHP's "Digital Image Archive" for Fremont County.

In the lab, collected artifacts were washed, labeled, and catalogued prior to analysis; PAAC volunteers were involved in much of this work, which also was credited toward certification in the PAAC Laboratory module. Building on Jeffrey Ferguson's graduate research at the University of Colorado at Boulder (Ferguson and Skinner 2003), five glassy artifacts collected during the survey were submitted to the Archaeological XRF Laboratory in Albuquerque, NM for source analysis. Four of the items were sourced to obsidian deposits in New Mexico, but the fifth was determined to be a glassy form of iron ore or slag (see Results below and Appendix II; Shackley 1995, 2005, 2012). Selected artifacts among the 88 collected items were photographed; all collected artifacts other than lithic material samples and the bison horn sheath were illustrated as line drawings. All field and lab line drawings of artifacts, and site sketch maps, were inked for inclusion with the final site forms (Appendix III).

Progress reports were submitted annually to the Colorado State Board of Land Commissioners (SBLC), and filed with permit records at OAHP in Denver. Wider dissemination of this information was provided in several conference presentations (Black 2008b, 2009a, 2009b, 2010, 2011; Black and Theis 2011) and was also posted on the PAAC web site at http://www.historycolorado.org/oahp/summer-training-survey. Site forms and the report draft were produced in Word *.doc format at OAHP; copies of all forms and the report were sent to the SBLC district office in Denver. Other report copies, minus the site and IF forms, were distributed to CAS chapter libraries, the BLM office in Cañon City, and the USDA Forest Service office in Pueblo. All project records including field forms, notes, correspondence, lab sheets, negatives, prints, digital files, and data disks are stored at OAHP–Denver.

Figure 14. Example of the debitage inventory form used during the Antelope Gulch survey.

Antelope Gulch Debitage Inventory

Site 5FN_____

Temporary Site # AGS–_____

FLAKE TYPES ☐ 🡻 MATERIALS	Core Reduction Flakes	Thinning Flakes	Finishing/ Maintenance	Unidentifiable Fragments	Angular Debris	TOTALS
Morrison quartzite: **color(s)**						
Coarse quartzites: **brown**						
other color(s)						
Chalcedony: **white/light gray**						
agate [banded]						
moss agate						
other color(s)						
Chert: **gray–dark gray**						
other color(s)						
Jasper: **maroon**						
yellow-brown						
dendritic [*TC]						
Obsidian: **color, inclusions**						
Other material(s): **Basalt**						
Petrified wood						
Siltstone						
Other [specify]:						
TOTALS						

***TC**: material resembles cherts from the Trout Creek source, site 5CF84

Results

Within the inventoried 794 ac of the AGS, a project total of 80 sites and 22 IFs has been recorded, which yields a site density of 64 sites/mi^2. Sites have been assigned permanent site numbers 5FN2152.1, 5FN2337–2351, 5FN2433–2451, 5FN2584–2598, 5FN2601–2609, 5FN2644–2653, and 5FN2659–2669; IFs are numbered 5FN2452–2454, 5FN2599–2600, 5FN2654–2658, and 5FN2670–2681. Of this total, 55 sites and 13 IFs are American Indian sites of prehistoric age, 24 sites have both prehistoric American Indian and Historic period non-Indian components, and one site and nine IFs have only Historic period Euro-American materials (Table 4). Two of the Historic period non-Indian components at largely prehistoric sites would have been recorded as IFs had they been found in spatially separate locations (5FN2341, 5FN2649). Likewise, the very limited prehistoric component at site 5FN2668 would have been recorded as an IF were it not associated with more extensive Historic period materials. None of the newly recorded sites or IFs have definitive evidence of Historic period American Indian components, although site 5FN2345 may have a culturally peeled tree and there is speculation that the stone circles at 5FN494 could be of such a young age (Tucker 2001:15). Overall, then, 99% of the sites and 59% of the IFs contain evidence of American Indian activities of various dimensions.

Affiliation & Chronology	*Sites*	*IFs*
American Indian, prehistoric (pre-AD 1600)	55	13
Non-Indian + prehistoric American Indian	24	0
Non-Indian	1	9

Table 4. Affiliation and chronology of recorded sites and IFs at Antelope Gulch.

The Sites

5FN2337 (AGS–08–1) is a debitage scatter and jasper source on a sloping ridge at the edge of a saddle, high above and east of Badger Creek in the far southeastern portion of the surveyed area. Material is widely scattered except for two concentrations next to rock outcrops near the saddle. One concentration is very dense, primarily consisting of jasper thinning flakes and flake fragments. The second is much smaller, a mix of light-colored chert and chalcedony flakes. A sizable majority of the nearly 200 observed flakes are unidentifiable flake fragments, partly due to use of locally available jasper of average quality, and partly due to heat alteration. One small (5 m diameter) jasper outcrop at the north edge of the site is of higher quality, and is a visually attractive banded material occurring as a broken-up lens within the Fremont

Dolomite formation (Figure 15; see Wallace et al. 1999). No tools were observed, and no features other than the two concentrations are present. The best potential for buried material is on the saddle below the rock outcrop. The site is evaluated potentially eligible for the National Register of Historic Places (NRHP).

Figure 15. Close-up of jasper flakes from 5FN2337, showing variability in the visual attributes of the naturally occurring toolstone at this site.

5FN2338 (AGS–08–2) is located northwest of 5FN2337 near the crest of a ridge, and contains both prehistoric and historic components. The prehistoric portion of the site is an open lithic scatter consisting of core reduction and thinning flakes of jasper, chert, and chalcedony. Native jasper occurs in the Fremont formation at the site—especially on the east and southeast sides—but flake density across the site is low overall and this suggests the outcrop here was not a significant source of material in the past. No tools or features were observed, and the potential for buried material is likely very low.

The Historic period component consists of mineral exploration features: three prospector's pits and one probable prospector's trench. These are on two edges of an open area, which also contains the prehistoric lithic scatter. The open area is surrounded by ponderosa pine, spruce and Douglas-fir. A few sagebrush grow in the open area. The three prospector's pits are aligned along the eastern boundary of the site, just before a drop-off. These pits have fairly large trees growing out of their centers. The trench is at the western edge of the site. It contains a modern cache covered with a blue-gray tarp and branches. Spoil piles are present and have trees growing within them. No artifacts are associated with the pits other than modern trash. A modern round fire box, enclosed by a larger stone ring, has been built approximately 47½ feet west of the row of prospector's pits. A cleared area exists between the wall and the fire pit.

Given the lack of associated artifacts, it is difficult to estimate the age of the prospecting here. To the north and northwest, copper-silver deposits have been identified in the Kerber (Lower Pennsylvanian) and Sharpsdale (Middle Pennsylvanian) formations. A number of prospect pits and several mines in these areas were developed. Mineral patent dates in the region cluster between 1898 and 1908, with a few later patents between 1912 and 1928. It's also possible that the prospecting is related to the slightly earlier activity associated with the gold rush to Cripple Creek. Both components of this site are evaluated not eligible for the NRHP.

5FN2339 (AGS–08–3) is an open lithic scatter or hunting station located on two benches of a ridge west of Badger Creek. Six tools and nearly 250 flakes were documented. Locus A and Locus B are spatially distinct scatters separated by the slope between the two benches. Locus A on the lower bench is more extensive; it contains two projectile points (collected, FS–1 and FS–2), a biface fragment, and a jasper flake concentration at the foot of the slope leading up to Locus B on the upper bench. Locus B yielded some debitage and three tools, including a biface tip, a point or knife base of dendritic jasper, and a hammerstone. Jasper dominates as the most common material on the entire site, along with lesser numbers of other cherts, chalcedony, and quartzite. Most flakes were unidentifiable fragments but the remainder represents early and intermediate stage core reduction and thinning activities. There is a good potential for buried material in both loci. Diagnostic points suggest multiple occupations dating to the Early Archaic and Developmental periods (Figure 16). The site is evaluated eligible for the NRHP.

5FN2340 (AGS–08–4) is an open lithic scatter or chipping station with several tools, located on a slope overlooking the wide Badger Creek valley to the east. Yellow-brown dendritic jasper flakes, comparable to the Trout Creek jasper source but more likely of local origin, are by far most common here among the nearly 200 pieces of

debitage. Two concentrations of flakes were documented about 20 m apart with a small bench between them. Artifacts found in addition to the flakes were all non-diagnostic: a knife, a biface tip, hammerstone rejuvenation flakes, and a chert core. Although more flakes may lie buried just below the surface, slope wash and gullying are negatively impacting the site's physical integrity. The site is evaluated not eligible for the NRHP.

Figure 16. Diagnostic tools collected at site 5FN2339 date to the Archaic period (5FN2339–1 at left; 5FN2339–2 at right).

5FN2341 (AGS–08–5) is an open lithic scatter or hunting station along with a single historical artifact, located along the southeast side of the ridge a short distance

south of 5FN2340. It consists of a dispersed lithic scatter within which are a couple of small artifact clusters. One such cluster is below a rock outcrop on the southeast edge of the site where a scraper and a biface (collected, FS–3) were found. A second small cluster near the center of the site yielded a projectile point base (collected as FS–1). In addition, a projectile point tip was found on the northeast edge of the site (also collected, FS–2). These materials suggest multiple occupations in the Early Archaic and Late Prehistoric (Developmental or Diversification) periods. Debitage is mainly maroon jasper followed by a mixture of brown and yellow chert. Flakes are about evenly distributed between core reduction and thinning flakes representing the early and intermediate stages of tool manufacture. No artifacts were seen in the backdirt piles from rodent disturbance, indicating little probability of buried material.

The Historic period component here is limited to a single tinned can, which would represent an Isolated Find if not for its location within the southern edge of the prehistoric lithic scatter component. The tin can was found near a dolomite outcrop with many jasper and chert lithics scattered nearby. The can has a wide soldered side seam, measures 4½" high × 3" in diameter, and likely held solid contents given its large opening in the lid. Such tinned cans predate ca. 1920–1925. Both components of this site are evaluated not eligible for the NRHP.

5FN2342 (AGS–08–6) is an open lithic scatter situated on the same narrow, undulating interfluvial ridge west of Badger Creek, northwest of and above 5FN2341 (Figure 17). Artifact density is somewhat low with little apparent potential for intact buried material given the lack of artifacts observed on the numerous rodent backdirt piles present on the ridge. Flaked stone materials are dominated by jasper and various colors of chert, with several flake clusters representing reduction of a single material. All stages of tool manufacture are present in the debitage with intermediate stage thinning flakes and unidentifiable flake fragments most common. Two jasper core fragments have been observed here, but no diagnostic artifacts are present and only one tool has been noted: a chert utilized flake. No features have been observed as the small flake clusters are too limited to be considered artifact concentrations. The site is evaluated not eligible for the NRHP.

5FN2343 (AGS–08–7) is a small and sparse lithic scatter or chipping station on a narrow, rocky interfluvial ridge directly upslope (SW) of 5FN2342. Only 11 total flakes have been observed here, all of maroon or yellow-brown jasper in solid, banded, or dendritic variations. These flakes represent early and intermediate stages of tool manufacture, as is typical of most sites in this area. Also present are untested cobbles of jasper and quartzite; no evidence of procurement activity is present here. No tools or features have been found. The soil is quite shallow with extensive bedrock outcrops of dolomite and quartzite, so the potential for buried material is

minimal. Disturbances include past logging along with continuing animal activity. The site is evaluated not eligible for the NRHP.

Figure 17. Site 5FN2342 extends from the crest of the ridge at left to large boulder outcrops on the ridge slope at right. The view is to the east-northeast.

5FN2344 (AGS–08–8) consists of an open flaked and ground stone scatter located between two narrow interfluvial ridges west of Badger Creek, bisected by an incised dry wash. The site extends down the wash into open grassland, and upslope in other directions onto wooded slopes and benches. A limestone ledge is a distinctive landscape feature north of the wash at the forest-grassland border. Artifact density is high overall with one concentration defined in the southeastern part of the site. Near and below this concentration, artifacts are exposed in the banks of the wash up to 60 cm below surface, showing great potential for intact buried material (Figure 18). A thermal feature of fire-cracked rock (FCR) and charcoal-stained soil is also present at the edge of the wash just upstream from the concentration. Flaked stone materials are heavily dominated by jasper, with chert, chalcedony, agate, and quartzite also present. All stages of tool manufacture are present in the debitage with intermediate-stage

thinning flakes and early-stage core reduction flakes most common. Several tools have been observed here including a mano, scrapers (two collected, FS# 1–2), bifaces, unifaces, a flake tool, and one diagnostic artifact (collected, FS# 3): an arrow point blade—probably corner-notched—dating to the Developmental period ca. AD 200–1000. Tool distribution is widespread on the site, including within the artifact concentration. The site is evaluated eligible for the NRHP.

Figure 18. Artifacts are exposed in the eroding banks of a gully at site 5FN2344 as flagged in the foreground of this view to the south-southwest.

5FN2345 (AGS–08–9) is an open multi-component prehistoric and historic site scattered down a narrow, sloping ridge at the forest margin northeast of 5FN2344, northwest of 5FN2340, and south across a wash from 5FN2349. The prehistoric component is a camp with a lithic concentration feature occurring in the upper reaches near the forest margin. The feature is a concentration of gray chert flaked stone artifacts and one groundstone item. The denser scatters of artifacts are concentrated along the ridgeline with less dense materials on the upper east slope, and even sparser finds on the western slope and lower north slope. All stages of flake

stone tool manufacture are represented with thinning flakes most common, followed by unidentifiable fragments, then similar numbers of core reduction flakes and finishing flakes; angular debris is only present in minimal numbers. A variety of materials formed the debitage with jasper being most prevalent, followed by chert. A single core of yellow jasper also was found on the western slope.

A majority of flaked stone tools show expedient manufacture. An unusual burinated flake disk of jasper was found on the lower north-facing slope. Three biface fragments and one uniface fragment with bifacial edge retouch also were found, all but one biface made of jasper. A single unifacial mano of a grey sandstone-like material was the only groundstone artifact found at the site. No diagnostic artifacts were found so the time period(s) of occupation is not known, but the quantity and diversity of artifacts found indicate multiple periods may be represented here. The highest potential for buried material is in the upper portion of the ridge in deeper soils, away from bedrock outcrops.

The historic component consists of a possible peeled tree, two pits dug for mineral prospecting, and one 20 m diameter area of possible mineral prospecting located in a hummocky area with rodent disturbance at the northeast end of the site. The possible peeled tree (Figure 19) is located at the southwest edge of the site and, if truly representative of cultural harvesting of ponderosa pine bark, would be the only Historic period evidence of American Indians in the surveyed area. The scar measures 110 cm L × 25.5 cm W and is located on the lower trunk beginning 48 cm above ground level. A faint cut or chop mark is oriented diagonally in the lower portion of the scar, but does not coincide with the bottom end. The scar has the size and positioning on the trunk one would expect for such features (see Martorano 1988:8–13, 1999:159–160). However, the scar converges to a sharp point on each end; culturally peeled trees usually display one straighter edge next to axe cut marks and/or a jagged edge where the bark was torn away. Also, the bark below and particularly above the scar is vertically cracked beginning at the apex of each pointed end. Although lightning-caused scars may have a spiral form down the truck, they can be straighter as is the long crack in the bark on this tree. Thus, the cultural origin of this scarred tree feature is equivocal.

The two definite prospect pits are in the east central site area and are dug into dolomite—probably the Dyer member of the Chaffee formation—on the lower east side of the site ridge line. The 3rd zone located in the hummocky area also is dug into dolomite which may suggest additional prospecting activity. Prospect pit #1 (P1) is highest on eastern side of the ridgeline below the tree margin and does not have an obvious spoil pile. There are wood remnants scattered inside the pit. The generally circular depression here measures 2.2 m east-west × 2.4 m north-south from rim to

rim. The distance from this feature to Pit #2 (P2) is 27 m. Pit #2 is a prospect with a more distinct spoil pile, located close to the bottom of the ridge slope on the east side above a rocky dolomite outcropping. The circular depression here measures 2.6 m × 2.9 m. Its spoil pile measures 3.4 m at its widest point and 5.2 m in length including the lower section that has evidence of washing down hill. Feature P2 is 35 m south of Feature #3 (P3), the latter located near the toe of the ridge in the hummocky area with abundant rodent disturbances. The terrain in P3 is suggestive of several overlapping prospect pits, however it is uncertain whether these depressions are of cultural or natural origin. Dimensions of this area are 20 m × 22 m. As is true of other mineral prospecting locations in the AGS, the range of dates here is estimated at a maximum of AD 1860 to 1930, more likely post-1890. This Historic period activity at the site is not significant, but the prehistoric component is evaluated potentially eligible for the NRHP.

Figure 19. This scar on a ponderosa pine at 5FN2345 has many of the characteristics of bark harvesting features, but has a pointed shape on both ends from which a long crack extends high up the truck.

5FN2346 (AGS–08–10) is another open, multi-component prehistoric and historic site, located on a lower slope on the west side of Badger Creek where a high voltage transmission line runs in a NW-SE direction. Within the prehistoric component, there are five spatially separated activity areas defined by flaked stone artifacts and a few chert cores. Various jasper materials, chert, and chalcedony form the bulk of the tools and flaked stone debitage observed. The higher percentage of core reduction and thinning flakes found in the debitage assemblage suggests this area was used primarily for early and middle stages of lithic tool manufacture. All five of the cores were found along the crest of the ridgeline. Four of these cores were found in two pairs. The general site location on a high point of ground with a good view of

the surrounding area may indicate that this site was used, also, as a hunting station. Among the four tools documented was a single diagnostic item: a maroon jasper projectile point base of likely Cody complex affinities suggesting this area has been utilized as a lithic manufacturing area over a long period of time. A single piece of ground stone in the form of a unifacial mano also was found, which indicates occasional use of the area for floral resource gathering and processing. Fragments of a biface and a uniface round out the modified flaked stone artifacts observed. Both the surface remains and the presence of artifacts on rodent backdirt suggesting buried material lead to an evaluation that the site is potentially eligible for the NRHP.

5FN2347 (AGS–08–11) is an open lithic scatter and lithic material source located on the toe of a ridge adjacent to and above Fremont County Road 2. There is a low quality chalcedony lithic source located on the lower southeast side of the site, represented by sparsely distributed, small nodules of white- to gray-colored material containing numerous cracks and impurities. This area is mapped at the boundary of the Leadville Limestone on the upper slope and the Kerber formation on the lower slope (Wallace et al. 1999); the chalcedony probably originates in the Kerber formation. Almost two thirds of the flaked stone material found at the site is this chalcedony with a lesser amount of chert and a few jasper flakes. Half of the core reduction flakes found at the site are of chalcedony, which indicates probable use of local materials and that this site was used to gather the source material for stone tools. However, chalcedony is uncommon on nearby sites, so the raw material here was not of significance in the larger area. Two-thirds of the thinning flakes found at the site are chalcedony, with a few thinning flakes of chert and jasper. No finishing flakes were found, which indicates that this site was used primarily in the early and intermediate stages of tool manufacture. Due to a lack of diagnostic artifacts, the site age or time period for use remains unknown. Both the presence of exposed bedrock and the low density of artifacts despite high ground visibility indicate a low probability of buried material. The lack of tools further indicates limited site use as a chipping station. The site is evaluated not eligible for the NRHP.

5FN2348 (AGS–08–12) is an extensive flaked stone scatter—perhaps a hunting station—located on a broad, northeast-sloping interfluvial ridge west of Badger Creek, northwest of a dry wash. The site contains two concentrations of artifacts, each with tools. Concentration A is on the higher, more level ground at the southerly edge of the site near (10–15 m below) limestone exposures at a low cliff, and exhibits a bifacial preform fragment and two flake tools. Concentration B is on a moderate slope toward the north edge of the site, and yielded one diagnostic artifact (collected, FS# 1): a stemmed arrow point with an impact-fractured tip, probably dating to the Developmental period ca. AD 200–1000. One other biface fragment was observed near the site center between the two concentrations. Flaked stone materials on the site

are very heavily dominated by jasper with chert, chalcedony, and quartzite also present in much smaller quantities. All stages of tool manufacture are present in the debitage with intermediate-stage thinning flakes most common by far. About 10% of the flaked stone shows evidence of thermal alteration, probably from natural fire events. There is a moderate potential for intact buried material based on artifact proveniences near rodent burrows. The site is evaluated eligible for the NRHP.

5FN2349 (AGS–08–13) consists of both prehistoric and historic components, the former of which is an open lithic scatter situated on a broad, sloping interfluvial ridge west of Badger Creek. Most artifacts are widely scattered on the southeast-facing ridge slope with a few items extending up onto the ridge crest and a few others down onto the toe of the ridge slope near a dry wash. Artifact density is low overall with little apparent potential for intact buried material given the lack of artifacts observed on the numerous rodent backdirt piles present on the ridge. Flaked stone materials are heavily dominated by jasper along with a few artifacts of chert, chalcedony, and a single obsidian tool. Most stages of tool manufacture are present in the debitage with intermediate-stage thinning flakes and early-stage core reduction flakes most common. Although no diagnostic artifacts are present, five tools have been noted: three jasper biface fragments, an edge-modified flake tool of chalcedony, and an obsidian end scraper (collected, FS-1). The obsidian material has been sourced to the El Rechuelos locality in northern New Mexico (a.k.a. Polvadera Peak; see Appendix II). No prehistoric features have been observed on the site.

The entirety of the Historic period component consists of two prospect pits about 6 m apart, located at the southeast foot of the interfluvial ridge (Figure 20); these pits are at the eastern edge of the prehistoric lithic scatter described above. The northern-most pit measures 1.8 m × 2.6 m in diameter and 0.6 m deep, with a low spoil pile of soil and white quartz rocks immediately adjacent. The second pit to the south-southwest has dimensions of 2.0 m × 1.3 m in diameter and estimated 0.2 m deep based on the low volume of material in the adjacent spoil pile; large white quartz boulders have partly backfilled this pit. No artifacts are visible on the surface, although on the southeast side of the southern prospect pit is a peeled log 2.3 m long and 12 cm in diameter. The age of this component is unknown and could date as early as the Gold Rush era ca. 1860–1880. More likely, however, it may date to the slightly later period 1890–1930, based on the beginning date for the Cripple Creek gold rush that brought thousands of prospectors to the area and on mineral patent dates of 1898–1928 for the mining of silver-copper ores in red bed formations to the north and northwest of the project area (even though the geological context here differs significantly from the red bed localities). This site is evaluated not eligible for the NRHP.

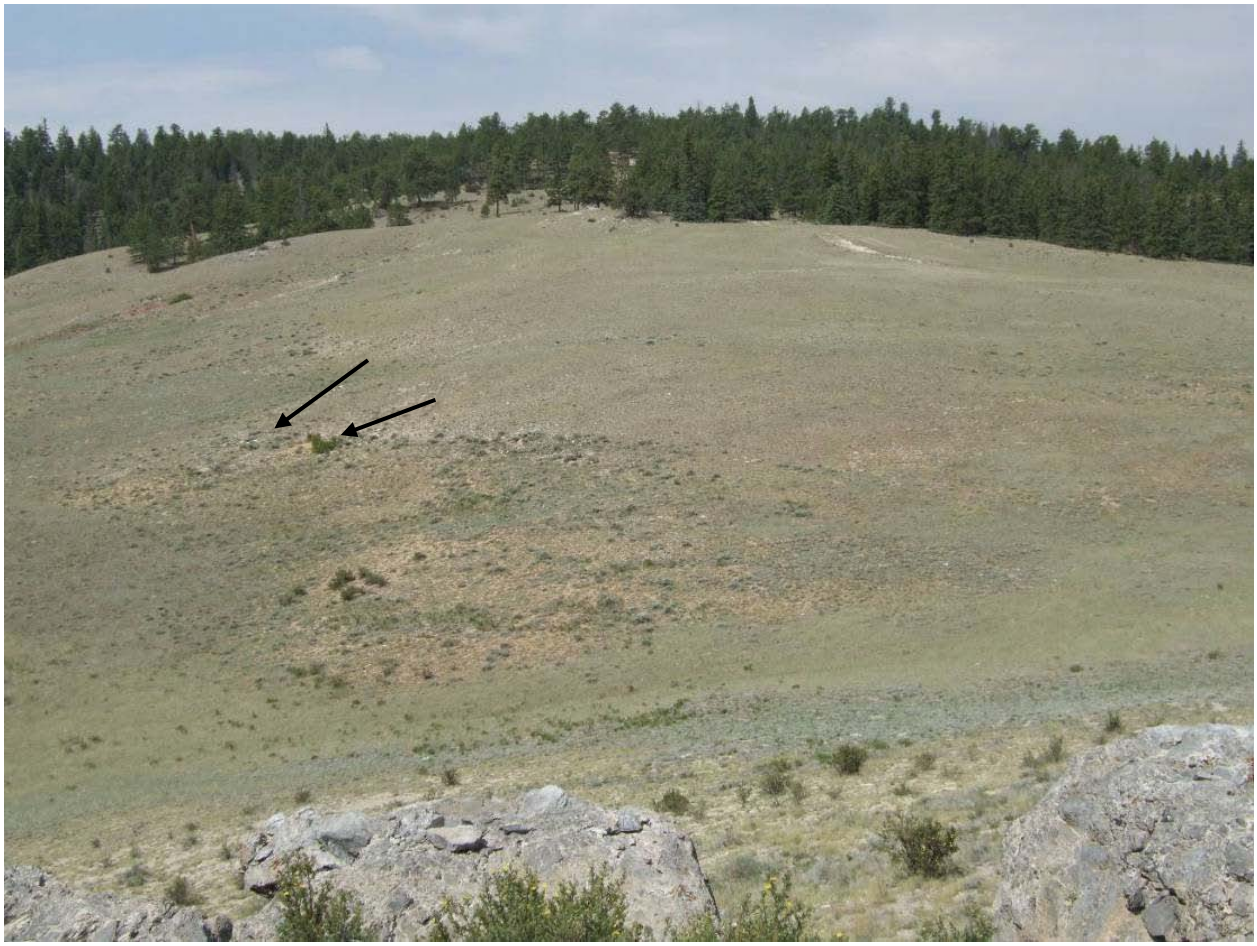


Figure 20. The two prospect pits at 5FN2349 are shown on the ridge slope in this site view to the west-southwest.

5FN2350 (AGS–08–14) also has prehistoric and historic components, and is located on a bench directly upslope (southwest) of 5FN2349. The prehistoric component is an open lithic scatter or hunting station that exhibits a 15 m diameter artifact concentration. A shallow drainage begins midway up the bench in the eastern part of the site, becoming more defined at the lower east edge of the site. The artifact concentration surrounds this drainage on both sides at the top of the site and narrows to the drainage itself towards the bottom of the site. Jasper is the predominant material, and thinning flakes are the most common flake type in the concentration. Flakes found outside the concentration are also predominately jasper, but core reduction flakes are more common in these areas. Compared to other nearby sites, the artifacts here are in better physical condition (i.e., there are relatively few flake fragments and a lower percentage of thermally altered specimens), possibly indicating a younger site age. A dark yellowish-brown jasper biface fragment was located on the southern edge of the artifact concentration, and a white chalcedony projectile point was located adjacent to the north edge of the artifact concentration (collected, FS-1).

The projectile point is a Desert side-notched arrow tip, indicating a Diversification or Protohistoric period occupation ca. AD 1300–1800. This prehistoric component is evaluated potentially eligible for the NRHP.

The Historic period component is a camp, possibly related to logging activity. The logging endeavor is evident from a small number of sawn logs and stumps, and the camp activity is represented by small stoneware and glass fragments, can fragments, and a few nails. There is also evidence of some kind of construction; a few metal strap pieces and milled wood are scattered about. The artifact density is fairly light with fewer than 60 items in total recorded. There is also a modern campfire feature just outside the historic site boundary. There is little to no archaeological potential for this component due to its low artifact density and small diversity of artifacts. Similar areas with tree stumps occur throughout the forested areas within the AGS. Thus, the historic component does not contribute to the NRHP eligibility of the site.

5FN2351 (AGS–08–15) is an open lithic scatter bisected by an eroding jeep trail, located directly west of 5FN2350 on a higher section of the sloping ridge in a sparse pine woodland. The lithic scatter to the north of the road is predominantly composed of small, biface thinning and finishing flakes. A concentration of flakes measuring 15 m × 8 m also is in this area, and is the only feature on the site. The scatter south of the road consists mostly of core reduction flakes and large thinning flakes. These materials occur above and below a low bedrock ledge that roughly parallels the road and helps define the crest of the ridge. Jasper, in some form, comprises 93% of the material types. One grey chert core was found at the far south end of the site, and one very small fragment of a yellow chalcedony biface that appears to be a portion of a tip also was observed. No diagnostic lithics were found. Although almost 200 artifacts have been documented here, the potential for buried archaeological materials is quite low and the surface assemblage has been moderately damaged by a variety of natural and modern cultural processes. This site is evaluated not eligible for the NRHP.

5FN2433 (AGS–09–16) is an open camp—a flaked and ground stone scatter on a small, wooded pass between Steer Creek and Badger Creek. There are three main clusters of artifacts, exhibiting a maximum density of four items per m^2. The easternmost cluster below the ridge crest contains a non-diagnostic, but very well-made, projectile point tip. The central site cluster constitutes more of a concentration of lithic materials, just north of which is a cluster of fire-cracked rock (FCR)—one being a fragment of ground stone, probably a piece of a cooking slab. Flaked stone materials are heavily dominated by jasper along with a few artifacts of chert, chalcedony, and quartzite. All stages of tool manufacture are present in the debitage

with intermediate-stage thinning flakes and unidentifiable flake fragments most common. One chert core and several core reduction flakes represent early stages of tool manufacture. The potential for intact buried material is spotty given the prevalence of bedrock outcrops on the ridge, but pockets of sediment accumulation between the outcrops could be tested for such subsurface deposits. The site is evaluated potentially eligible for the NRHP.

5FN2434 (AGS–09–17) has both prehistoric and historic components. The prehistoric component consists of an extensive flaked stone scatter on an undulating ridge bisected by a jeep trail. The only feature observed is a concentration of jasper thinning flakes near a small bedrock knoll, containing a maximum density of 20 items per m^2. No diagnostic artifacts have been found here, perhaps in part due to evidence of past artifact collecting in the form of a collector's pile of flakes placed on a rock. Tools observed include a quartzite chopper and two production stage bifaces; one other quartzite rock slab is a manuport of uncertain function. Flaked stone materials are heavily dominated by jasper with only rare artifacts of chert, chalcedony, and quartzite observed. All stages of tool manufacture are present in the debitage with intermediate-stage thinning flakes, unidentifiable flake fragments, and angular debris most common. The potential for intact buried material is clearly good with flakes found in disturbed soils at a wind-thrown tree, around rodent backdirt piles, and in the berm of a jeep trail.

The entirety of the Historic period component consists of one isolated prospect pit found near a modern slash pile and next to the jeep trail; this pit is within the central portion of the prehistoric lithic scatter described above. The pit measures 2.5 m × 2.0 m in diameter and 0.5 m deep, with a low spoil pile of soil and rocks immediately adjacent to the southeast—a piñon pine tree is growing out of these tailings. No artifacts are visible on the surface; the age of this component is unknown and could date as early as the Gold Rush era ca. 1860–1880. More likely, however, it may date to a later period 1890–1930, based on the beginning of the Cripple Creek gold rush that brought thousands of prospectors to the area and on mineral patent dates of 1898–1928 for the mining of silver-copper ores in red bed formations to the north and northwest of the project area. The site is evaluated potentially eligible for the NRHP.

5FN2435 (AGS–09–18) is a very sparse flaked stone scatter or hunting station near the crest of a broad, bench-like ridge northeast of Steer Creek. Although a little quartzite outcrops here, there is no evidence of procurement activity. No artifact concentrations occur on the site, nor are any other features present. The only tool found is a side-notched arrow point fragment (collected, FS-1) diagnostic of the Diversification period. The very limited debitage observed is all jasper, mostly

intermediate-stage thinning flakes along with a few core reduction flakes representing the early stage of tool manufacture. Most of the lithics observed on the site show the effects of excessive thermal alteration in the form of crazed and potlidded surfaces. Natural fires through the surrounding forest are likely responsible. The potential for intact buried material is very low given the sparse nature of the scatter in spite of good ground visibility, therefore the site is evaluated not eligible for the NRHP.

5FN2436 (AGS–09–19) is another multi-component prehistoric and historic site. The prehistoric portion of the site consists of an extensive flaked stone scatter plus one ground stone artifact on a ridge-like bench bisected by a jeep trail, where the bench begins to broaden to the northwest. There are three clusters of flaking debris present, including one concentration of flakes exposed in the disturbed berm of the jeep trail, suggesting the presence of a buried cultural deposit. Sparser flake clusters occur near some fire-oxidized rocks at the northeast end of the site area, and with the single piece of ground stone (a cooking slab fragment) in the south-central site area east of the jeep trail. No diagnostic artifacts have been found here, but one edge fragment of a production-stage biface has been observed. Flaked stone materials are heavily dominated by jasper with far fewer artifacts of chalcedony, quartzite, and obsidian (one flake) present. All stages of tool manufacture are present in the debitage but unidentifiable flake fragments are very abundant, in part due to damage from natural fires.

The Historic period component consists solely of one isolated prospect pit located next to a jeep trail; this pit is at the south end of a prehistoric lithic scatter described above. The pit measures 3.0 m × 2.6 m in diameter and 0.5 m deep, with a 25 cm high spoil pile of soil and rocks immediately adjacent to the northeast spread over an area 4 m long and 3 m wide. No artifacts are visible on the surface; the age of this component is unknown and could date as early as the Gold Rush era ca. 1860–1880. More likely, as at 5FN2349 and 5FN2434, the prospecting here could date to the period 1890–1930, based on the beginning of the Cripple Creek gold rush that brought thousands of prospectors to the area and on mineral patent dates of 1898–1928 for the mining of silver-copper ores in red bed formations to the north and northwest of the project area. The prehistoric portion of the site is evaluated potentially eligible for the NRHP.

5FN2437 (AGS–09–20) consists of a flaked stone scatter on the crest of a broad, bench-like ridge northeast of Steer Creek. The scatter is in a currently very open pine forest, but many stumps from past logging indicate the forest here was denser in the past. No concentrations of artifacts occur on site, nor are any other features present. Three tools found here include a large side-notched projectile point fragment (collected, FS-1) diagnostic of the Early Archaic period, a small corner-notched arrow

point fragment (collected, FS-2) from the Late Prehistoric period, and a composite knife-scraper (collected, FS-3); one early production stage biface and a small unifacial perform also have been documented. The debitage observed is dominated by jasper flakes representing all stages of tool manufacture, along with much smaller numbers of chalcedony, chert, and quartzite flakes. Two of three cores found here also are of local jasper. Natural fires have burned many of the lithics present at the surface. The potential for intact buried material is considered low given the sparse nature of the scatter in spite of good ground visibility and extensive rodent disturbance. The site is evaluated not eligible for the NRHP.

5FN2438 (AGS–09–21) is an open camp site: an extensive flaked and ground stone scatter on an east-sloping spur ridge northeast of Steer Creek, traversed by a jeep trail. Within the scatter are four concentrations of artifacts, labeled A-D. Cluster A is in the northern part of the site at the edge of the ridge and exhibits cores, flakes, a scraper (collected, FS-1), a cooking slab fragment, and six small fragments of one ground stone artifact (probably a mano). Cluster B is on the upper end of the site to the west, and is dominated by debitage—particularly, biface thinning flakes. Cluster C is partly exposed in the southern berm of the jeep trail, and contains two jasper scraper fragments, a core, and an obsidian flake along with some debitage. Cluster D defines the southeastern edge of the site on a moderate slope and, like Cluster B, is dominated by thinning flakes. One jasper core tool is among the sparse material scattered between the artifact concentrations. Site-wide, the debitage observed is predominately jasper flakes representing all stages of tool manufacture, along with much smaller numbers of chalcedony, chert, and obsidian. The observed tools suggest probable plant and animal resource processing, cooking, and related short-term camp activities. Natural fires have burned many of the lithics present at the surface. The potential for intact buried material is moderately high given the presence of artifacts in the disturbed soils at the edge of the jeep trail. But the age(s) of the occupation(s) is unknown due to the present lack of diagnostic materials. The site is evaluated potentially eligible for the NRHP.

5FN2439 (AGS–09–22) is an extensive flaked stone scatter on an eroding, northeast ridge slope between Badger Creek and Steer Creek. Many artifacts are found within shallow gullies, in a few instances in significantly elevated numbers. Out of over a hundred artifacts documented on site, five tools were noted including two core-hammerstones, two fragments of a mano or hide-rubbing tool, a production-stage biface, and a flake tool. The only feature recorded was a flaked stone concentration in the northwest part of the site. The debitage observed is dominated by jasper flakes representing all stages of tool manufacture, along with smaller numbers of chalcedony, chert, quartzite, silicified sediment ("Morrison formation quartzite") and quartz crystal flakes. Many of these materials show damage from

naturally occurring fires. In addition to the debitage, the artifact concentration also contains several pieces of burned sandstone indicating the former presence of at least one thermal feature. The potential for intact buried material is considered low given the degree of slope erosion and clear horizontal displacement of many artifacts. No diagnostic artifacts occur to suggest which period(s) of occupation may be represented. The site is evaluated not eligible for the NRHP.

5FN2440 (AGS–09–23) is a multi-component prehistoric and historic site. The prehistoric portion of the site consists of an elongated flaked stone scatter plus one ground stone artifact on a narrow, northeast-sloping alluvial terrace on the northwest side of an incised, dry wash. Unlike nearby sites, there are no concentrations of artifacts visible at the surface here, but items found at the eroding edge of the terrace suggest the presence of buried cultural deposits, which could be as much as 1 m deep given the amount of down-cutting represented in the cutbank of the wash. The single piece of ground stone found is a bifacial mano fragment at the edge of the wash cutbank. No clearly diagnostic artifacts have been found here, but one fragment of a late stage biface has been observed—possibly an arrow point preform, which would indicate at least one Late Prehistoric period component is represented. Flaked stone materials are heavily dominated by jasper with far fewer artifacts of chalcedony and quartzite observed. All stages of tool manufacture are present in the debitage, but small finishing flakes from the final stages of tool manufacture are very abundant.

The Historic period component consists of an isolated log foundation or enclosure—possibly a pen or corral for sheep—on a northeast slope just above the dry wash, and at the southwest end of the prehistoric lithic scatter described above. Logs of the feature are rotted, measure 2–6 inches in diameter, and are of unidentified conifers (the local growth is Douglas-fir, Engelmann spruce, and ponderosa pine). Perhaps 2–3 courses of logs define three of four walls forming a 12 foot square, embedded in the ground following the slope, not cut-and-fill (Figure 21). The entry may be in the southwest portion of the northeast (down hill) wall. No artifacts are visible on the surface; the age of this component is unknown but could be as early as 1860–1890. Although the field crew described the feature as a possible tent platform, a small animal enclosure is more likely (Richard Carrillo and Jonathon Horn, personal communications 2013). The site is evaluated potentially eligible for the NRHP.

5FN2441 (AGS–09–24) is an open lithic scatter below (north of) 5FN2442, located on an 8° ridge slope with a northeast aspect. The slope is eroding and the soil is shallow, limiting the potential for good provenance and for buried materials. Thermal alterations in the form of potlidding and spalling are present on the lithics from repeated natural fires in the area. Artifact density on the site is low; with the highest density of $5/m^2$ in the lower northeast area. The majority of the lithic material

is maroon jasper, which occurs naturally in the area. The local occurrence of this raw material could account for the dominance of angular debris in the debitage count. However, all stages of tool production are present, indicating that tools were produced at the site. Two cores, one flake tool, and one diagnostic bifacial arrow point preform fragment from the post-Archaic era (collected, FS-1) are the only non-debitage artifacts found on the site. This site is evaluated not eligible for the NRHP.

Figure 21. View to the west at the possible pen or corral with deteriorating logs at 5FN2440.

5FN2442 (AGS–09–25) is an open lithic scatter on a gently sloping ridge with some bedrock outcrops, located between 5FN2440 to the southeast and 5FN2441 to the north. The overall lithic density of most of the site is sparse, with the exception of a 16 m × 4 m concentration of very high density near the center of the site. There are pockets of shallow soil development, including this area of highest lithic concentration, that have potential for buried material. Dendritic and maroon jasper dominate the lithic material but chalcedony, chert, and agate are also present. All phases of tool production are represented, with intermediate stage thinning flakes being most prevalent. There are some very small resharpening flakes, indicating tool maintenance.

One chert manuport also was found, along with one scraper with use wear indicative of work on a relatively hard material, and one biface midsection from a projectile point or knife. No diagnostic artifacts were found or any other evidence to date the site. It is evaluated as potentially eligible for the NRHP.

5FN2443 (AGS–09–26) is an open lithic scatter or chipping station on a fairly steep north-facing slope northwest of, and slightly lower than, site 5FN2441. The generally sparse flake scatter here contains a small artifact cluster near the southwest boundary. Overall, the debitage assemblage is dominated by jasper. Although there are no wind-thrown tree wells or other soil disturbances to verify, the soil depth appears to be shallow base on the gravelly, rocky surface. Along with the evidence of slope wash, there is a low potential for intact buried material. All tool production stages are represented, but the early to middle stages of manufacture are dominant in the debitage. The small artifact cluster consists of one secondary flake blank of jasper, one biface tip of chalcedony, and about ten jasper thinning flakes within a little over 1 m^2 area. Near the northeast edge of the site, there is a quartzite core fragment and a jasper biface blank. No diagnostics were found to indicate age of occupation. The site is evaluated not eligible for the NRHP.

5FN2444 (AGS–09–27) contains both prehistoric and historic components. The prehistoric component is an open camp and lithic material source located on a gently northeast-sloping bench, south of and above site 5FN2447. The upper (southern) site boundary is above the bench on a moderately-dipping slope. The only site feature is an artifact concentration centered on a low bedrock outcrop of Fremont Dolomite in the central part of the site area. The rock outcrop served as a local source of jasper raw material for flaked stone tool manufacture, with the concentration consisting mostly of maroon jasper core reduction flakes, angular debris, unidentifiable fragments, and thinning flakes. Although the primary raw material present was maroon jasper, some yellow-brown jasper also was noted. The poor quality and low quantity of raw material currently present at the outcrop seems to indicate that ancient flintknappers were "high grading" the jasper deposit, utilizing the best material for tool manufacture and discarding or ignoring the poorer quality material.

Debitage from other materials (chert and chalcedony) is present in small amounts and indicates that these materials from other sources (probably local) also were brought to the site for flaked stone tool manufacture. All stages of flake tool manufacture are represented here, including several cores and core fragments in addition to over 100 pieces of debitage. A burned bone fragment (collected, FS-1), a corner-notched projectile point fragment diagnostic of the Late Archaic period (also collected, FS-2), a flake tool fragment, a metate fragment, and two cores all were found in the east-central part of the site. The metate and burned bone fragments

indicate that food processing and preparation took place at this site. A small polished manuport fragment of unknown gray and white lithic material and of undetermined use was also found.

The Historic period component exhibits a segment of a utility line plus a trash scatter. Clear evidence of the late 19th-early 20th century utility line construction here consists of two remaining poles positioned ca. 80 ft apart, and numerous insulator fragments. See linear site 5FN2152.1 below for a complete description of this utility line, which also passes through sites 5FN2448 and 5FN2646. Other historic artifacts found here include three hinged-lid tobacco tins, a piece of smooth wire, a piece of weathered milled lumber, a 63 inch post (which is far less weathered than other artifacts and appears to be more recent than the rest of the site), two pieces of clear glass, and a piece of aqua glass. One of the pieces of clear glass has embossed lettering. While no concrete evidence of a worker's camp was found, there is a rock which is a possible manuport and could have been used to hold down a tent. There is no firm proof that the tobacco tins are associated with the utility line construction; the hinged lid style dates no earlier than 1910–1911. Evidence of early logging in the surrounding area suggests another local activity that could explain the presence of the historic artifacts at 5FN2444. Although the historic component here is not significant, the prehistoric component is evaluated potentially eligible for the NRHP.

5FN2152.1 (AGS–09–27, 09–31, 11–116) is a linear site consisting of the intermittently preserved remnants of a utility line that passes through three other archaeological sites. Within a distance of just under 1,300 ft (390 m) are the rotting stumps of four utility poles, and the mostly broken pieces of at least five glass insulators. The pole stumps occur in pairs at each end of the segment, and define a NE-SW line in a 72°–252° orientation. A modern 5-wire high voltage transmission line intersects the older segment along a nearly E-W line (88°–268°), and could be a mid-20th century replacement for the historical resource, although the abandoned line is much more likely to have been for telephone service than for electrical power.

At the southwest end of the segment, within the boundary of site 5FN2444, are two pole stumps about 80 ft apart, and numerous insulator fragments. This location is about 450 ft south of Fremont County Road 2. The eastern of these two pole stumps has a large, bent, square-headed bolt through its center, with the nut still intact. There are two large square metal washers, one on each side of the post. All of the insulator fragments are in the area near this pole. The second pole has no evidence of hardware remaining, and no insulator fragments were found nearby. One insulator fragment has embossed lettering: "EL CO." This is very likely a remnant of the same label embossed on other mold-blown insulators farther northeast along this segment: "AM. TEL. & TEL. CO." There are other historical artifacts found here including three hinged-lid

tobacco tins, a piece of smooth wire, a piece of weathered milled lumber, a 63-inch post (which is far less weathered than the other post stumps and appears to be both more recent and unrelated), two pieces of clear glass, and a piece of aqua glass. Evidence of early logging abounds in the surrounding area suggesting another local activity that could explain the presence of the artifacts other than the insulator fragments.

About 650 ft (200 m) to the northeast is a single green glass, mold-made insulator found at the north edge of prehistoric site 5FN2448. However, no utility pole stumps are present in this area, or in the intervening area to the southwest. In this spot, the insulator is directly beneath the modern 5-line high voltage power line. The insulator was made in a 3-piece mold, and is broken in two pieces. It is also embossed: "AM. TEL. & TEL. CO." It is of the "Toll" style # CD-121 illustrated in David Clint's (1976:93) *Colorado Historical Bottles and Etc., 1859–1915*, which likely predates the early-mid-1920s when that insulator style was replaced by CD-122. The name of this insulator style refers to the primary use of these insulators on telephone toll circuits.

There is another gap of 375 ft (115 m) in the line to the northeast of 5FN2448, reaching the far northeast end of the segment at prehistoric site 5FN2646, where the stumps of the 2nd pair of utility poles remain along with more insulator fragments. Light green glass insulators of the "Toll" type, style # CD-121, are present here as well (Figure 22). Two wooden post stumps are embedded in the ground 131 ft (40 m) apart on the same southwest-northeast alignment. The eastern stump is approximately 1 ft in diameter. One green glass insulator base fragment is 7 ft northwest of this stump; embossing on the fragment reads "AM. TEL." The western stump has a 1 ft diameter fragment sticking out of the ground, surrounded by three light green glass insulator top fragments, threaded internally and also embossed with "AM. TEL. & TEL. CO." Another fragment of light green glass without embossing is present as well. Pieces of old wood, similar to that of the stump, are present southwest of the stump, and represent further potential remnants of utility posts. The crew noted other glass fragments in a cluster approximately 33 ft northwest of the western stump, and another cluster of wood fragments located to the north at approximately the same distance.

Cumulatively, the scattered insulator fragments and pole stumps are evidence of a long-abandoned utility line, most likely for telephone service although other lines for power and/or telegraph may have run along the same corridor. All or portions of the embossed label "AM. TEL. & TEL. CO." on mold-made glass insulators suggest a pre-1930 time frame that is supported by some historical data from the company web site. The American Telephone and Telegraph Company (the forerunner of today's

AT&T Corp.) was organized in 1885 to expand long distance lines through the United States; their lines reached Chicago in 1892, Denver in 1899, and San Francisco in 1915 (AT&T Corp. 2012). It seems unlikely that extension of AT&T telephone service through the Colorado mountains would predate its arrival in Denver. Thus, a likely date range for the line at 5FN2152.1 is 1899–1925. Other related segments beyond the AGS project area probably exist and some may be in better condition, but the extremely deteriorated materials here along with its limited potential to yield additional data lead to the evaluation that 5FN2152.1 is not eligible for the NRHP.

Figure 22. This glass insulator is one of several found along the scattered remnants of the utility line at site 5FN2152.1, where it intersects site 5FN2646. Note the bubbles in the glass.

5FN2445 (AGS–09–28) is another multi-component prehistoric and historic site. The prehistoric component consists of a sparse flaked and ground stone scatter in a 20 m × 6 m area, on the gentle north toe slope of a mountain ridge, just south of a shallow, grassy wash. Two pieces of burned sandstone found are probably fragments of a sandstone cooking slab; one is unifacially ground and measures 3 cm × 3 cm × 1 cm. No flaked stone tools, and no clearly diagnostic artifacts, have been found here,

nor have any features been observed. Flaked stone debitage materials are evenly divided between jasper and chalcedony, and two small core fragments also have been observed—one each of jasper and chert. Only intermediate stage thinning flakes are present in the debitage. The sparse nature of the surface assemblage along with the lack of artifacts associated with rodent backdirt piles indicate a low potential for buried material.

The Historic period component consists of a sparse trash scatter, primarily cans in a mix of mid- to late 20th century materials; the trash scatter occurs generally north and northeast of the prehistoric lithic scatter described above. Most of the cans are located in an east-flowing, grassy drainage just south of Fremont County Road 2. Other artifacts found on the site include a small piece of folded sheet metal; a modern, calkined, fullered horseshoe; and a pair of vice grips engraved "TAIWAN." In addition, two small pieces of sawed wood were found, as well as a large (27" × 17" × 4") rock slab of unknown function. There has been some past logging in the nearby forests, but it is not known whether that activity is related to this camp. Another possibility is that this camp was used by workers involved in either road or power line construction/maintenance. The site is evaluated not eligible for the NRHP.

5FN2446 (AGS–09–29) is yet another site with both prehistoric and historic components. The prehistoric component is an open lithic scatter or hunting station near the west edge of the AGS, located on a saddle at the head of an intermittent drainage, on both sides of Fremont Count Road 2 although most materials are south of the road. It contains two lithic concentrations, Features A and B, but only a couple of flaked stone tools among the 230+ artifacts documented. Concentration A is the smaller of the two features and is centrally located in the site. It mostly contains white/light gray chalcedony thinning and finishing flakes. Concentration B is slightly more extensive and is found a short distance to the west-northwest of Feature A, with jasper thinning and finishing flakes being most common. Over the entire site, jasper debitage accounts for more than half of the surface assemblage, along with smaller but still significant numbers of chalcedony and other chert artifacts. One chalcedony core fragment also was observed; two tools noted are a projectile point fragment (collected, FS –1) of maroon jasper that may be diagnostic of the Late Archaic period and a uniface of dendritic maroon jasper. The relatively level ground here and soil development evident in the road cut suggest some potential for buried material.

The Historic period component appears to be a short-term work camp consisting primarily of crimped-seal tinned cans (mostly crushed), can scraps, and can lids that are widely dispersed and few in total quantity. Other artifacts observed include a bottle cap, key-type can lid openers, and a short piece of metal hanger strap. Past logging operations are evidence from the rotted tree stumps scattered about as

well as modern slash piles from brush clearing at the site. The presence of the county road and nearby power lines also strongly suggest that construction and maintenance crew operations may have taken place in and around the site. For example, several modern campfire rings were noted within the site boundaries as well as modern road trash and aluminum drink can pull tabs. Artifact styles and local history indicate one or more occupations in the period AD 1920–1960. Although this historic component is limited in the quantity and quality of materials with low research potential, the prehistoric component of the site is evaluated potentially eligible for the NRHP.

5FN2447 (AGS–09–30) is an open lithic scatter and jasper source at the toe of a north-facing slope of a mountain ridge, extending to the south edge of a dry wash/ arroyo. Two lithic procurement loci (labeled A and B) and a flaked stone artifact concentration define three site features. Raw material in both procurement zones is mapped in the Fremont Dolomite formation (Wallace et al. 1999). The toolstone consists of angular cobbles of mostly yellow-brown jasper; cortex is rough and white/light gray in color, similar to source material at 5FN2444 up slope to the south. Cores of this jasper have a 7–10 cm range in size, and show a blocky, unpatterned reduction approach. Some cores have marbled color patterns ranging from the usual yellow-brown to creamy white, maroon, and brown (Figure 23). Flaked stone tools include two jasper flake tools in procurement Locus A and a maroon jasper uniface—possibly a projectile point blade (collected, FS-1)—at the southeast edge of the site. No clearly diagnostic artifacts have been found here as yet. Flaked stone debitage materials are dominated by yellow-brown jasper along with lesser numbers of chalcedony and chert flakes. All stages of tool manufacture are represented along with the raw material procurement activity; biface thinning flakes are very abundant in the debitage. Hundreds of flakes are present in all three feature areas. The potential for buried material is greatest in the alluvial deposits near the arroyo in the northern portion of the site. The site is evaluated eligible for the NRHP.

5FN2448 (AGS–09–31) has both prehistoric and historic components. The prehistoric component consists of a flaked stone, ground stone, and bone scatter on an alluvial fan at the north toe slope of a mountain ridge, west of Badger Creek. Three distinct rock outcrops mark the spot, from west-to-east: brown sandstone tilted and fractured into upright slab configurations; blocks and nodules of purple quartzite; and massive gray limestone/dolomite, all within 10–15 m of each other at the forest edge. Although this area is mapped within the Fremont Dolomite formation, the sandstone and quartzite may be remnant patches of the Parting Quartzite member of the Chaffee formation that are too small to appear on the geologic map of Wallace et al. (1999). The upper, southern portion of the site is within an open spruce forest and is somewhat eroded by slope wash and gullying. The northern part of the site is outside

Figure 23. Three cores at site 5FN2447 illustrate the diversity of chert and jasper toolstone represented at this lithic source.

the forest in a less eroded grassland with lower ground—and artifact—visibility, although a higher percentage of debitage was found in this area.

One piece of burned sandstone, three pieces of burned bone, a biface fragment, a small round "biscuit" mano, and an end scraper (collected, FS-1) were found near each other toward the upper, south end of the site. Two of the burned bone specimens appear to be fragments of large mammal ribs of a size larger than deer, such as elk or bison. Both the burned bone and burned sandstone are suggestive of the presence of a thermal feature, although no intact features have been observed. One other flaked stone tool found here is a second biface fragment. All flaked stone tools are made of chert, whereas the debitage materials are more mixed with jasper being dominant, and chert and chalcedony in smaller quantities. All stages of tool manufacture are represented in the debitage, especially early stage core reduction and intermediate stage thinning flakes. Although no diagnostic materials have been found, artifact distributions suggest the upper and lower site loci are separate activity areas, and may differ in time as well. The highest potential for intact buried material is in the less eroded, grassy northern half of the site.

The Historic period component is limited to a single green glass, mold-made insulator broken in two pieces—probably part of the old utility line mapped in a small scatter at 5FN2444 to the west and at 5FN2646 to the east. However, no utility pole stumps are present in this area, and all of the scattered evidence for this line has been combined into linear site 5FN2152.1 described previously. The prehistoric component of 5FN2448 is evaluated potentially eligible for the NRHP.

5FN2449 (AGS–09–101) is a chert and agate/chalcedony toolstone source with an associated artifact scatter. It consists of a moderately dense scatter of flaking debris and small, multidirectional cores on a gentle south-facing slope above an intermittent, east-flowing tributary of Badger Creek. Most of the artifacts are found in a dense concentration, which coincides with an area of sheet wash, suggesting that the site contains buried cultural materials. Fremont County Road 2 cuts through the southern third of the site; numerous artifacts are present in the road cut and adjacent borrow ditch. Most of the material consists of banded red chert and agate/chalcedony, and gray chert and agate/chalcedony. Unmodified nodules of these materials are present on site and nearby; this area is mapped on the boundary of the Dyer Dolomite with the Fremont Dolomite, the former occupying the ridge slope above and north of the road (Wallace et al. 1999). Dendritic yellow to brown chert/jasper also is present in the form of flakes and cores; this material is similar to Trout Creek chert, but likely has more local origins. A few burned flakes have been observed, perhaps indicative of hearth-centered activities, but the bulk of the material seems to be related to quarrying and lithic procurement. Several "cores" observed are simply tested cobbles. Banded

chert and agate/chalcedony ranges from deep red to translucent, with white and gray. Pink conglomeratic chert also is present. One biface or lenticular core is the only modified artifact observed; no clearly diagnostic artifacts have been found here as yet. An arroyo defines the north and northeast edges of the site, but artifacts were observed neither in the cutbanks nor in the larger arroyo south of the site. The site is evaluated potentially eligible for the NRHP.

5FN2450 (AGS–09–102) is another chert and chalcedony toolstone source, consisting of a moderately dense scatter of flakes, cores, and tested raw materials. The site is located mid-slope on the side of a ridge, evidently at the point where the raw material nodules are eroding from the bedrock formation (the Dyer Dolomite member of the Chaffee formation on-site and, possibly, Leadville Limestone-derived material from a higher position on the slope; see Wallace et al. 1999). Raw material ranges from translucent, gray, high-quality chalcedony to opaque white chert with crystal-filled vugs. Cortex varies from pebbly to smooth. Some flakes exhibit a white, splotchy patination. This material is the same as the white/gray raw material present on 5FN2449 across a gully to the south, but the red-banded agate material is not present here. A core and flake concentration in the northern site area coincides with a more eroded area of the slope, suggesting additional buried material may be present. In addition to the raw material available on site, several other lithic materials were observed including a gray chert or silicified shale comparable to material from the Leadville Limestone formation documented at quarry site 5FN2592 nearby to the northeast; dendritic yellow to brown chert/jasper (similar to Trout Creek chert, but likely from more local origins); and quartzite. One gray chert/silicified shale flake tool (collected, FS-1) is the only modified artifact observed; no ground stone, burned rock, or clearly diagnostic artifacts have been found here as yet. A gully defines the south-southwest edge of the site, but no artifacts were observed in the cutbanks. The site is evaluated potentially eligible for the NRHP.

5FN2451 (AGS–09–104) consists of a large, moderately dense scatter of flaking debris, flaked stone tools, and cores at another toolstone source. Two raw materials are native to the site. West of an arroyo that bisects the site are gray chert nodules, and east of the arroyo is opaque white chert grading to translucent gray chalcedony. The toolstones occur at the boundary of the Dyer Dolomite with the Leadville Limestone, the latter shown higher on the ridge slope on the map of Wallace et al. (1999). Two artifact concentrations are evident. One (Feature 3 or F3) is associated with the gray chert deposit west of the arroyo, and consists of both gray chert and dendritic yellow-brown to maroon jasper debitage, and a single flake tool. Two other tools—another flake tool at the arroyo and an expedient core-scraper—were found just outside F3. Among the artifacts in this concentration are 5–7 biface thinning

flakes. The gray chert here actually may be a silicified shale or siltstone; it appears in rounded nodules, and many unmodified nodules of this material are present.

The other concentration (F2) consists of core reduction flakes and cores east of the arroyo, on a steeper eroding area of the slope. This is likely where the chert and chalcedony raw material is eroding from limestone/dolomite bedrock. Material in F2 includes white to gray chert similar to materials documented at nearby site 5FN2450. No tools were observed within F2, but one white chalcedony projectile point was collected (FS-1) just to the south; it is a stemmed dart point diagnostic of the Middle to Late Archaic period. One possible rock-filled, but deflated, hearth (F1; Figure 24) was observed on the east edge of the arroyo. This arroyo seems to divide two different colluvial deposits: red-brown silt containing gray chert on the west probably derived from the Leadville Limestone, and brown silt containing white chert and gray chalcedony to the east more likely from the Dyer Dolomite. The potential for intact buried deposits is highest in the vicinity of F3. The site is evaluated potentially eligible for the NRHP.

Figure 24. Close in view of deflated hearth Feature 1 at site 5FN2451.

5FN2584 (AGS–10–32) has both prehistoric and historic components, located near the west edge of the project area on a gentle north-facing slope, just northeast of the intersection of County Roads 1B and 2. The prehistoric component is a lithic source, primarily for jasper with minor quartzite available at the north site edge. Angular blocks and more rounded boulders of yellow-brown and red jasper—some with dendritic inclusions—are scattered across the site, their visibility obscured by

vegetation cover. The blocks and boulders range in diameter from 13 cm to 50 cm, with an average size of 17 cm. Evidence of prehistoric lithic procurement activity is rather sparse, comprised of core reduction flakes and shatter (angular debris). Low rock outcrops barely rise above the surrounding grasses and forbs, and not only include patches of jasper but also a maroon-purple coarse sandstone material and low quality, dark grey chert (not worked). The outcrop landscape here appears to be vandalized, with 13 circular "scoop" holes and three similar but rectangular-shaped holes observed. These shallow pits may be due to rock hounds removing large boulders containing jasper.

The core reduction seems to be exploratory, with flakes removed in a haphazard fashion to expose the underlying material (i.e., cores are multi-directional). The angular debris is of high quality, while much of the remaining outcrop is of lesser quality and is in smaller chunks. The outcrop runs approximately 10 m east-west and approximately 15 m down slope. Two material samples of jasper were collected as comparative specimens (FS-1, FS-2). There may be less prehistoric lithic activity at this location due to the nature of the material, and the abundance of quality lithic material nearby. In addition to the jasper outcrop, there is a small green to red quartzite outcrop at the north site boundary. This outcrop is approx-imately 5 m across and contains a few flakes and fragments indicative of testing activity. The quartzite is exposed in the lower layers of the red-bed Kerber formation (Early Pennsylvanian), which adjoins the chert- and jasper-bearing Leadville Limestone (Early Mississippian) marking an unconformity in the local geological record (Wallace et al. 1999). One material sample of quartzite also was collected (FS-3).

The historic component is an isolated small mine or prospect located at the west edge of the site, marked by an excavation roughly oval in shape with modified timber supports. The depression is 17 ft across east-west. Its spoil pile is 21 ft × 13 ft across and approximately 4 ft high (as measured from the bottom of the pit). A modified log on the west side has eight 5" wire nails protruding from the surface. The east side exhibits several fragments of milled lumber. One piece of lumber has five 5" wire nails driven into it. Approximately 12 fragments of modified logs make up the rest of the east portion of the mine. The modified log that defines the east boundary is fire-damaged. No other timber within the feature exhibits such charring. One rusted can fragment is located to the southeast; three modern cans are north of the mine feature, and additional modern trash has been tossed from the county road. This area also shows signs of logging, attested by a sawn tree and axe-cut stump 40 ft to the northeast of the pit feature. The age of this component is estimated to be in the period 1895–1960, most likely toward the early end of this range based on vegetation which includes three aspen trees growing out of the spoil pile. The site is evaluated not eligible for the NRHP.

5FN2585 (AGS–10–33) is a large open lithic scatter or hunting station situated on an open, south-sloping bench overlooking the valley of the east-flowing tributary of Badger Creek that parallels County Road 2 in this area. The site has been heavily impacted by slope wash, which has scattered some artifacts down the ridge slope below the east edge of the bench. No artifact concentrations or other features were observed. Lithic tools include a small biface (collected, FS-1), a small corner-notched projectile point diagnostic of the Developmental period (collected, FS-2), and a complete biface or preform (collected, FS-3). Both bifaces are made of dendritic maroon jasper. The larger biface was collected from the toe of the lower east slope below the main site area; it appears to be among the materials washed down from the bench above. Thirty-eight flakes were recorded, representing all stages of lithic reduction. Early stage core reduction flakes are in the majority, followed by thinning flakes. The primary material represented is jasper, with quartzite, chalcedony, and chert also present. Although there is a small area of intense rodent activity on the west edge of the site, the soil is shallow which, together with the moderate to severe slope wash and weathering of bedrock, makes the potential for intact buried features or other cultural material low. The site is evaluated not eligible for the NRHP.

5FN2586 (AGS–10–34) is an open lithic scatter or chipping station located at a low limestone/dolomite cliff in the Leadville formation and extending southward down the adjacent ridge slope north of County Road 2. This is a tool production site characterized by a scattering of mostly dendritic jasper early- and middle-stage reduction and thinning flakes. A biface fragment and three cores/core fragments all of jasper are further evidence of tool manufacture on the site. The only finished tool noted is a unifacial drill of chalcedony (collected, FS-1), suggesting minor tool use activity such as hide-working. The artifact scatter is spread rather extensively below the low cliff to near a high voltage transmission line. Artifacts are distributed in two patterns: a more linear distribution near the low cliff suggestive of erosion down slope, and a more random distribution lower on the ridge slope. Several of the jasper flakes were found in close proximity to the cores and core fragment suggesting they may have been part of the same production cycle. Although the limestone/dolomite cliff within the site area contains minor lenses and small nodules of dark gray chert, there is no evidence of procurement activity in this part of the Leadville formation (but see 5FN2592 and 2593 below). The site is evaluated not eligible for the NRHP.

5FN2587 (AGS–10–35) is an open lithic site or chipping station, located on a gently sloping bench just southeast of and below the crest of a narrow ridge. This area is north of County Road 2, north-northwest of 5FN2585, and northeast of 5FN2586. The site is a small and sparse scatter with a low density and diversity of flaked stone artifacts. Naturally-occurring jasper is present as float in small amounts on the crest of the ridge just west of the lithic scatter, but there is no evidence of procurement

activity for this material. Artifacts observed on-site consist of a core, two core fragments, 13 flakes (primarily jasper), and one possible cobble manuport of a conglomerate material. Debitage is dominated by angular debris and unidentifiable flake fragments of maroon jasper. No features, diagnostics, or other tools have been documented. The evidence indicates that this site was utilized primarily for early to middle stage tool manufacture. Shallow soil and the adjacent rock outcrop also suggest a low potential for buried material at this site. It is evaluated not eligible for the NRHP.

5FN2588 (AGS–10–36) is a probable hunting station in the form of an extensive scatter of flaking debris, flaked stone tools, and cores spread along a north-south axis across a prominent saddle of a ridge, onto the adjacent headwater slopes of shallow drainages. The abundant debitage is dominated by locally available jasper, along with lesser numbers of chert, quartzite, chalcedony, agate, and Morrison silicified sediment flakes. A sizable percentage of the debitage is broken into unidentifiable fragments—in part from natural fire damage—but early to intermediate stage core reduction and thinning flakes also are present, as are single cores of jasper and quartzite. There are two artifact clusters within the site area, one on the crest of the saddle extending a short distance northward, and the second about 15–20 m north of the first on the broad headwater slope of a drainage. Tools observed include a chalcedony flake tool and two projectile points (both of the latter collected, FS-1 & 2). One projectile tip is a tiny stemmed or corner-notched arrow point (FS-1) perhaps dating to the Diversification period ca. AD 1050–1600, and the second is a badly heat-damaged dart point, probably a corner-notched specimen diagnostic of the Late Archaic period. No features were observed, but rodent activity has brought buried artifacts to the surface and demonstrates that the site has potential for intact buried deposits, especially on the gentler slopes of the saddle. The site is evaluated potentially eligible for the NRHP.

5FN2589 (AGS–10–37) is a small flaked and ground stone scatter—i.e., an open camp—on an east-west ridge and its uppermost slopes, where the ridge crest dips to form a shallow swale. Flaked stone debitage is predominately locally available jasper, along with lesser amounts of chert and chalcedony flakes. All stages of tool manufacture are represented, but the majority is intermediate stage biface thinning flakes. No cores are present, and one production stage uniface was the only modified piece of flaked stone observed. There are two artifact clusters within the site area about 10 m apart, both toward the west edge of the site. Only one finished tool was observed: a well-shaped, bifacial mano (Figure 25), quite near the uniface. No time-diagnostic artifacts or features were observed, and small rodent burrowing has not exposed any buried artifacts. In combination with the rocky nature of the surface, this

observation suggests that the site has a low potential for intact buried deposits. The site is evaluated not eligible for the NRHP.

Figure 25. This bifacial mano was found partly buried at site 5FN2589.

5FN2590 (AGS–10–38) is an open lithic site or chipping station, located on rolling, dissected terrain on the ridge immediately outside the southwest corner of Antelope Gulch site 5FN494. All stages of tool manufacture are represented, most abundantly by early stage core reduction flakes accompanied by significant numbers of unidentifiable flake fragments and intermediate stage biface thinning flakes. Apart from the debitage, a small biface edge fragment was found as well as a larger fragment from an early production stage biface, and a spokeshave made on a chert flake. Materials used were (in order of density) jasper, chert, and chalcedony. No time-diagnostic items were noted. One dense flake concentration was the only feature observed, documented near the eastern site boundary in a 16 m × 11 m area. The site extends from a slight saddle on the main ridge to the northwest, easterly to an area where the ridge is bisected by two gullies running roughly to the south. Its south boundary is defined by a low rock cliff and other small rock outcrops. Due to the

dissected nature of the site area, lack of features, and low probability of intact buried materials, the site is evaluated not eligible for the NRHP.

5FN2591 (AGS–10–39) is a flaked and ground stone scatter near the east end of an east-west trending ridge, abutting the arbitrarily-defined south boundary of the Antelope Gulch site (5FN494). At the northeast site edge, and the south edge of the ridge, is a low bedrock knoll exhibiting three small depressions of uncertain cultural or natural origins. The most distinct such pit is on top of the knoll, measures 4 m in diameter, and contains a hammerstone made from a tested chert cobble. The other two depressions are on the northwest and southwest sides of the knoll, and are not quite as sharply defined. Across the site, artifact density is moderate to heavy, with two flaked stone concentrations defined as site features. Feature FC-1 occupies a roughly circular area at the northwest boundary of the site near a N-S trending rock outcrop, while FC-2 is an elongated concentration near the south edge of the ridge that contains many heat-damaged artifacts along with at least one flake tool. Flaked stone debitage is predominately locally available jasper, along with significant numbers of other chert and chalcedony flakes, and sparser quartzite and siltstone flakes. All stages of tool manufacture are represented, but the majority is intermediate stage biface thinning flakes. No cores or time-diagnostic artifacts have been observed. Tools noted include the hammerstone; a shaped, unifacial mano also used as a maul; a uniface; one biface fragment; and two flake tools. The site has a moderate potential for intact buried deposits, particularly in flatter areas away from the rock outcrops and knolls. This camp site is evaluated potentially eligible for the NRHP.

5FN2592 (AGS–10–40) has both prehistoric and Historic period components. The site's prehistoric evidence consists of a flaked stone scatter and a procurement zone for chert located along a ledge of Leadville Limestone on the south slope of an east-west trending ridge, abutting the arbitrarily-defined south boundary of the Antelope Gulch site (5FN494). The raw material procured here is dominantly medium to dark gray chert in solid colors, with variations containing wavy to concentric banding—this is the "bull's eye agate" mentioned by Tucker (2001:7)—and color ranges to light gray, grayish brown, brownish gray, and greenish gray (six total pieces were collected as comparative raw material samples). Some materials also exhibit a brown to reddish brown weathering patina. Although this site is a relatively large source of the gray chert seen in small amounts on local sites, the procurement activity here was not intense. Cores and flakes are not overly abundant, and the reduction strategies tended toward the casual side as the core shapes are quite blocky, multi-directional, or are secondary forms from large flakes.

Most of the chert procurement is concentrated in a narrow E-W band on the slope immediately above the limestone ledge (Figure 26), but sparser workings also

occur a bit below the ledge and to the east of the ledge on the west side of a wash. Flaked stone debitage on the entire site is predominately gray chert but also includes locally available jasper—especially toward the east site edge—and chalcedony; one quartzite core also was recorded. In addition to the expected trend toward early stages of tool manufacture in the debitage, there are also some intermediate stage biface thinning flakes present. No time-diagnostic artifacts have been observed, but one production stage uniface fragment, one biface fragment, and two flake tool fragments occur here. With the exception of a small area around a sandstone knoll east of the limestone ledge, the site has a low potential for intact buried deposits due to erosion of the ridge slope.

Figure 26. Arrows denote the distribution of gray chert toolstone outcrops associated with a limestone ledge at site 5FN2592.

The Historic period component is entirely within the perimeter of the larger prehistoric lithic procurement site, and is limited to two features: a rock cairn located about 100 ft (30 m) north-northwest and upslope from a prospect pit. The cairn is associated with a wooden post and is located on the upper ridge slope near its crest,

while the pit is mid-slope and just west of the small sandstone knoll mentioned above. About 55 ft (16 m) east of the prospect pit is a log, which may or may not have been part of the working of the prospect pit. The only other artifacts noted were one can lid and one crushed sanitary can located a short distance east of the cairn. It is possible that the cairn-and-post was some sort of claim marker related to the prospecting, or to other property boundary activities—cairn-and-post features are well represented on the survey, especially in the grasslands north of Antelope Gulch. The age of this component is uncertain and could date as early as the Gold Rush era ca. 1860–1880. As mentioned previously for other sites with prospect pits, the more likely time frame is the period 1890–1930, based on the beginning of the Cripple Creek gold rush that brought thousands of prospectors to the area and on mineral patent dates of 1898–1928 for the mining of silver-copper ores in red bed formations to the north and northwest of the project area. The site is evaluated not eligible for the NRHP.

5FN2593 (AGS–10–41) is a flaked stone scatter and small chert source on a south-facing ridge slope, abutting the arbitrarily-defined south boundary of the Antelope Gulch site (5FN494), and just east of a more extensive source of gray chert (5FN2592). Both the bulk of the artifacts and the small procurement zone are located in the central part of the site; the artifacts tend to cluster down slope of the procurement zone. Not surprisingly, flaked stone debitage is predominately the locally available chert, along with a significant number of jasper flakes, and sparser quartzite, silicified sediment, agate, and chalcedony flakes. All stages of tool manufacture are represented, but the majority is early to intermediate stage core reduction and biface thinning flakes. Nine cores also have been documented, but no time-diagnostic artifacts have been observed. The only tool noted was a bifacial preform of dark gray chert. Procurement activity within the area of outcropping medium to dark gray chert was quite expedient, with core forms generally angular, blocky, and multi-directional in fist-sized pieces. The same approach to procurement characterizes the larger, adjacent outcrop at 5FN2592, both of which are in the Leadville Limestone formation. The site has a low potential for intact buried deposits given erosion and animal activity on the ridge slope. The site is evaluated not eligible for the NRHP.

5FN2594 (AGS–10–42) has both prehistoric and Historic period components. The prehistoric part of the site is a sparse flaked stone scatter on a rocky hilltop with a panoramic view, abutting the arbitrarily-defined south boundary of the Antelope Gulch site (5FN494). The presumed "bison jump" cliff at 5FN494 is readily visible to the north from the hilltop, and the Badger Creek valley is directly east of the hill, with the creek itself about 730 m (0.4 mi) from this site. Widely scattered flakes occur from the crest of the hill eastward onto the upper slopes. Flaked stone debitage on the entire site is predominately the locally available maroon and yellow-brown jasper plus minor amounts of chalcedony, chert, and Morrison fm. silicified sediment. Middle to

late stages of tool manufacture are largely represented in the debitage, as biface thinning and finishing/maintenance flakes; only a few early stage core reduction flakes were noted here. Time-diagnostic artifacts have not been observed, nor other tools or features. Virtually all of the limited flaked stone items observed are quite small, possibly due to repeated episodes of artifact collecting both by "arrowhead hunters" and collectors of the gem stone peridot. The rocky, exposed nature of the hill suggests the prehistoric component has a low potential for intact buried deposits.

The Historic period component encompasses the smaller prehistoric lithic scatter and occurs across the crest and upper slopes of the rocky hill. The location is well-known to "rock hounds" as the Lone Tree or Lone Pine peridot source (Rhoads 2002), named for the isolated ponderosa pine tree which grows off the northwest side of the hill and is an easily seen landmark from the nearby county road. The peridot occurs in Miocene basalt, the outcrop here too small to be shown on the map of Wallace et al. (1999). Modern gem collectors continue to visit the site in search of peridot, using rock hammers to break open the volcanic rocks strewn across the crest and slopes of the hill. The displacement of native rocks on the hill is obvious from the $CaCO_3$ rinds now exposed to the elements but which formerly accumulated on the undersides of those rocks.

Small spoil piles are also present from gem collecting activity, and an artificial cut on the south edge of the hill top may be evidence of past use of heavy equipment to mine for peridot. This cut measures about 15 m long and extends 6 m into the hillside, creating a bench-like shelf. Small inclusions of obsidian occur in a few of the basalt-like rocks here, but are much too tiny to have been of interest to prehistoric flintknappers. No artifacts remain from the modern or Historic period activities. Thus, the age range of this component prior to modern times is uncertain but could date as early as the period 1890–1930, based on the beginning of the Cripple Creek gold rush that brought thousands of prospectors to the area and on mineral patent dates of 1898–1928 for the mining of silver-copper ores in red bed formations to the north and northwest of the project area. Unfortunately, not only are gem collectors removing peridot, they are likely also collecting artifacts as the prehistoric component here is very sparse and limited almost exclusively to very tiny flakes. This site is evaluated not eligible for the NRHP.

5FN2595 (AGS–10–43) is a flaked stone scatter or chipping station on the lower portions of a south-facing ridge slope, in a zone characterized by apparently natural hummocks of soil & gravel, and just south to southeast of sources of gray chert (5FN2592 and 5FN2593). Due to the proximity of the chert procurement zones, not surprisingly, flaked stone debitage is predominately this gray chert, along with lesser numbers of jasper, chalcedony, moss agate, and quartzite flakes. All stages of tool

manufacture are represented, but the greater number is of early to intermediate stage core reduction and biface thinning flakes. Two small core fragments of dark gray chert have been found, but no time-diagnostic artifacts have been observed. The only tool noted is an end scraper, also of dark gray chert. The distribution of lithic material is slightly denser within the hummocky area in the eastern portion of the site; the natural hummocks represent locally deeper soils, but the lack of artifacts in eroding areas in and around these hummocks shows that the site has a low potential for intact buried deposits. The site is evaluated not eligible for the NRHP.

5FN2596 (AGS–10–44) is a very sparse lithic scatter or chipping station located at the foot of a south-facing ridge slope below hilltop site 5FN2594. Only ten total artifacts of flaked stone have been observed, none of which are time-diagnostic, and no features are present at the surface. Other than debitage, the only two artifacts of note are a chalcedony core and a large jasper biface fragment (collected, FS-1). The debitage is limited to a few core reduction flakes of chalcedony, and five jasper flakes representing intermediate and late stages of tool manufacture. The lack of dark gray to black chert here is unexpected given the proximity of source materials a short distance to the northwest. The site is evaluated not eligible for the NRHP.

5FN2597 (AGS–10–45) has both prehistoric and Historic period components, located on a gently northeast-sloping area bounded by ridges and low ledges about midway between Antelope Gulch to the north and County Road 2 to the south. It abuts the west boundary of Antelope Gulch site 5FN494 near the latter's southwest corner, and is also northwest of 5FN2591 and south of 5FN2598. The prehistoric component here is an extensive and locally dense open lithic scatter or hunting station within which nearly 250 flakes have been documented along with a chert core, a jasper biface, a projectile point tip of chalcedony, and projectile point base of jasper (collected, FS-1). The point base has a slightly expanding stem, indicating an occupation in the Middle or Late Archaic period. Also, the point tip was made on a flake, and both this fact and its thin cross-section are suggestive of an arrow point of the post-Archaic era.

As is typical of sites in this area, jasper is the dominant material in the debitage assemblage, with far lesser quantities of other cherts, chalcedony, and quartzite also present. All stages of tool manufacture are represented, particularly biface thinning flakes, but an unusually high number of finishing/maintenance flakes from pressure retouch also has been noted. The only feature observed is a 15 m × 5 m artifact concentration in a rodent-disturbed zone near the east edge of the site (i.e., just beyond the west boundary of 5FN494, into which this site almost certainly extends). However, the rodent disturbance has exposed at least a few artifacts from previously

buried contexts, as well as charcoal-stained soil, strongly suggesting the presence of additional buried artifacts along with thermal features of some sort.

The Historic period component is limited to a cairn feature with a fallen post and wooden lathe pieces at the western edge of the site on the crest of a spur ridge. The cairn-and-post feature is among many in the area that may be claim markers, dating to ca. 1965–1978. The evidence for a young age is in mining claim records, and that the two milled boards fastened together to create the post are nominal 2 × 4s, actually measuring 1½" × 3½" with rounded edges. This combination of attributes generally post-dates AD 1961 (Smith and Wood 1964:21–23). The fastenings are 3½" wire nails; a finishing nail 1½" long embedded in the upper part of the post likely held a sign or claim marker. About 13 unshaped rocks up to 30 cm in length were piled to support the post, now rotted on its lower end. No other historic artifacts were noted, but a modern campfire ring with discarded cans is just east of the site. There are also numerous stumps in the site area from past logging activity. At the south end of the site at a low sandstone ledge, three sawn logs lay in a U shape open to the south, but this arrangement appears to be entirely fortuitous, not intentional. Although this historic component is not significant, the prehistoric component is evaluated eligible for the NRHP.

5FN2598 (AGS–10–46) is a flaked stone scatter on a north-facing ridge slope with a panoramic view, extending northward down to a saddle accessed by a jeep trail, and abutting the arbitrarily-defined west boundary of the Antelope Gulch site (5FN494). The south edge of the site is just below a ledge at the rim of the ridge, on top of which is site 5FN2597. Widely scattered flakes occur across the southern and western portions of the site, with somewhat higher artifact densities elsewhere but in no clearly defined concentrations. About 60% of the flaked stone debitage on the entire site is the locally available maroon and yellow-brown jasper plus some chalcedony and only minor amounts of chert, moss agate, quartzite, and Morrison fm. silicified sediment. All stages of tool manufacture are represented in the debitage, with intermediate stage biface thinning flakes being most abundant. No time-diagnostic artifacts or features have been observed, and the only tool noted is a modified flake of jasper—probably removed from a large biface. The lack of tools may be due to repeated episodes of artifact collecting by "arrowhead hunters" given the widely-known presence of the Antelope Gulch site to the east. The site has a moderate potential for intact buried deposits, especially at the toe of the ridge slope extending northward onto the saddle. The site is evaluated eligible for the NRHP.

5FN2601 (AGS–10–105) is a lithic scatter or chipping station located in an open meadow north of the forest edge in three concentrations, two to the west and one east of Badger Creek Ranch Road. Tools found include a yellow-brown chalcedony

uniface fragment (FS #1), one utilized flake of dendritic yellow-brown jasper (FS# 2), and two utilized flakes of dendritic jasper. One other collected item (FS #3) appeared to be an obsidian flake fragment, but EDXRF analysis proved that it was a glassy form of iron ore or slag (see Appendix II). Material types on the site consist primarily of jasper and chert, and the majority of the artifacts are early stage reduction flakes. Small quantities of chalcedony also are present, along with one small chunk of petrified wood. Deposit depth is undetermined, but the presence of artifacts eroding from the edges of Badger Creek Ranch Road and soil depth observed in a moderately deep (ca. 2.1 m) arroyo located 60 m to the northeast, suggest some potential for intact subsurface deposits. The south edge of Antelope Gulch site 5FN454 is about 280 m northwest of 5FN2601, and the "bison jump" cliff within 5FN454 is visible approximately 970 m north of this site. This site is evaluated potentially eligible for the NRHP.

5FN2602 (AGS–10–106) is located directly southwest of 5FN2601 on a northeast sloping meadow, which backs into mixed conifer forest. No archaeological features are visible on the surface. The surface artifacts are scattered, and no meaningful distribution patterns are discernible. No tools or diagnostics have been noted, but two cores—one of red-maroon quartzite and one Morrison quartzite or silicified sediment—have been found. Debitage of jasper dominates the flake assemblage, followed by chalcedony, petrified wood, basalt, chert, quartzite, and obsidian. One flake each of yellow-brown jasper (FS # 1), red-maroon quartzite (FS #2), dendritic yellow jasper (FS #3), and red jasper (FS #4) were collected. All stages of lithic tool production are in evidence here, and site function is interpreted as a chipping station where the early and middle stages of tool manufacture are best represented. Site 5FN2602 is moderately impacted by cattle activity, and is subject to alluvial and aeolian erosion. Rodent activity and small washes also have been noted, indicating some soil depth. The nearest permanent water is Badger Creek, located about 950 m to the east, and 5FN494 is 450 m to the north. This site is evaluated potentially eligible for the NRHP.

5FN2603 (AGS–10–107) is an open lithic site and Historic period cache located near the top of a low ridge at the east edge of the project area, on the upper southeast slope characterized by weathered volcanic outcrops, boulders, and flat narrow benches. This section of the ridge system is the northeastern end of the same land-form containing the "bison jump" cliff at 5FN494, with a quite expansive viewshed including the Badger Creek drainage 400 m east as well as lower terrain to the south and north. This site has no discernible prehistoric features other than one primary concentration of artifacts. Tools include one broken scraper of yellow jasper and two worked flakes of dendritic jasper. Jasper is the overwhelmingly dominant material type, with only two quartzite flakes and one chalcedony flake present.

The historic component at 5FN2603 is a small artifact cache in the form of a Clabber Girl Baking Powder can containing a collection of assorted clock parts, cartridge cases, and bailing wire (Figure 27). The clock backing is stamped with the words "Waterbury Clock Co." and some illegible engraving. The Waterbury company was founded in the Connecticut town of the same name in 1854, and operated under that corporate label into 1932 (Antique Clocks Guy 2011). Given that the Clabber Girl brand name was first used in 1923 (Clabber Girl Corp. 2013), a rather tight time frame for the cache can be established. The exact function of the cache is unknown, but crew members speculated that it might represent a ritual burial (unlikely) or a property marker. No doubt, other, unimagined possibilities exist to explain the cache. The site as a whole is evaluated not eligible for the NRHP.

Figure 27. A variety of metal artifacts were found in a cache feature at 5FN2603.

5FN2604 (AGS–10–108) is a lithic scatter located a short distance southeast of 5FN2602, on a northeast sloping meadow at the edge of a mixed conifer forest. Artifacts are scattered, with no concentrations or other discernible features. However, the site yielded numerous tools and one definitive diagnostic artifact. Three of the

tools have been collected: Field Specimen #1 (FS-1) is a broken blade of yellow jasper with beveled edges; FS-2 is a corner-notched projectile point base and midsection of purple veined chalcedony dating to either the Late Archaic or Developmental period; and FS-3 is a broken bifacial scraper/knife made of jasper. The projectile point material resembles Alibates chert from the Texas panhandle. Additional tools on the site include one bifacial scraper of yellow jasper, one crudely worked biface of chert, a broken biface of dendritic jasper, a biface of grey chalcedony, one utilized flake of maroon jasper, and a possible scraper of yellow jasper. One chert core and one exhausted maroon jasper core also have been documented here, along with abundant debitage. The dominate material type is jasper, followed by chalcedony, chert, petrified wood, and basalt. Site 5FN2604 likely functioned as a hunting station, and is evaluated potentially eligible for the NRHP.

5FN2605 (AGS–10–109) is an open lithic site located on a northeast sloping meadow between 5FN2348 on a lower ridge and 5FN2439 on the slope above at the edge of the forest. Artifacts are scattered with no significant clustering evident and no other features visible at the surface. However, three tools have been observed, including one diagnostic artifact. The latter was collected as FS-1, a Late Archaic or Developmental period projectile point fragment made from yellow-brown petrified wood. Additional tools on site are a crude biface of dendritic maroon jasper, and a second biface of maroon jasper. No cores or any other tools were noted. The dominate material type is jasper followed by chalcedony, quartzite, chert, and petrified wood. Thinning flakes dominate in the debitage assemblage, along with lesser numbers of finishing flakes, and five core reduction flakes. Site activities include but are not limited to core reduction, intermediate stages of tool manufacture, and hunting. Incisions by numerous small washes plus rodent activity suggest a soil depth of 13–30 cm, with some potential for intact buried materials. The site is evaluated potentially eligible for the NRHP.

5FN2606 (AGS–10–110) is a large open camp on the north side of Antelope Gulch, just east of the boundary of 5FN494. The site contains four features, all of which are flake concentrations, from 7 × 7 m to 25 × 15 m in area. Although no diagnostic artifacts were present, five other lithic tools have been documented including two pieces of ground stone and three flake tools. A mano fragment, animal bones, one of the worked flakes, and three of the concentrations are located in the north portion of the site. A granitic ground stone fragment, two worked flakes of dendritic jasper, and one flake concentration are in the southern portion of the site near the Antelope Gulch drainage. Overall, flakes dominate the surface assemblage. Jasper is the predominant material type (93%), followed by far fewer numbers of chalcedony, chert, and quartzite flakes. Soil depth appears to be inconsistent across the site. The Antelope Gulch intermittent drainage suggests alluvial deposits, but in

places large boulders and volcanic bedrock are exposed, removing some portions of the site from consideration for the presence of undisturbed deposits. Site function includes but is not limited to seed processing, core reduction, and lithic production. The site is evaluated not eligible for the NRHP.

5FN2607 (AGS–10–111) is an open lithic site located on a gentle south-facing slope, north of Antelope Gulch and northeast of both 5FN494 and 5FN2606. Artifacts at this site are distributed on a narrow north-south axis, with one artifact concentration in the northern portion of the site. Three tools—all located within the concentration—include one projectile point tip of maroon dendritic jasper, one worked flake of the same material, and one worked flake of maroon and white agate. Artifacts on the south appear to be eroding down the hill from the concentration in the north. The site represents activities related to core reduction and lithic production; all phases of production are represented within the flake assemblage. All but one of the 67 flakes recorded is jasper; there is also one flake of chalcedony. The site has little potential depth, as it is on high rocky ground with only pockets of windblown soil. It is evaluated not eligible for the NRHP.

5FN2608 (AGS–10–112) is an open lithic site located on a south-facing slope, north of Antelope Gulch, directly below the ridge just northeast of the 5FN494 "bison jump," and virtually surrounded by nearby cultural resources documented on this survey. Here, the artifacts are distributed in five concentrations. One concentration is located in the northern portion of the site, one is along the east boundary, and three concentrations are at the west boundary along the west side of a shallow wash. Two worked flakes, both of jasper, represent the only observed tools. One flake tool is located near the west boundary of the site between the upper two of the three western artifact concentrations. The second flake tool is located near the east boundary, about 15 m north of the eastern artifact concentration. The site represents activities related to core reduction and lithic production; all phases of production are represented within the assemblage. The dominant material type in the assemblage is jasper (79%), followed by quartzite, chalcedony, and chert. The potential for subsurface deposits here is indicated by artifacts eroding from the 45 m long, 30 cm deep wash that bisects the southern portion of the site. In sum, 5FN2608 has the potential to yield information concerning subsistence strategies, prehistoric settlement patterns, procurement of raw lithic material, and utilization of lithic material. It is evaluated potentially eligible for the NRHP.

5FN2609 (AGS–10–113) is another open lithic site located on the gentle south-facing slope north of Antelope Gulch, at the foot of the steeper talus slope of a rocky ridge. It is near the northeast corner of 5FN494, just north of 5FN2606, and south-west of 5FN2608. There are four artifact concentrations on this site, which are the

only features noted. In addition, three tools have been recorded here: a crudely worked scraper and a flake tool of yellow jasper, and one broken multi-purpose flake tool of dendritic yellow jasper. As with virtually all the sites in the area, jasper flakes are numerically dominant in the surface assemblage, followed by minor occurrences of chalcedony and chert flakes. All stages of lithic production are represented, with only a slight plurality of early stage core reduction flakes. Site depth is approximately 10–30 cm, possibly more, based on the material eroding from a small wash within artifact concentration #2. Site 5FN2609 is evaluated potentially eligible for the NRHP.

5FN2644 (AGS–11–114) sits on an open meadow with a north aspect, just south of County Road 2 (CR 2); the south boundary of 5FN494 is approximately 280 m to the northwest. It is an open camp that includes four concentrations of artifacts and one collector's pile. Among the tools are three groundstone fragments—one of maroon quartzite, one of sandstone, and one of an uncertain granular rock type (possibly andesite). Flaked stone tools include one uniface scraper, one utilized flake, one scraper/chopper, and one preform—all of yellow-brown jasper. The crew recorded more than 250 pieces of debitage plus one exhausted core of dark grey chert. The assemblage is dominated by yellow-brown jasper (78%), followed by lesser amounts of chalcedony, chert, and quartzite. No finishing flakes were noted but the large number of angular debris and core reduction flakes suggest early stages of tool manufacture, while the groundstone fragments indicate food processing. The collector's pile consists of pieces of yellow brown angular debris within the area of the largest concentration of the debitage. No historic date could be determined for the collector's pile. The site is evaluated not eligible for the NRHP.

5FN2645 (AGS–11–115) is also located south of CR 2, directly west of 5FN2644. The site is an open lithic scatter with one non-architectural feature present: an artifact concentration. Among the flaked stone artifacts are two black chert cores and one maroon chert core, plus one uniface scraper fragment of chalcedony. The artifact concentration consists of nearly equal numbers of chalcedony and yellow-brown jasper flakes. Similar to 5FN2644, the site witnessed significant early-stage tool production, with minimal tool use in evidence. Material diversity of the assemblage shows a slight majority (57%) of chalcedony flakes, many jasper artifacts, but only minor numbers of other chert and quartzite. The soil is rocky and shallow, suggesting low potential for buried deposits. The site is evaluated not eligible for the NRHP.

5FN2646 (AGS–11–116) is also located south of CR 2, immediately south of 5FN2644 on a small alluvial fan that descends toward the northwest. Both prehistoric and historic components are present here. The prehistoric component includes one possible non-architectural feature consisting of three rocks (breccia) that form an east-west alignment measuring 75 cm by 18 cm. The rocks appear to extend about 3 cm

below the present ground surface. It is not certain if the feature belongs to the prehistoric component, the historic component, or if it is a natural pattern. No formal or informal tools were observed, but one dark gray chert core is present. Flaked stone debitage distribution is rather uniform across the site, lacking the clustering indicative of defined activity areas. Material types are weighted toward the ubiquitous yellow-brown jasper (60%) of which 10% is a dendritic variety, along with grey chert, chalcedony, and quartzite. The dominance of core reduction and thinning flakes with associated angular debris suggests the site is a limited activity area focusing on early to intermediate stages of tool production. Although soil depths of 15-20 cm are indicated, the ground is heavily disturbed from the construction and later removal of the utility line, and no artifacts were observed eroding from cuts in the deposits here, suggesting a low potential for the presence of buried material.

The Historic period component of 5FN2646 exhibits the remnants of utility poles and light green glass insulators, which compliment the data from comparable utility line segments documented at sites 5FN2444 and 5FN2448. This evidence from all three sites has been combined into linear site 5FN2152.1, previously described. Both components of the present site are evaluated not eligible for the NRHP.

5FN2647 (AGS–11–117) is located south of 5FN2644 and directly southeast of 5FN2646. The site is primarily within the mixed conifer forest with only the northern third protruding from the forest edge, into an area where the forest thins into scattered clumps of trees. Like 5FN2646, both prehistoric and historic components are represented. The prehistoric component here is a large open camp, with a narrow drainage marking the east boundary. Five features have been noted on the site: four artifact concentrations, consisting of flakes and tools, and one ash lens; concentration #4 has more tools than the other concentrations. The ash lens is 20 m south of this tool concentration. The 13 tools observed on site include one pecked metate fragment of sandstone, one granite mano (in 3 pieces) worked on three faces, one chert hammer-stone, one jasper scraper, one pink chalcedony projectile point fragment (tip), two utilized biface fragments of jasper, one utilized biface fragment of chalcedony, one biface tool fragment of chalcedony, one broken scraper of chert, one uniface graver of chalcedony, one biface tool fragment of jasper, and one utilized flake of chert. Flaking debris of jasper, chalcedony, chert, agate, and quartzite complete the prehistoric assemblage. Overall material diversity, excluding the granite and sandstone, is, in decreasing order of abundance: jasper (50%), chalcedony, chert, agate, and quartzite. Food processing and lithic production were the dominate activities at this component.

The Historic period component primarily consists of six solder-sealed tinned cans, 3-4" in diameter, found in the forest at the edge of a narrow drainage forming the eastern site boundary. Cans are scattered over a 20 m × 1.5 m area. In addition to

the cans, four pieces of shoe leather are at the south boundary of the site, near the ash lens. Construction of the sole pieces with nail or screw attachments indicates post-1912 construction. This component is possibly associated with work on the installation of the historic utility line located north of the site (see 5FN2152.1 and 5FN2646 above for information concerning the utility line remnants). Both components of the site are evaluated not eligible for the NRHP.

5FN2648 (AGS–11–118) is a prehistoric site located at the forest edge, directly east of 5FN2647 and south of 5FN2649. It is an open camp situated on a moderate north-facing slope. The assemblage indicates that the occupants utilized the site for camping, food preparation and processing, and all stages of tool manufacture. Surface artifacts noted include two broken projectile point tips (jasper and chalcedony), one broken jasper projectile point base, and nine expedient flake tools (six of jasper, two of agate, and one chert). In addition, the site exhibits four chert core fragments, one quartzite core, one quartzite hammerstone, one jasper bifacial scraper, one chert end scraper, one red granite metate fragment, several chunks of charcoal, and three pieces of fire-cracked rock (FCR). Surface features include four possible hearths, two of which are eroded.

An especially enigmatic aspect of this site is the presence of 22 discolored soil mounds that may be ash dumps; nothing similar to this soil type was observed on adjacent sites 5FN2646, 5FN2647, or 5FN2649. It is possible that the hearths and ash dumps are modern. Also present at the site are two dense concentrations of flakes. The total number of flakes observed was 176: mostly thinning flakes, unidentifiable flake fragments, and angular debris along with small numbers of core reduction and finishing/maintenance flakes. As is common in the area, jasper dominates among the debitage materials recorded here, with minor amounts of chert, chalcedony, and quartzite also occurring. Soil depth of 10–15 cm, the presence of rodent burrows, and evidence of artifacts eroding out of shallow washes indicate the potential for buried cultural materials at the site. The site is evaluated potentially eligible for the NRHP.

5FN2649 (AGS–11–119) is a site with both prehistoric and historic components, although the latter is quite minimal. It is located 75 m south of CR 2, just north of 5FN2648 and northeast of 5FN2647. The prehistoric component is an open camp, most of which is in an open meadow, with only a small part within the mixed conifer forest represented in this area by isolated islands of trees. One non-architectural feature, an artifact concentration, is present on the site and it contains two chert core fragments, a maroon jasper core fragment, and flakes of chert and yellow-brown jasper. Tools include one broken sandstone mano and a utilized flake of yellow-brown jasper. Jasper materials dominate in the assemblage at 88%, followed by quartzite and chert. The Historic period component is entirely limited to a single isolated tobacco

tin. The site has little potential for buried cultural materials and is evaluated not eligible for the NRHP.

5FN2650 (AGS–11–120) is an open lithic scatter and chert source located on a low interfluvial ridge on the rolling plain just south of the main fork of Antelope Gulch, east of CR 1B. Other sites in the vicinity are sources of chert and jasper, including 5FN2652 nearby to the south and 5FN2651 farther away to the east. At 5FN2650, the artifacts consist solely of flakes around a few small (30 cm diameter) greenish brown-gray chert outcrops. This area is mapped in the Sharpsdale formation (Middle Pennsylvanian), where it adjoins an overlay of Pleistocene pediment gravels (Wallace et al. 1999). Material diversity is low, very heavily dominated (96%) by this chert, with only limited chalcedony and jasper present. Some of the material has been shattered into pieces of angular debris and unidentifiable flake fragments, but recognizable flakes in core reduction and thinning stages are preserved as well. Although one artifact concentration of chert flakes is present, artifact numbers total less than 50 on the site as a whole, and the potential for buried cultural materials is low. This is not a significant source of chert in the region, and the site is evaluated not eligible for the NRHP.

5FN2651 (AGS–11–121) is a lithic source for jasper and low-quality obsidian, located on a small rise just south of Antelope Gulch with a few boulder outcrops of Wall Mountain Tuff weathering from the high areas. The arbitrarily-defined west boundary of 5FN494 is only 15 m east of this site. Two forks of Antelope Gulch intersect directly north of the site, and when dry may have offered an opportunity for prehistoric procurement of toolstone material within the gravels. However, there is no current evidence to confirm this observation, as it looks as if the drainage is seasonally active. Two areas within this site, one to the northeast and one to the southeast, have openings within rocky outcrops with characteristics that led some survey crew members to speculate that the features may be hunting blinds. However, no artifacts are associated with the two areas and each one has the appearance of fallen and deteriorated natural formations, as opposed to culturally stacked rock, of which definitive examples are located on 5FN494. The two features at 5FN2651 had none of the characteristics that the hunting blinds on 5FN494 displayed. However, it is possible that the features at one point in time (or several points in time) might have seen use as such. The features are recorded as non-architectural and sketches of each were produced.

More importantly, there are two pits on the west side of the site containing deposits of yellow-brown jasper with gradations to a brown-black obsidian with quartz inclusions, from which persons in the past excavated and quarried available material. Lichen is present on material still attached to the earth. Pit #1 has a depth of

~1.4 meters (Figure 28); Pit #2 is about 6 m south-southwest of #1 and is ~1.2 meters in depth. It is quite probable that a large portion of the depth was created in the modern era, though one should not rule out the possibility that the pit features were initiated prehistorically. For example, apparently prehistoric jasper quarry pits were recorded by Belivilacqua and Wunderlich (2006) in the Gribbles Park area about 6 km southeast of Antelope Gulch. There is a significant amount of what appears to be angular debris in and around the two pits and associated outcrops (one jasper spall was collected, FS-1). How much is cultural and how much resulted from the removal of the nodules is impossible to tell. Only a few spent cores, core reduction, and thinning flakes remain. Two collectors' piles—one of flakes and one of cores—are present on the site.

Figure 28. A thick lens of toolstone-quality jasper has been exposed in a modern stone quarry pit (Pit #1) at 5FN2651. The bedrock here is Wall Mountain Tuff.

In addition, one small cluster of 11 flakes is present on the east side of the site. Included are one chert flake, one flake from the glassy material derived from Pit #2 (obsidian/quartz), six yellow-brown jasper flakes, one maroon jasper flake, and two

red-white mottled chert flakes. The rest of the identifiable assemblage was quite small. Tools include one chalcedony distal end scraper and one utilized flake tool of chert. Five spent cores of the brown-black obsidian with quartzite inclusions were recorded, and one was collected (FS-2). A weathered bison horn sheath also was collected (FS-3), about 40 m west-northwest of Pit #1. Its preservation in a surface context suggests it is none too old, probably late Historic period or modern (it may be of relevance that the last known wild bison in Colorado were killed in Lost Park about 75 km northeast of this site in 1897 [Simmons 2002:18]). In addition, 21 flakes of jasper, three flakes of chert, and one flake of chalcedony were scattered across the site. The material breakdown of all artifacts is 68% jasper, 15% obsidian, 9% chert, and 6% chalcedony. The site is evaluated eligible for the NRHP.

5FN2652 (AGS–11–122) is another site with both prehistoric and historic components, located south of 5FN2650 on a northeast-sloping, rolling plain along the south side of an Antelope Gulch tributary. The prehistoric component here is a brown chert/jasper source or material procurement area. Artifacts consist entirely of fragmented jasper raw material nodules (two collected, FS-1 and FS-2) and flaking debris, but no definitive cores were observed. Material and artifacts are all brown jasper (100%). Over 200 flakes were recorded and categorized as angular debris, along with 44 chunks of jasper raw material. Sixteen individual jasper outcrops were recorded, ranging in size from 3 m × 1.5 m to 30 cm × 30 cm (only half of these jasper outcrops were precisely measured due to time limitations). One of these is a possible jasper quarry pit about 2 m in diameter × 0.5 m deep. This area is mapped at the boundary of the Sharpsdale formation along the drainage with the Kerber formation on the lower slope (Wallace et al. 1999); the jasper probably originates in the Kerber formation. The narrowly focused nature of the artifact assemblage here suggests this was a limited activity area that focused on acquisition and testing of jasper material for tool production.

The Historic period component is a trash scatter with a date range of 1860–1970 consisting of amber glass, clear glass, tin can fragments, one evaporated milk can, one oil can, one wine bottle, one brown Clorox bleach bottle bottom, and one quart-size Ball canning jar. No features are present, and there is little potential for buried material in this component. The site is evaluated not eligible for the NRHP.

5FN2653 (AGS–11–123) also has both prehistoric and historic components. It is located on a northwest-facing slope at the transition of a conifer forest, southeast of 5FN2652 and 230 m west of the southwest corner of 5FN494. The prehistoric component of 5FN2653 is an open lithic scatter characterized by flaked stone debitage that appears to be washing down from the tree line. One concentration of artifacts, consisting only of flakes, represents the only feature observed. Likewise,

flaking debris is the only artifact class present on the site as a whole. Material types largely consist of jasper, along with some chert, and only minor amounts of chalcedony. The artifact assemblage is indicative of a limited activity area that focused on lithic reduction and some early stage tool production. The impact of the Historic period prospect pit and related activities on the southwest side of the site is uncertain but may have contributed both to the physical disturbance of the prehistoric component and the possible loss of tools from surface collecting.

The Historic period component of 5FN2653 consists of a prospect pit and associated artifacts. The historic materials are mixed with artifacts from the prehistoric component, and it is probable that the more recent activities—the excavation of the prospect pit and related construction activities—heavily disturbed the integrity of the prehistoric component. The prospect pit measures 16 m × 14 m and has an associated spoil pile from the excavation. Artifacts recorded include machine cut nails, one wire nail, bailing wire, barbed wire, barrel hoops, scrap iron, a sanitary can, fourteen solder dot cans, and approximately 30 scraps of milled lumber. This component may date to the period 1890–1930, based on the beginning of the Cripple Creek gold rush that brought thousands of prospectors to the area and on mineral patent dates of 1898–1928 for the mining of silver-copper ores in red bed formations to the north and northwest of the project area. Both components of this site are evaluated not eligible for the NRHP.

5FN2659 (AGS–11–47) consists of a flaked stone scatter on a northeast-sloping section of a low, rocky ridge, adjacent to the northeast corner of the Antelope Gulch site rectangle (5FN494). Overall artifact density is low to moderate, with no concentrations of artifacts and no other features present. Due to the slope of the ridge and widespread bedrock exposures, the site area has been impacted by both wind and water erosion, as well as animal activity (primarily cattle and wild game grazing). Thus, the potential for intact buried material is assessed as quite low. Only two tools have been observed here, a chalcedony scraper (collected, FS-1) and a core tool of yellow-brown jasper used in scraping tasks. The site's surface assemblage is dominated by debitage representing all stages of tool manufacture—particularly, biface thinning flakes and unidentifiable flake fragments. Flaked stone materials represented are predominately the locally-available jasper, along with smaller numbers of other cherts, chalcedony, and a single piece of petrified wood. Given the proximity of the purported "bison jump" feature at adjacent site 5FN494, the ridge here was searched for any possibly related game drive features. However, no evidence of this sort was encountered either on this site or on other local sites, nor was any game drive evidence observed on aerial photographs. This site is evaluated not eligible for the NRHP.

5FN2660 (AGS–11–48) contains both prehistoric and Historic period components, situated on a rocky, gently north-northwest sloping ridge with thin soils, extending down to more level and grassy terrain around low rock ledges and rounded knolls. The older evidence consists of a flaked stone scatter of rather homogeneous contents. Overall artifact density is low, with no true concentrations of lithics noted although most of the two dozen flakes found here occur within two clusters in the east-southeast and southwest portions of the site. No diagnostic artifacts, no other tools, and no features are present. Due to the widespread bedrock exposures, the potential for intact buried material is extremely low. The site assemblage is exclusively one of lithic debitage representing all stages of tool manufacture, especially biface thinning flakes and unidentifiable flake fragments. Flaked stone materials are almost entirely the locally-available yellow-brown to maroon/red solid and dendritic jaspers, along with a single piece of tan chert. There are also two areas of natural, secondary jasper deposits in the form of small pebbles—generally less than 5 cm in diameter—found in the eastern and southern portions of the site. However, there is no evidence of procurement activity associated with these small nodules.

The Historic period component consists of two rock cairns located 28 m apart, overlapping with the northern portion of the prehistoric lithic scatter. Feature 1 is the larger of the two cairns, constructed with 18 unshaped rocks of native volcanic tuff at the base of a low bedrock ledge of the same rock type. Some rocks are lichen-covered, in a nearly square arrangement 2' in diameter. A wooden post is adjacent to Feature 1, presumably fallen from the center of the cairn (Figure 29). The post is of dimensional lumber, 3" × 3" square and 4' long. Feature 2 is nearly due east of the larger cairn, and lacks an associated post. It was built using only four unshaped rocks in a rough circular pattern. Artifact density on this component is extremely low, limited to a single crimped seam can. Mining records for the area are for uranium claims made in the period 1965–1978. The entire site is evaluated not eligible for the NRHP.

5FN2661 (AGS–11–49) is a flaked stone scatter situated on a nearly level grassy plain, north of Antelope Gulch site 5FN494. Although the low cliff at the Antelope Gulch site has been interpreted as a "bison jump" feature—and is visible from this site—no supporting evidence of this kind of activity such as game drive lines has been observed here. Overall artifact density is moderate, and the distribution of those artifacts is uneven with the greatest amount of clustering in the northwest portion of the site, although the latter does not rise to the level of a concentration. The site has been locally impacted by rodent burrowing, grazing, and wind deflation. The site's surface assemblage is dominated by lithic debitage. Although all stages of tool manufacture are represented, intermediate stage biface thinning flakes are most common by far. Flaked stone materials are likewise heavily dominated by the locally-available yellow-brown, solid and dendritic jaspers, along with lesser numbers of other

chert, agate, and chalcedony. No diagnostic artifacts or features have been observed, but two flaked stone tools of dendritic jasper have been recorded: a large broken flake removed from a scraper (i.e., tool reshaping or modification) and a flake tool fragment with use wear from low angle scraping/shaving. A small cluster of flakes in a 30 cm diameter area at the southwest edge of the site is suggestive of a collector's pile, but it could also be from prehistoric cultural activity. This site has some potential for intact buried material, and also may be related to activities at the adjacent Antelope Gulch site. It is evaluated potentially eligible for the NRHP.

Figure 29. This cairn-post pairing at 5FN2660 is a common feature in the AGS north of Antelope Gulch. The mapping station is at the tripod at top center in this southerly view.

5FN2662 (AGS–11–50) is a flaked stone scatter on a level alluvial terrace on the south bank of Antelope Gulch, extending a short distance up the foot of a gentle ridge slope to the south. Overall artifact density is quite low, with no concentrations of artifacts noted and no diagnostic artifacts, only one other tool, and no features observed. The site assemblage is almost exclusively lithic debitage representing early and middle stages of tool manufacture. All but one of the flaked stone materials are of

the locally-available yellow-brown to maroon jaspers, along with a single piece of light gray chalcedony. The single tool found here in the eastern portion of the site is a heavily weathered, composite flake tool of brown jasper, used as both a spokeshave and scraper. The potential for intact buried material is very low given the good ground visibility and total lack of artifacts exposed in the gully walls of Antelope Gulch. The site is evaluated not eligible for the NRHP.

5FN2663 (AGS–11–51) is an open lithic scatter situated on a gently sloping mountain plain. It is on the north edge of the Antelope Gulch site; in fact, its southern boundary coincides with the arbitrarily-defined north boundary of 5FN494. There are clearly-defined areas of lithic artifact concentration located in the south/southeast portion of 5FN2663; outside of these concentrations lithics are sparse. Density within these concentrations is 3–7 artifacts per square meter. However, several tools were found outside of these concentrations. Most of the lithics are of jasper with other materials such as chert and chalcedony also present. Two jasper scrapers (both collected, FS-2 & FS-4), one flake tool, one chalcedony biface (FS-1), and one obsidian flake tool (FS-3) were recorded, but no diagnostic artifacts were found. The obsidian material has been sourced to the Valles Rhyolite (Cerro del Medio) locality in northern New Mexico (see Appendix II). Not all stages of tool manufacture were represented; only core reduction, thinning, and unidentifiable fragments were found. In addition to the two artifact concentrations, one other feature is present here. Built into a low rock outcropping at the west edge of the site is a small stone circle of five large rocks (Figure 30). While the site has been disturbed by rodent activity and cattle grazing, and is subject to wind erosion, there is good potential for discovering features and lithics buried within the variable soil depths of the site. The site, given the concentration of lithics and stone circle, may have functioned as a camp site where tools were manufactured. The site is evaluated eligible for the NRHP.

5FN2664 (AGS–11–52) is an open lithic scatter concentrated on a flat plain at the center of a saddle bounded by higher terrain to the north and south, but relatively open terrain to the west and east. Toward the western boundary of the site is a mound-shaped or knoll-like rock outcropping—most of the flaked stone artifacts are due east of this outcrop. A majority of observed lithics are thinning and finishing/ maintenance flakes which represent the intermediate to later stages of tool manufacture. While one production stage biface was found, no tools—diagnostic or otherwise—were found. A collector's pile of eight flakes that was found at the south end of the site may explain the absence of tools. All but three flakes found on site were made of chert and jasper. Maroon chert flakes predominate on the east side of the site while dendritic chert is found at greater frequency on the western edge of the site. Flake densities range from less than 1 flake/m^2 to approximately 10 flakes/m^2 toward the center of the site. There is the potential for buried material at the center of

the site where both soil depth and lithic artifact density are greatest. No prehistoric features were observed on site. The site, given the concentration of debitage, may have functioned as a chipping station where tools were manufactured. The site is evaluated potentially eligible for the NRHP.

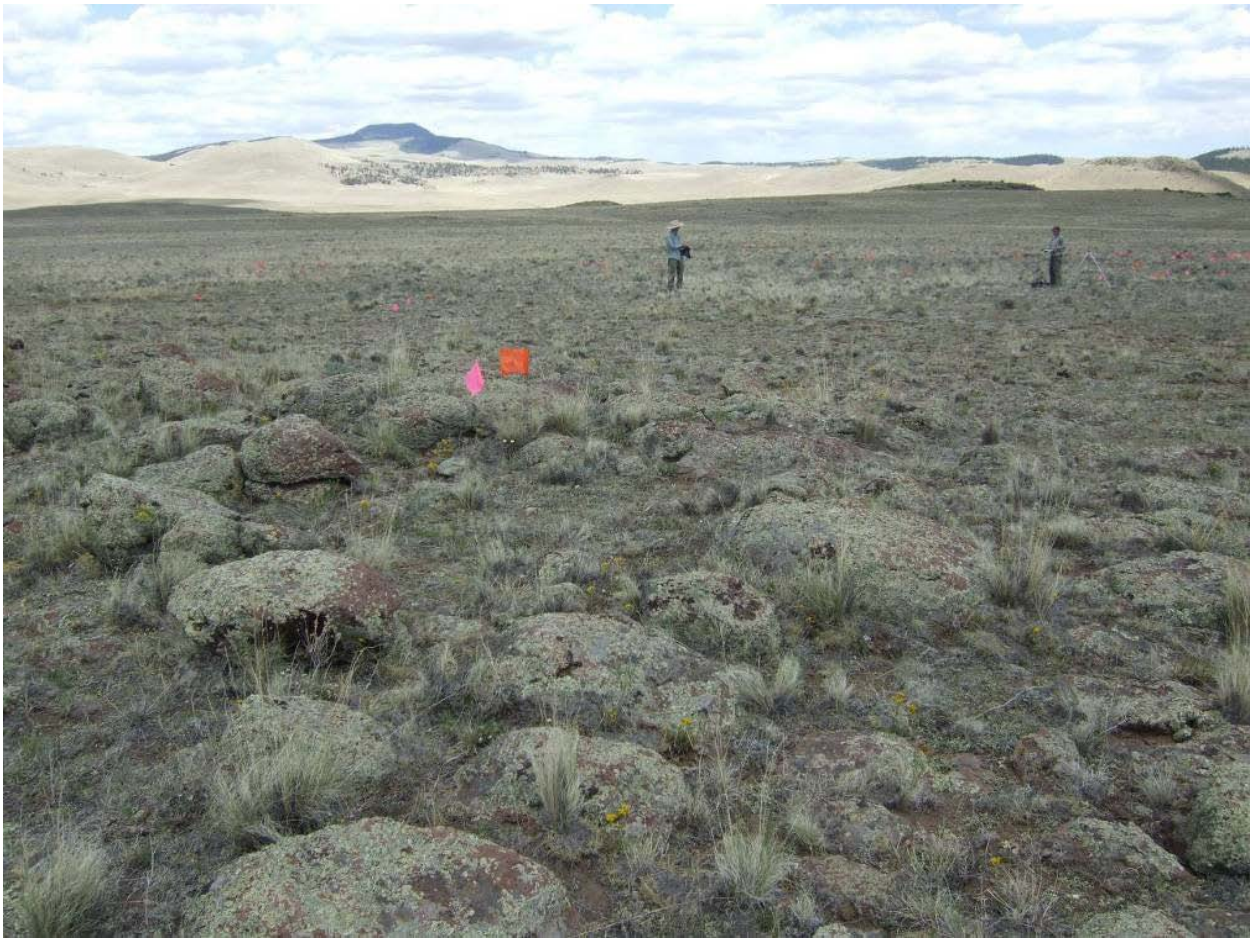


Figure 30. The pair of pin flags in the foreground is within a small stone enclosure at 5FN2663. The mapping station is at the figure standing at the right in this east view.

5FN2665 (AGS–11–53) is an open lithic scatter on a gently rolling grassland plain just northeast of a low butte. The main flaked stone concentration occurs along a NW-SE axis in the northern area of the site, and is the only feature observed here. The majority of lithics are core reduction and thinning flakes which represent the early to intermediate stages of tool manufacture. No tools—diagnostic or otherwise—were found. Flaked stone materials are heavily dominated by a dark green and black chert; locally-available jasper and chalcedony occur in lower numbers. There is the potential for buried material in and around the lithic concentration, based on the observation of rodent disturbance that has exposed several flakes from subsurface contexts. However, the absence of diagnostic materials precludes an assessment of the chronology of

prehistoric occupations here. This site is evaluated potentially eligible for the NRHP.

5FN2666 (AGS–11–54) is a sparse—but somewhat unusual—open lithic scatter on a gently rolling grassland plain north of Antelope Gulch, impacted by a moderate amount of rodent burrowing. Most flaked stone artifacts here are widely distributed at densities much less than $1/m^2$, except in one small area where there is a flake cluster of $4–5/m^2$. The majority of flakes are biface thinning pieces representing the intermediate stage of tool manufacture. One of the unusual aspects to the site is in the flaked stone materials that were utilized here compared to all other sites recorded in the vicinity. Here, the toolstone material distribution is heavily weighted toward light-colored chalcedonies, whereas the far more typical assemblage is dominated by yellow-brown to maroon jaspers. Both materials are locally-available, but jasper is much more common in bedrock exposures to the west and south. Another unusual site attribute is in the two artifacts collected here: a flake of non-local obsidian sourced to the El Rechuelos locality in northern New Mexico (FS-1; see Appendix II) and a triangular biface blade fragment of tan quartzite (FS-2). Even more so than chalcedony, quartzite is an uncommon material type on sites in this area. No diagnostic tools were found, so the time period(s) of prehistoric occupation(s) remains unknown. There appears to be little potential for buried material, based both on the sparse nature of the surface assemblage and on the lack of artifacts associated with rodent-disturbed soils here. The site is evaluated not eligible for the NRHP.

5FN2667 (AGS–11–55) consists of an apparently secondary (gravel) source of jasper toolstone, mostly in a variety of yellowish-brown chert or jasper with dark green to black veins and smaller quantities of material containing dendritic inclusions (Figure 31). These fist-sized and smaller nodules have a rough-textured, cream- to tan-colored cortex. This area is mapped in the Antero formation (Oligocene; Wallace et al. 1999), with limestones and conglomerates that could be the host deposits. However, Quaternary pediment gravels are mapped not far south of here and might also account for this toolstone deposit. The location of the lithic scatter is north of Antelope Gulch in open grassland on the upper slope of a low ridge, facing northeast with an expansive view of the surrounding landscape (Figure 32). Within the site there are two main concentrations of flaked stone debitage, cores, raw material nodules, and angular debris from material testing via hard hammer percussion.

Cluster A on the west side of the site contains about 60% of the surface assemblage, and exhibits a large number of core reduction and biface thinning flakes, along with a few late stage finishing flakes. Two samples of raw material were collected from this concentration (FS-1, FS-2; Figure 31 top and lower left). Cluster B is nearby to the east, and is dominated by core reduction flakes and very few thinning or finishing flakes. One raw material sample was collected from this concentration

(FS-3; Figure 31 lower right). No flaked stone materials other than the native jasper have been observed, and no features other than the two material concentrations are present. The jasper deposit here seems to have been high-graded given the preponderance of lower quality nodules and cores remaining. Also, some slope wash has affected the distribution of the remains as evidenced by: 1.) the somewhat linear shape of the two concentrations in a downslope orientation; and 2.) size-grading of the concentrations with larger items found upslope and smaller ones washed farther downslope to the north and northeast. No tools, diagnostic or otherwise, were found so the time period(s) of prehistoric occupation(s) remains unknown. Although there is some potential for buried material, even if it is present it is likely quite similar to the surface assemblage. The site is evaluated not eligible for the NRHP.

Figure 31. The naturally occurring jasper at site 5FN2667 is distinctly veined (sample collection, catalog #5FN2667–1, 5FN2667–2, and 5FN2667–3).

5FN2668 (AGS–11–56) is another site with both prehistoric and Historic period components. The prehistoric component might have been recorded as an isolated find if not in spatial association with Historic period cairns. It consists of a very sparse flaked stone scatter of five flakes and one core situated on and around a small, rounded, bedrock knoll west of Badger Creek. The site's limited assemblage is almost exclusively biface thinning flakes plus one unidentifiable flake fragment. Flaked stone materials, however, are rather diverse given the small number of items present, and include a few different types of chert, the locally-available maroon jasper, and yellow agate. The core is also a jasper artifact. No diagnostic artifacts, no other tools, and no features are present. Due to the widespread bedrock exposures, the potential for intact buried material is quite low.

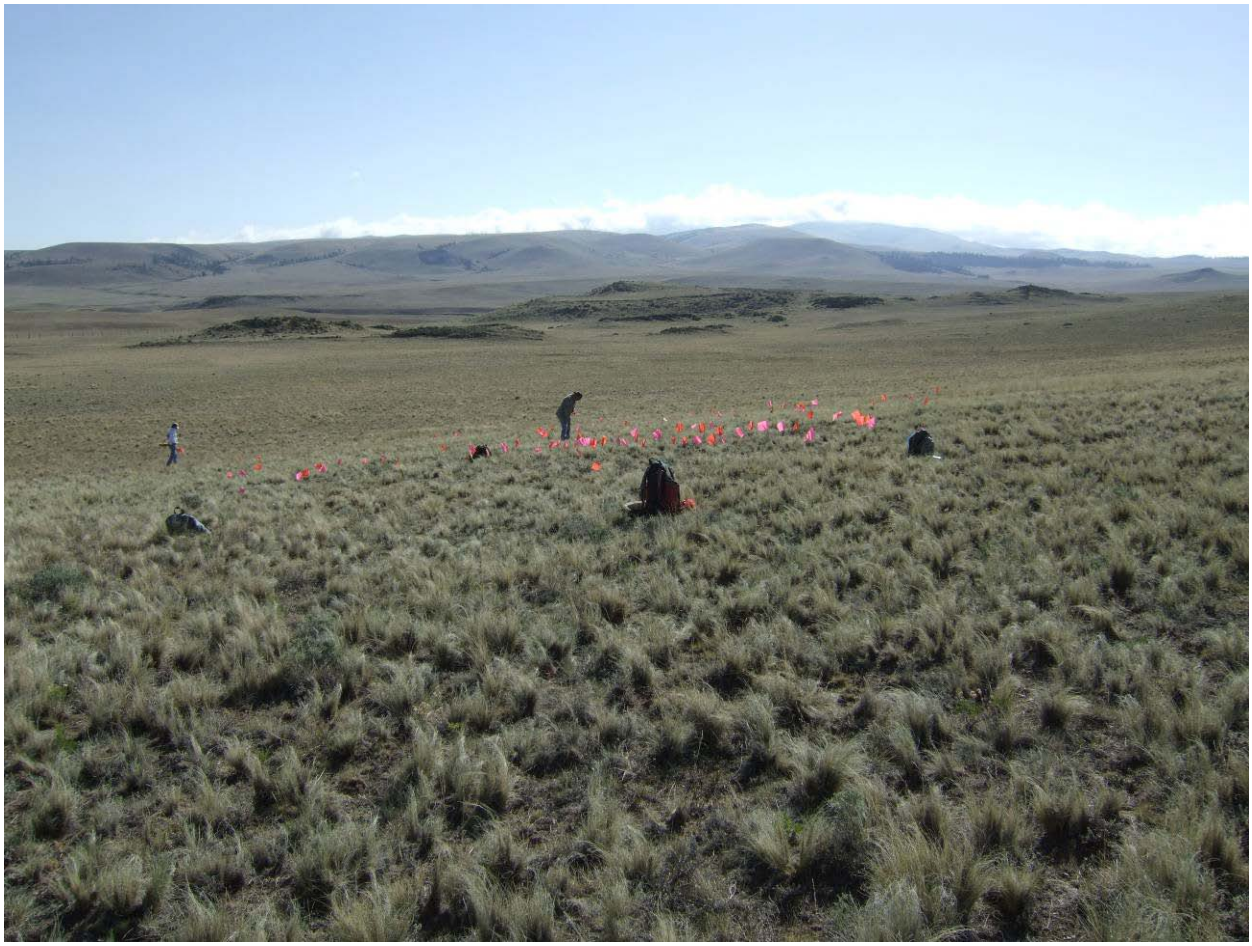


Figure 32. Site 5FN2667 is probably a secondary source of jasper, as a concentration of nodules within a gravel deposit on the slope, readily seen by the pin flags in this northeast view.

The Historic period component is a rough alignment from northwest to southeast of three rock cairns spread across a ca. 155 ft long area obliquely down a slope, adjacent to the prehistoric lithic scatter. Also within the site, but not in functional relation to the cairns, are seven short strands of barbed wire and a modern cartridge case. The northwesternmost (Cairn A) and middle (Cairn B) cairns have definite center pockets in which posts were likely set, but the posts are no longer present or preserved. Cairn A is constructed with seven unshaped rocks of native volcanic tuff—five of which form the base and two in an upper course; all are heavily lichen-covered. One other lichen-covered rock rests 10" away and may have been an original part of this cairn. About 108 ft to the southeast is Cairn B, composed of at least 13 rocks with the larger rocks forming the base; six of the cairn rocks are lichen-covered. Two other rocks appear to have tumbled off the cairn and lay a few inches away. Cairn C is about 50 ft southeast of Cairn B, and is composed of seven rocks (two are lichen-covered) in a single course, a couple of which are fairly large. One

additional small rock is about 11" away. Rocks in this cairn surround a slightly off-center hole. A remnant piece of log from a probable wooden post is about 22" away from Cairn C, and is itself surrounded by pieces of wood lathe. Unlike most other cairn-and-post features in this area, the post here is not of dimensional lumber, but of an unshaped tree branch/trunk. Cairn C is within 45 ft of the property boundary fence separating state trust land on-site from private lands to the east. Both site components are evaluated not eligible for the NRHP.

5FN2669 (AGS–11–57), like 5FN2668, has both prehistoric and Historic period components. The prehistoric component consists of a sparse flaked stone scatter of eight artifacts situated on and adjacent to a low, elongated, bedrock ridge west of Badger Creek. The majority of the site's limited assemblage is clustered on a colluvial slope at the base of the low cliff on the northeast side of the ridge; extremely sparse materials also occur on the rocky crest of the ridge (Figure 33). Two tools were found and collected within the small cluster: a corner-notched projectile point diagnostic of the Late Archaic period (FS-1), and a stemmed uniface base & tip that appear to be from a single tool—possibly also a projectile point (FS-2). Material types include a mix of locally-available jasper, other chert, and chalcedony. The sparse debitage mostly represents early and intermediate stages of tool manufacture in the form of core reduction and biface thinning flakes. No features are present. Due to the widespread bedrock exposures and sparse surface materials even on the colluvial slope where ground visibility is good, the potential for intact buried material is quite low.

The Historic period component consists of three rock cairns spread across a ca. 160 ft × 50 ft area on the crest and southwest slope of the rocky ridge, adjacent to the southwest side of the prehistoric lithic scatter. Together the three cairns define a narrow triangle with Cairns 1 & 2 about 50 ft apart on and near the top of the ridge, and Cairn 3 farther away to the southwest about 160 ft from the others at the foot of the ridge. Only Cairn 2 on the upper slope of the ridge is currently associated with a wooden post, but the presence of center pockets in Cairns 1 and 3 suggest posts were originally present (i.e., all three cairns likely functioned as bracing to keep posts in a vertical position). Cairn 1 is constructed with nine unshaped rocks of native volcanic tuff—all are lichen-covered. This cairn measures up to 2 ft in diameter, and its rocks are stacked 11" high. About 50 ft to the south-southeast is Cairn 2, composed of 14 rocks in a 3 ft × 2 ft area and stacked 1.6 ft high; again all of the cairn rocks are lichen-covered. Resting in a fallen position at this cairn is a wood post made of two lengths of dimensional lumber nailed together (nominal 2" × 4" size). The post is 4 ft long and its two boards were fastened together using seven wire nails—five of which are 16d size. Cairn 3 has 13 lichen-covered rocks in a 2 ft × 2 ft area and stacked 1.5 ft high. Collectively, the cairn rocks vary in size from 4" × 3" to 1 ft × 1 ft. No other

features or artifacts are present in this component. Both site components are evaluated not eligible for the NRHP.

Figure 33. Like several other sites recorded north of Antelope Gulch, the 5FN2669 location is associated with a prominent rock outcrop; this view to the west shows flagged activity areas both on the crest of the ridge and at its base on the right.

The Isolated Finds

Twenty-two isolated finds (IFs) were documented during the Antelope Gulch inventory. Thirteen of these 22 isolates are of prehistoric American Indian origin, and the remaining nine date to the Historic period. The latter include two prospect pits and ten rock cairns; several—if not all—of the cairns actually may date to the early modern era, ca. 1960–1980.

5FN2452 (AGS–09–IF1) includes three items: one black agate flake tool edge fragment; one light gray chalcedony flake fragment; and one maroon jasper flake fragment. These were found in a 33.5 m NW-SE × 5 m NE-SW area on a sloping

bench, on a lower north ridge slope, south of the major east-flowing Badger Creek tributary.

5FN2453 (AGS–09–IF2) is a single large, speckled, yellow-brown and maroon jasper spear point; the haft element is stemmed with a convex base (Figure 34). This style is diagnostic of the Early Archaic period ca. 8000–5000 BP. The jasper material is lustrous, possibly from natural surface fire(s). It was found on the north toe slope of a ridge, near the head of the major east-flowing Badger Creek tributary.

Figure 34. The convex base shape on this specimen collected at 5FN2453 is generally diagnostic of the Early Archaic period.

5FN2454 (AGS–09–103) consists of two items found 10 m apart on the southeast-facing slope of a ridge, above the major east-flowing Badger Creek tributary south of Antelope Gulch. Both flaked stone artifacts are brown dendritic jasper biface fragments; one measures 5 cm × 3.5 cm, the second is 3 cm × 2 cm.

5FN2599 (AGS–10–IF3) is an isolated mineral prospecting pit measuring 2.8 m long × 2.4 m wide, with an adjacent 6 m × 5 m tailings pile. A shallow depression to the west may be a smaller prospect. The only two artifacts noted are a 2" × 4" board with wire nails to the northeast of the prospect, and a lard bucket to the south of the pit. The Historic period date range for this IF could be ca. 1890–1930 given the local mining history of the district, but is probably later if the likely-modern lumber is contemporaneous. As an aside, there is a natural, small deposit of jasper at this location (mapped in the Fremont Dolomite; Wallace et al. 1999), but it entirely lacks evidence of procurement. This location is on the south toe slope of a ridge, near the head of the major east-flowing Badger Creek tributary.

5FN2600 (AGS–10–IF4) has one feature: a rock pile of quartzite, the individual blocks measuring up to 25 cm in maximum length. This cairn is very well-weathered, 0.8 m × 1.0 m, partly obscured by soil and vegetation, and currently stacked two rocks high (ca. 20 cm). No artifacts are present. The feature may be a monument for a mining claim or a similar marker of the Historic period, no doubt post-1860 but perhaps older than the common cairn-and-post features in the area. There is a second less-likely cairn—probably a natural rock pile—about 12 m to the northwest of the more definitive cairn. The location is at the foot of a north-facing slope of a ridge, just above the major east-flowing Badger Creek tributary.

5FN2654 (AGS–11–IF124) consists of five flakes and a flake tool located in a small drainage about 70 m southwest of site 5FN2651. This area is in open grassland at the transition to the mixed conifer forest on the higher ridge slope to the south-west. The six artifacts documented here include one utilized chert flake and five pieces of debitage: three chert flakes and two angular debris fragments—one each of chalcedony and chert.

5FN2655 (AGS–11–IF125) is an isolate with just two flakes located between two small drainages ca. 170 m southwest of site 5FN2652. The debitage consists of one unidentifiable chalcedony flake fragment and one yellow-brown jasper core reduction flake. In addition, there are three very small outcrops of solid to dendritic yellow-brown jasper just east of the flakes, but with absolutely no evidence of procurement activity associated. This area is mapped in the Kerber formation. Similar to 5FN2652, the location is in open grassland at the transition to the mixed conifer forest on the slopes above, south of Antelope Gulch and east of Fremont County Road 1B.

5FN2656 (AGS–11–IF126) is a small lithic scatter of nine flakes with no concentrations, located between two small drainages about 130 m southwest of site 5FN2652. The isolate consists of six jasper flakes and three chert flakes in the open grassland below the forest ecotone, about 40 m from isolate 5FN2655.

5FN2657 (AGS–11–IF127) is a Historic period prospect pit located in the open grassland near the tree line, 170 m north-northeast of site 5FN2653. No artifacts have been observed in the vicinity. The weathered pit feature measures about 16 ft × 14 ft and is 5 ft deep, with an associated tailings pile on the north side. Both the lack of artifacts and of direct historical records prevent a precise age assignment, but the prospecting is estimated to date to the period 1890–1930 based on general regional history. This period is associated with the Cripple Creek gold rush and its aftermath, including the mining of silver-copper ores in red bed formations to the north and northwest of the project area.

5FN2658 (AGS–11–IF128) is limited to a single obsidian flake (collected, FS-1), located 100 m southwest of site 5FN2652, in the open grassland south of Antelope Gulch and just below the edge of the mixed conifer forest. The artifact is a non-diagnostic thinning flake fragment with a broken distal end. The obsidian material has been sourced to the El Rechuelos locality in northern New Mexico (see Appendix II).

5FN2670 (AGS–11–IF5) has seven total pieces of flaked stone debitage; four flakes are in 3 m diameter cluster to the southwest and the other three are scattered to the northeast up to 32 m away. Six of the seven flakes are made of local jasper including two thinning flakes and four unidentifiable flake fragments; there is also one dark gray chert piece of angular debris. This IF is immediately northeast of Antelope Gulch site 5FN494, on a sloping swale or saddle of the ridge forming the rimrock just north of the gulch.

5FN2671 (AGS–11–IF6) is a small rock cairn of 10–12 unshaped blocks of local Wall Mountain tuff. Most rocks have a heavy lichen cover. This feature is 20" (50 cm) in diameter and two rocks high, and shows no evidence of the former presence of a wood post as seen with many other cairns in the area. A 2nd cairn is on private land ca. 40 m to the northeast but 10 m east of the property fence, which our crew did not cross. The location is at the east edge of the survey area, on a gently rolling plain marked by numerous small, mound-like rock outcrops. Badger Creek is 300 m to the northeast.

5FN2672 (AGS–11–IF7) consists of eight flaked stone artifacts observed in a 9 m NNW-SSE × 2 m ENE-WSW area centered on a tiny outcropping of jasper and chert that was apparently not utilized as a toolstone source (Figure 35). All artifacts are yellow-brown jasper including one core fragment, one core reduction flake, one thinning flake, three unidentifiable flake fragments, one piece of angular debris, and one utilized flake. The yellow-brown jasper outcrops in a 1.75 × 1.0 m area as small ±20 cm patches in (mostly buried, ground level) boulders of pink-brown Wall Mountain tuff; this material grades from massive to highly fractured, and one patch on the downslope end of the IF grades from light yellow to white/light gray chert. Two small material samples were collected (FS-1 and 2). The outcrop is just outside the northeast corner of 5FN494 on a south-southeast slope near the crest of a ridge. There is a general gradient of 10°–15° here, but more level spots occur behind boulders detached from the rimrock.

5FN2673 (AGS–11–IF8) is a single small rock cairn which braced a wood post. The cairn has 12 unshaped, rounded to angular rocks of local origin, in a size range from 3" × 8"× 8" cm to 8" × 12" × 16" cm and with variable lichen cover. This feature is ca. 36" E-W × 30" N-S in diameter and two rocks high. The wood post is

made with two 4 ft long boards nailed together with three 16d wire nails. The post has fallen from the center of the rock cairn. Milled boards in the post are nominal 2 × 4s, actually measuring 1½" × 3½" with rounded edges, suggesting an age no earlier than 1961. A second post made from a juniper(?) log is 180 ft (55 m) to the north, near a brown glass Coors bottle. This IF is on a very gently rolling plain in an open grassland area about 250 m north of Antelope Gulch. Mining claim records for the area on file with the BLM are for uranium claims made in the period 1965–1978.

Figure 35. Yellow-brown jasper is an ubiquitous toolstone material in the Antelope Gulch region, but this small deposit in Wall Mountain tuff at 5FN2672 shows no evidence of procurement activity.

5FN2674 (AGS–11–IF9) contains six total pieces of flaked stone debitage in a 2 m SE-NW × 25 m NE-SW area. Two of the six are made of yellow-brown jasper (one dendritic), one is maroon jasper, two are greenish black chert, and one is a light gray quartzite blade. Three are biface thinning flakes (two jasper, one quartzite), and three are unidentifiable flake fragments. The area is a very gently rolling plain in an open grassland area, a short distance east of a low volcanic butte. Antelope Gulch is 250 m to the south.

5FN2675 (AGS–11–IF10) is a single rock cairn of 14 unshaped, rounded to angular rocks of local origin. The rocks are in a size range from 8" to 26" maximum dimension, with variable lichen cover (minimal to abundant) both on exposed surfaces and undersides. This feature is ca. 47" E-W × 39" N-S in diameter and two rocks high, with a center space from a displaced post. The wood post originally in the center of the cairn has been displaced 90 ft (27 m) to the east. It is a single 2 × 4 board that is 32" long with an axe-cut taper on one end. As with similar features in the area, the milled board is a nominal 2 × 4, measuring 1½" × 3½" with rounded edges that suggests an age no earlier than 1961. Unlike similar posts in other nearby cairns, this one is not nailed to a second board. The cairn is on the northeast mid-slope of a low volcanic butte and the post is on the adjacent very gently rolling plain. Antelope Gulch flows 260 m to the south. Mining claim records for the area on file with the BLM are for uranium claims made in the period 1965–1978.

5FN2676 (AGS–11–IF11) is a single small rock cairn and wood post that has fallen from the center of the cairn, like the post at 5FN2673. The feature has 11 unshaped, rounded to angular rocks of local origin, in a size range from 9" to 31" maximum dimension, with only minor lichen cover on exposed surfaces. It is ca. 39" in diameter and 8" (two rocks) high, with a center space remaining from the fallen post. The post is made with two 2 × 4 boards (44½" L) fastened together with three 16d wire nails, and it has an axe-cut taper on one end. One finishing nail in the post probably fastened a sign or claim note. Fitting the local pattern, milled boards in the post are nominal 2 × 4s, actually measuring 1½" × 3½" with rounded edges, indicating an age no earlier than 1961, most likely the period 1965–1978. The location is a south-facing 5° slope near the toe of a small hill, above a very gently rolling plain toward the east edge of the survey area. Badger Creek is 400 m to the northeast.

5FN2677 (AGS–11–IF12) is a single small stemmed or weakly corner-notched arrow point of maroon jasper (Figure 36). This is a nearly complete specimen except the tips of the blade and one shoulder are broken. The flaking pattern is a mix of collateral and oblique scars. Its blade shape is triangular, and the stem edges are weakly expanding. Metric dimensions are: total length 2.13 cm; maximum width (at shoulders) 1.61 cm; maximum thickness 0.44 cm; and neck width 0.67 cm. The style dates to the Late Prehistoric stage, post AD-100. Most likely it is a small version of corner-notched forms common in the Developmental period up to AD 1000, but it may be a later stemmed form found in some Diversification and Protohistoric period contexts as late as AD 1700–1800. It was found (and collected) at the northwest edge of the crest of a hill about 485 m north of Antelope Gulch.

5FN2678 (AGS–11–IF13) is a complete, small, side- and basally-notched arrow point of yellow-brown chalcedony (Figure 37). As with 5FN2677, the flaking pattern

is a mix of collateral and oblique scars. The small side notches are close to the base, and the basal notch is likewise small and centrally positioned. The blade shape is ovate, the stem edges are sharply expanding, and the basal edge is slightly convex. Metric dimensions are: total length 2.90 cm; maximum width (at shoulders) 1.89 cm; maximum thickness 0.39 cm; and neck width 1.28 cm. The style dates to the Late Prehistoric stage, post AD-1300; it is most likely a tri-notched type of the late Diversification period up to AD 1450, but may date as late as AD 1700–1800. The discovery location is a gently rolling plain in an open grassland area, south of a volcanic rock outcrop. Badger Creek is 535 m to the east.

Figure 36. This small arrow point found at 5FN2677 represents a probable hunting episode of the AD 100–1000 period.

Figure 37. Tri-notched arrow points such as this specimen from 5FN2678 generally date to the AD 1300–1800 period.

5FN2679 (AGS–11–IF14) consists of two rock cairns 47 ft (14 m) apart, located near the east edge of the survey area amidst numerous small rock outcrops, about 150 m west of Badger Creek. The southern of the two cairns is associated with a wood post and lathe fragments, and was built using six unshaped, rounded rocks of local origin, with moderate lichen cover. This feature is 26" (67 cm) in diameter and 16" (two rocks) high. The wood post has fallen from the center of the cairn and is made with two 2 × 4 boards (ca. 48" L but partly buried & rotted) nailed together with two 16d wire nails. As usual for this area, the milled boards in the post are nominal 2 × 4s, measuring 1½" × 3½" with rounded edges, again suggesting an age no earlier than 1961 and likely in the period 1965–1978. Broken pieces of thin wood lathe—the

tapered end—are next to the cairn and post. The northern cairn is simply made with 16 unshaped local rocks, with moderate to heavy lichen cover. This cairn is 28" (70 cm) in diameter and 16" (two rocks) high, and lacks a post. One white chalcedony flake was found 2 m south of the southern cairn, but is obviously not culturally associated. Also, fifteen fire-reddened rocks in a loose cluster are 51 m south of southern cairn, but are likely non-cultural (e.g., oxidized from a lightning strike). The cairns and post features are among many in the area that may be claim or property boundary markers built in modern (post-1960) times.

5FN2680 (AGS–11–IF15) is another pair of cairns spaced 52 ft (16 m) apart, separated by a small ridge-shaped rock outcrop at the north edge of the survey area about 725 m north of Antelope Gulch. The northern of the two cairns is associated with a wood post and lathe, and was built using 16 unshaped, 5"–19" long rocks of Wall Mountain tuff, with heavy lichen cover. The feature is 3' × 3' 4" in diameter and stacked two rocks high. The wood post—fallen from the center of the cairn—is made with the usual pair of 2 × 4 boards (48" L) nailed together with four 16d wire nails. Once again, the milled boards in the post are nominal 2 × 4s, measuring 1½" × 3½" with rounded edges, indicating an age no earlier than 1961. Records on uranium mining claims for the area date to 1965–1978. Also, one broken piece of thin wood lathe is next to this cairn and post. The southern cairn is made with 29 unshaped, 7"–17" long rocks of the same material, with moderate to heavy lichen cover. This feature is 39" in diameter, is stacked three rocks high, and lacks a post. See the discussion below for an overview of cairn-and-post features in the project area.

5FN2681 (AGS–11–IF16) consists of 14 total pieces of flaked stone debitage and two pebbles in a 20 cm diameter cluster; this is likely a collector's pile of artifacts. The collection is located on the upper northwest slope of a prominent rock outcrop (a small ridge), overlooking a dry wash to the north. Antelope Gulch is about 610 m to the south. The flakes are jasper (n = 8), chert (n = 4), and chalcedony (n = 2) materials, from early and middle stages of tool manufacture. The unflaked pebbles are of yellow-brown jasper and yellow chalcedony. None of these items were collected.

Patterns and Trends in the AGS Data

In the Statement of Objectives chapter, a series of 11 questions was posed as issues to pursue on the PAAC survey at Antelope Gulch (see pages 31–32). In the remainder of the report, these and other topics are addressed based both on the inventory results and on results of previous investigations in the region.

Site Types

Based on the surface evidence, the 80 sites in the AGS can be categorized into several different prehistoric and historic site types (Table 5); note that multiple types are assigned to some sites as contents dictate. The most common types represented in the study area are prehistoric lithic scatters (48 sites; 60 percent of all sites), with prehistoric camps (19 sites; 24 percent) and lithic sources or "quarries" (14 sites; 17.5 percent) second and third in frequency. About 71 percent of the lithic scatters (34 sites) are more specifically identified as chipping stations, a.k.a. flaked stone occurrences where debitage dominates overall artifact counts and tools of any kind are either absent or low in number. The other 14 lithic scatters may be hunting stations based on the presence of one or more projectile points (Figure 38). Both of these kinds of open lithic sites are characterized by very low tool-to-debitage ratios but differ from lithic sources (where debitage likewise dominates) by their lack of naturally occurring toolstone. Production stage bifaces and unifaces—i.e., blanks and preforms—are found on many of these sites, but neither ground stone tools nor features such as hearths or roasting pits are present.

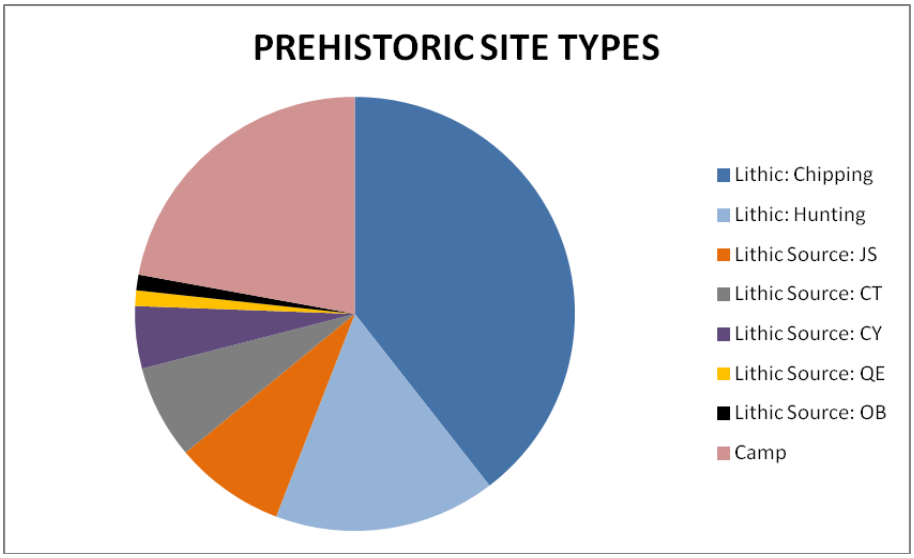


Figure 38. Prehistoric site type frequencies in the AGS.

Key:
JS = jasper
CT = chert
CY = chalcedony
QE = quartzite
OB = obsidian

Of course, it has been long recognized that procurement of toolstone may be an activity "embedded" in other cultural pursuits taking place in the same area (Black 2000b:138, citing Binford 1979:259). Thus, it is no surprise that at one site (5FN2451) an Archaic period projectile point and a hearth feature were found at a source of chert and chalcedony, and at jasper source 5FN2444 a number of flaked and ground stone tools plus burned bone were found—both cases representing evidence of short-term camp activities. In general, camps are typified by a moderate-to-high level of both artifact density and tool diversity, and often exhibit ground stone artifacts and small

features such as hearths or clusters of fire-cracked rock (FCR). Although not found in the AGS, ceramics also may be present on post-Archaic camps in the region.

Table 5. Cultural resources of the Antelope Gulch area, 2008–2011

Site #	Site Type and Age (if known)	NRHP Eligibility	Artifacts Collected
5FN2152.1	utility line (telephone?): Historic period	not eligible	none
5FN2337	open lithic/chipping station and jasper quarry: unknown prehistoric period	potentially eligible	none
5FN2338	mineral prospecting: Historic period and open lithic/chipping station: unknown prehistoric period	not eligible	none
5FN2339	open lithic/hunting station: Early Archaic and Developmental periods	potentially eligible	two projectile point fragments
5FN2340	open lithic/chipping station: unknown prehistoric period	not eligible	one knife, one hammerstone rejuvenation flake
5FN2341	isolated can: Historic period and open lithic/hunting station: Early Archaic and Developmental periods	not eligible	two projectile point fragments, one bifacial preform
5FN2342	open lithic/chipping station: unknown prehistoric period	not eligible	none
5FN2343	open lithic/chipping station: unknown prehistoric period	not eligible	none
5FN2344	open camp: Developmental period	eligible	one projectile point fragment, two scrapers
5FN2345	peeled tree and mineral prospecting: Historic period; and open camp: unknown prehistoric period	potentially eligible (prehistoric component only)	none
5FN2346	open camp: Plano period	potentially eligible	one projectile point base
5FN2347	open lithic/chipping station and chalcedony quarry: unknown prehistoric period	not eligible	none
5FN2348	open lithic/hunting station: Developmental period	eligible	one projectile point
5FN2349	mineral prospecting: Historic period and open lithic/chipping station: unknown prehistoric period	not eligible	one obsidian scraper

Site #	Site Type and Age (if known)	NRHP Eligibility	Artifacts Collected
5FN2350	open logging camp: Historic period and open lithic/hunting station: Diversification period	potentially eligible (prehistoric component only)	one projectile point
5FN2351	open lithic/chipping station: unknown prehistoric period	not eligible	none
5FN2433	open camp: unknown prehistoric period	potentially eligible	none
5FN2434	mineral prospecting: Historic period and open lithic/chipping station: unknown prehistoric period	potentially eligible	none
5FN2435	open lithic/hunting station: Diversification period	not eligible	one projectile point
5FN2436	mineral prospecting: Historic period and open camp: unknown prehistoric period	potentially eligible	none
5FN2437	open lithic/hunting station: Early Archaic and Diversification period	not eligible	two projectile point fragments, one knife-scraper
5FN2438	open camp: unknown prehistoric period	potentially eligible	one scraper
5FN2439	open camp: unknown prehistoric period	not eligible	none
5FN2440	pen or corral: Historic period and open camp: unknown prehistoric period	potentially eligible	none
5FN2441	open lithic/hunting station: Diversification period	not eligible	one projectile point fragment
5FN2442	open lithic/chipping station: unknown prehistoric period	potentially eligible	none
5FN2443	open lithic/chipping station: unknown prehistoric period	not eligible	none
5FN2444	open camp & utility line: Historic period and open camp & jasper quarry: Late Archaic period	potentially eligible	one projectile point fragment, one burned bone fragment
5FN2445	open camp: Historic period and open lithic/ chipping station: unknown prehistoric period	not eligible	none
5FN2446	open camp: Historic period and open lithic/ hunting station: Late Archaic period	potentially eligible	one projectile point fragment
5FN2447	open lithic/chipping station & jasper quarry: unknown prehistoric period	eligible	one knife fragment, three jasper raw material samples
5FN2448	isolated glass insulator: Historic period and open camp: unknown prehistoric period	potentially eligible	one scraper

Site #	Site Type and Age (if known)	NRHP Eligibility	Artifacts Collected
5FN2449	open lithic/chipping station & chert-chalcedony quarry: unknown prehistoric period	potentially eligible	none
5FN2450	open lithic/chipping station & chert-chalcedony quarry: unknown prehistoric period	potentially eligible	one flake tool
5FN2451	open camp & chert-chalcedony quarry: Middle to Late Archaic period	eligible	one projectile point fragment, one chert raw material sample, two chalcedony raw material samples
5FN2452	prehistoric isolated find: two flakes & flake tool fragment	not eligible	none
5FN2453	prehistoric isolated find: one projectile point, Early Archaic period	not eligible	one projectile point
5FN2454	prehistoric isolated find: two biface fragments	not eligible	none
5FN2584	mineral prospecting: Historic period and open jasper & quartzite quarry: unknown prehistoric period	not eligible	one quartzite raw material sample, two jasper raw material samples
5FN2585	open lithic/hunting station: Developmental period	not eligible	one projectile point, two bifaces
5FN2586	open lithic/chipping station: unknown prehistoric period	not eligible	one drill
5FN2587	open lithic/chipping station: unknown prehistoric period	not eligible	none
5FN2588	open lithic/hunting station: Developmental and Late(?) Archaic periods	potentially eligible	two projectile point fragments
5FN2589	open camp: unknown prehistoric period	not eligible	none
5FN2590	open lithic/chipping station: unknown prehistoric period	not eligible	none
5FN2591	open camp: unknown prehistoric period	potentially eligible	none
5FN2592	mineral prospecting & cairn: Historic period; and open lithic/chipping station and chert quarry: unknown prehistoric period	not eligible	six chert raw material samples
5FN2593	open lithic/chipping station and chert quarry: unknown prehistoric period	not eligible	none
5FN2594	gemstone prospecting: Historic period; and open lithic/chipping station: unknown prehistoric period	not eligible	none

Site #	Site Type and Age (if known)	NRHP Eligibility	Artifacts Collected
5FN2595	open lithic/chipping station: unknown prehistoric period	not eligible	none
5FN2596	open lithic/chipping station: unknown prehistoric period	not eligible	one biface
5FN2597	claim post & cairn: Historic period; and open lithic/hunting station: Middle-Late Archaic and post-Archaic periods	potentially eligible	one projectile point fragment
5FN2598	open lithic/chipping station: unknown prehistoric period	potentially eligible	none
5FN2599	Historic period isolated find: one prospect pit	not eligible	none
5FN2600	Historic period isolated find: one cairn	not eligible	none
5FN2601	open lithic/chipping station: unknown prehistoric period	potentially eligible	one chalcedony flake, one jasper flake, one glassy iron slag fragment
5FN2602	open lithic/chipping station: unknown prehistoric period	potentially eligible	four jasper flakes
5FN2603	Historic period artifact cache; open lithic/chipping station: unknown prehistoric period	not eligible	none
5FN2604	open lithic/hunting station: Late Archaic or Developmental period	potentially eligible	one projectile point, one bifacial tool, one flake tool
5FN2605	open lithic/hunting station: Late Archaic or Developmental period	potentially eligible	one projectile point fragment
5FN2606	open camp: unknown prehistoric period	not eligible	none
5FN2607	open lithic/chipping station: unknown prehistoric period	not eligible	none
5FN2608	open lithic/chipping station: unknown prehistoric period	not eligible	none
5FN2609	open lithic/chipping station: unknown prehistoric period	potentially eligible	none
5FN2644	open camp: unknown prehistoric period	not eligible	none
5FN2645	open lithic/chipping station: unknown prehistoric period	not eligible	none
5FN2646	utility line: Historic period; and open lithic/chipping station: unknown prehistoric period	not eligible	none
5FN2647	open trash scatter: Historic period; and open camp: unknown prehistoric period	not eligible	none
5FN2648	open camp: unknown prehistoric period	potentially eligible	none

Site #	Site Type and Age (if known)	NRHP Eligibility	Artifacts Collected
5FN2649	isolated tinned can: Historic period; and open camp: unknown prehistoric period	not eligible	none
5FN2650	open chert quarry: unknown prehistoric period	not eligible	none
5FN2651	open jasper and obsidian quarry: unknown prehistoric period	not eligible	two lithic raw material samples, one horn fragment
5FN2652	trash scatter: Historic period; and open jasper quarry: unknown prehistoric period	not eligible	two jasper material samples
5FN2653	trash scatter: Historic period; and open lithic/chipping station: unknown prehistoric period	not eligible	none
5FN2654	prehistoric isolated find: five flakes and one flake tool	not eligible	none
5FN2655	prehistoric isolated find: three flakes	not eligible	none
5FN2656	prehistoric isolated find: nine flakes	not eligible	none
5FN2657	Historic period isolated find: one prospect pit with tailings pile	not eligible	none
5FN2658	prehistoric isolated find: one flake	not eligible	one obsidian flake
5FN2659	open lithic/chipping station: unknown prehistoric period	not eligible	one scraper
5FN2660	claim post & two cairns: Historic period; and open lithic/chipping station: unknown prehistoric period	not eligible	none
5FN2661	open lithic/chipping station: unknown prehistoric period	potentially eligible	none
5FN2662	open lithic/chipping station: unknown prehistoric period	not eligible	none
5FN2663	open camp: unknown prehistoric period	eligible	two scrapers, one biface, one obsidian flake
5FN2664	open lithic/chipping station: unknown prehistoric period	potentially eligible	none
5FN2665	open lithic/chipping station: unknown prehistoric period	potentially eligible	none
5FN2666	open lithic/chipping station: unknown prehistoric period	not eligible	one biface, one obsidian flake
5FN2667	open jasper quarry: unknown prehistoric period	not eligible	three jasper material samples
5FN2668	claim post & three cairns: Historic period; prehistoric isolated find: five flakes & one core, unknown period	not eligible	none

Site #	Site Type and Age (if known)	NRHP Eligibility	Artifacts Collected
5FN2669	claim post & three cairns: Historic period; open lithic/hunting station: Late Archaic period	not eligible	two projectile points (one in two pieces)
5FN2670	prehistoric isolated find: seven flakes, unknown period	not eligible	none
5FN2671	Historic period isolated find: one cairn	not eligible	none
5FN2672	prehistoric isolated find: eight flakes at tiny jasper source, unknown period	not eligible	two jasper material samples
5FN2673	Historic period isolated find: one cairn & claim post	not eligible	none
5FN2674	prehistoric isolated find: six flakes, unknown period	not eligible	none
5FN2675	Historic period isolated find: one cairn & claim post	not eligible	none
5FN2676	Historic period isolated find: one cairn & claim post	not eligible	none
5FN2677	prehistoric isolated find: small corner-notched arrow point, Developmental period	not eligible	one projectile point
5FN2678	prehistoric isolated find: small side- and basally-notched arrow point, Diversification period	not eligible	one projectile point
5FN2679	Historic period isolated find: two cairns	not eligible	none
5FN2680	Historic period isolated find: two cairns & one claim post	not eligible	none
5FN2681	prehistoric isolated find: collector's pile of 14 flakes & two cherty pebbles, unknown period	not eligible	none
_____	not a site; from natural gravel deposit in the SW¼ of Sec. 12, T51N, R10E	n.a.	four jasper material samples

In some cases, such as sites 5FN2345 and 5FN2648, there is enough cultural material present over a large area to indicate either repeated camping episodes and/or use of the area as a base camp. Extensive site areas from redundant use of the landscape are not uncommon attributes of sites in the AGS or in the Colorado mountains as a whole. None of the sites of any type in the survey area are associated with rockshelters. Features other than rockshelters are present on 18 of the 19 camp sites in the AGS. These include artifact concentrations at 17 sites, hearths and/or FCR at seven sites, one possible culturally-peeled tree, and one stone enclosure. Ground stone artifacts were documented at 16 of the camps, and three of those same sites also yielded bone fragments (burned bone at two sites).

As should be evident from the site descriptions in this chapter, the 14 sites with evidence of lithic procurement activity in the AGS have greatly influenced the content of artifact assemblages on other sites in the area. Nine of the 14 sources represent procurement of a single type of toolstone, mostly jasper or chert. Three of the sites are sources of both chert and chalcedony, one (5FN2584) is a source of both jasper and quartzite, and one other site (5FN2651) is a source of both jasper and low-grade obsidian. With the possible exception of 5FN2667, these are all primary bedrock sources but in at least seven different geological contexts! That geological complexity is explored in greater detail later in this report.

Although the term "quarry" is used to label this site type in the OAHP lexicon, only two of the sites in the AGS (5FN2651 and 5FN2652) have pits or depressions suggesting that extraction of toolstone may have involved any significant digging. More typically, toolstone procurement involved simple surface collection of nodules with no digging employed, and core reduction strategies were very expedient. Core shapes are generally blocky with random, multi-directional flake removals. Bifacial core shapes are present but rare, and reduction of large flakes (i.e., secondary cores) also is represented in AGS assemblages in small numbers.

Compared to these prehistoric resources, the site types of the Historic period (post–A.D. 1600) represent a surprisingly diverse sample given the relatively small number recorded (24 site components). Most common are mining prospects (15 features at nine sites, plus two IFs), cairns (10 features at five sites, plus seven IFs), and trash scatters (seven). The trash deposits likely represent short-term camping episodes related to ranching, logging, or infrastructure maintenance activity (roads, utility lines). One other Historic period camp at 5FN2440 is represented by a probable small corral that lacks associated artifacts (see Figure 21). Also present are remnants of a probable telephone line, an apparent cache of metal artifacts, and one possible culturally-peeled tree. Sites with bark-peeled ponderosa pine trees are usually related to American Indian activities mostly pre-dating 1880. However, as mentioned previously, no other kinds of Protohistoric items such as metal arrow points, tinklers, or glass trade beads have been found in the AGS. All other Historic period sites are of non–Indian origin and most of these appear to date to the 1890–1930 period.

Features

Of the 80 sites and 22 IFs recorded in the AGS, 52 sites and nine IFs have one or more features, and a grand total of 125 features have been documented (Table 6), not including toolstone procurement zones at bedrock outcrops. Artifact concentrations, particularly of flaked stone debitage, represent over half of this

number (n = 67) and occur in groups of as many as five concentrations on a single site (5FN2608). Thermal features include hearths or firepits (Figure 24), fire-cracked rock (FCR) concentrations, and ash/soil stains. Ten such features have been recorded at seven sites in the study area, with just one of those sites containing more than one thermal feature (5FN2648). Site 5FN2648 displays other unusual thermal effects, with at least 22 low mounds of ashy and/or charcoal-stained soil. Additional testing is needed there to determine the ages and cultural vs. natural origins of these features. The other prehistoric feature types include three toolstone quarry pits (at 5FN2651 and 2652), two clearings in rock outcrops at 5FN2651 that may be hunting blinds, a stone enclosure at 5FN2663 (Figure 30), and a possible rock alignment at 5FN2646. In addition, site 5FN2591 contains three enigmatic depressions in rocky terrain that are currently interpreted as natural features, but these deserve exploratory testing.

Table 6. Features in the Antelope Gulch survey area

Prehistoric Feature Type	**Number of Occurrences**
Artifact Concentration	67
Thermal Feature	10
Toolstone Quarry Pit	3
Depression/Hunting Blind	2
Stone Enclosure	1
Rock Alignment	1
TOTAL	**84**
Historic Feature Type	**Number of Occurrences**
Cairn	20
Mining Prospect	17
Animal Pen/Corral	1
Cache	1
Peeled Tree	1
Utility Line Segment	1
TOTAL	**41**

The possible hunting blinds at 5FN2651, along with the more clearly constructed features at 5FN494 (Figure 13), bring up the contentious issue of the Antelope Gulch site as a bison jump locality. Tucker's (2001) article examined the possibility of the low cliff of Wall Mountain Tuff being used as a bison jump feature, based both on informant reports (including from a Ute tribal member at a conference), and on the occasional discovery of isolated bison skeletal elements. His conclusion was that the evidence of the cliff as a jump feature was equivocal (Tucker 2001:13–14). To extend

the analysis, our survey crews covered the entire perimeter of the 5FN494 site boundary during the AGS project, with special attention paid to the zone north of the cliff where any possible game drive features would need to be located if the cliff served as a bison jump. Absolutely no such evidence was found, so the interpretation of 5FN494 as a bison jump site must rest solely on buried archaeological evidence. Thus, the only remaining major field work option left to pursue is a large-scale test excavation program at the foot of the cliff on the north bank of Antelope Gulch.

There are 41 features dating to the Historic period and just two feature types dominate the list (Table 6): cairns and mineral exploration features (mostly prospect pits). As noted previously, cairns have been documented at five sites and seven IFs, totaling 20 features. Half of these cairns are associated with wood posts, either in situ or fallen out of the rock pile (see Figure 29). Most of those ten posts consist of two milled boards nailed together, specifically nominal 2 × 4s with rounded edges, actually measuring 1½" × 3½" each. This combination of milled lumber attributes generally post-dates AD 1961 (Smith and Wood 1964:21–23). The fastenings are typically 3½" wire nails and there is sometimes a finishing nail or nail hole in the upper part of the post where a sign or claim marker was affixed. In several other cairns lacking associated posts, there is an opening within the cairn showing that a post was once present. In the case of mining claims, Colorado state law describes the way in which mineral deposit discoveries must be marked (C.R.S. 34-43-101ff, "Claims – How Located"; www.lexisnexis.com/hottopics/Colorado/). Lode claims can be up to 1500 ft × 600 ft along a vein, and must be marked with six posts at the four corners and center of each side line (C.R.S. 34-43-107). Placer claims are up to 20 acres for a single claimant, or 160 acres for a claim by a group of people, and must be marked with posts at each angle of the claim (C.R.S. 34-43-112).

The distribution of cairns in the AGS is heavily weighted toward the northern third of the project area, north of Antelope Gulch. Interestingly, in only two instances are cairns found in proximity to mineral prospect pits (5FN2592 and adjacent IFs 5FN2599–2600). The lack of prospecting evidence in the vicinity of the cairns north of Antelope Gulch suggests that either the claims in that area were largely speculative or that at least a few of the cairns were marking something other than mineral claims. A check of the records in the Bureau of Land Management's (BLM) office in Cañon City by PAAC volunteers Dennis and Wendy Schiferl revealed that three different groups were making uranium claims in the AGS area during the period 1965–1978. In 1965–1966, Keith and Donald Andrews of Rio Oro Mining Co. established claims in Sections 11 through 14 of the AGS. They were followed by Edgar Reigel and Associates, then in 1978 by John D. Groy and John L. Groy. All of the claims are now closed, supporting the field evidence that no actual mining was done to follow up on the claims.

The mineral exploration evidence is represented by 17 features at nine sites and two IFs, all south of Antelope Gulch. Most of these are simple prospect pits, with few artifacts in association and no evidence of any kind of structural supports. The trench-like pit at 5FN2338 is an example (Figure 39), with pine tree growth on the adjacent spoil pile showing that the activity must have occurred decades ago. Exceptions to this pattern occur at three sites. Wooden structural remnants are present next to the prospect or small mine at 5FN2584. The upper slope on the south side of the knoll at the Lone Pine site (5FN2594) has been excavated away, producing a flat bench rather than a pit or depression. This feature probably relates to mining for the gemstone peridot. Finally, Feature 3 at 5FN2345 is a 22 m × 20 m zone of disturbed soils and slight depressions, only partly due to rodent activity. This hummocky area may be the remains of overlapping prospect pits or similar exploratory digging. As noted previously, the prospecting in this area likely was most intense in the 1890–1930 period, based on the beginning date for the Cripple Creek gold rush that brought thousands of prospectors to the area, and on mineral patent dates of 1898–1928 for the mining of silver-copper ores in red bed formations to the north and northwest of the AGS. No significant production ever came of this activity, however, as no mineral patents were issued within the AGS project boundaries (see Table 3).

The remaining Historic period features in the AGS represent four different feature types. The possible culturally-peeled tree at 5FN2345 (Figure 19) may not be the only example in the area, but our crews did not attempt to verify the presence of other peeled trees observed by CAS volunteers on the crest of the high ridge overlooking Steer Creek just southwest of the AGS (Tucker 2001:10). See Martorano (1988, 1999) for more details on bark-peeled trees in Colorado, which generally post-date AD 1750. The square log feature interpreted as a pen or corral at 5FN2440 (Figure 21) is the only structural evidence in either camp or habitation contexts in the project area. The lack of associated artifacts there indicates that whatever activity left behind the feature must have been quite brief. One "feature scatter" is the abandoned utility (telephone) line at 5FN2152.1, intersecting three other prehistoric sites south of County Road 2 in a NE-SW alignment. Several fragments of mold-made glass insulators are embossed "AM. TEL. & TEL. CO." (Figure 22) and, in combination with known AT & T company history (AT&T Corp. 2012), indicate construction and use of the line ca. 1899–1925. Finally, the cache of metal items at 5FN2603 (Figure 27) is a unique discovery that defies easy explanation. The combination of clock parts, cartridge cases, and baling wire stuffed in a baking powder can probably dates to 1923–1932, but little else is definitive about this intriguing, if not bizarre, feature.

Figure 39. Southwest view of a trench-like prospect pit at 5FN2338. Although a modern cache of supplies is hidden beneath a tarp and tree branches within the pit, the well-vegetated pile of rock and soil next to it shows that the prospecting occurred long ago.

Settlement Patterns

Prehistoric resource density in the project area measures 63 sites/mi^2, a higher figure than observed in many other mountain settings. Given the abundant archaeological record in the AGS, it is in some ways as instructive to describe where sites are less numerous than where they are densely distributed. There are two such lower density areas in the AGS: steep, heavily-wooded ridge slopes in Sections 13 and 14, and open grasslands at a distance from either drainages or rock outcrops. The resulting ancient use of the AGS landscape is patterned in ways that suggest several potential environmental influences, but the relative importance of each is difficult to measure.

One of the most obvious "pulls" in evidence is the numerous and widespread occurrence of knappable toolstone deposits, most in primary bedrock contexts of surprising geological diversity. Especially important were the brightly colored, opaque cherts or "jasper," as proven by the fact that such materials represent over 70 percent of the nearly 9,500 lithic artifacts recorded on the survey (see below). Dark gray to black cherts, translucent chalcedonies and agates of various colors, minor amounts of quartzite, and even one location with a low-grade obsidian provided additional attractions for local flintknappers. Site distributions and densities south of Antelope Gulch, in particular, can be explained at least in part to the local availability of these toolstones.

However, another factor south of Antelope Gulch may be the mixed conifer woodlands on the ridges and hillslopes of the AGS, providing a combination of shelter from wind, fuel, construction material, and subsistence resources. An unknown aspect here is how much past logging has shaped the current forest. It is uncertain, for example, whether loggers clear-cut the original forest or left behind some younger trees; most stumps observed were at least 30 cm in diameter and a few were significantly larger, old growth. The higher ridge crests, although wooded, also provided excellent vantage points for observation of the surrounding lowlands (see Figures 5–6), as well as being relatively easy places to quickly traverse long distances compared to the more densely wooded slopes.

The landscape around the Antelope Gulch site (5FN494) itself may have been an attraction for local settlement for a number of reasons. Clearly, the permanent water available at the spring-fed pool (Figure 40) would have been well-used by those nomadic groups not following Badger Creek to the east. But the entire set of landforms surrounding the spring represents attractions in many forms (see Figure 5), even if the low cliff of Wall Mountain Tuff was never used as a bison jump. Tucker (2001:14) notes that the wide gap in the cliff just north of the spring-fed pool has a gentle slope that creates an effective ramp or natural game trail funneling larger animals directly to the spring (Figure 41). Hunters stationed in the hunting blinds south of the spring (see Figure 13) would be in excellent position as animals descended the ramp to access the spring water or to congregate along the gulch below the spring. All medium and large game species including bison, elk, deer, bighorn sheep, and pronghorn could have been procured in this way. Also, the Wall Mountain Tuff that forms the cliff itself is a toolstone source for high-quality jasper a short distance west of the spring at 5FN2651 (Figure 28), and dark gray chert and banded "bull's eye agate" occurs in quantity at 5FN2592 in Leadville Limestone outcrops just 500 m south of the spring (Figure 26; Tucker 2001:7). The sheltering qualities of the cliff and wooded ridge where the hunting blinds are found deserve mention as well.

Figure 40. West view of the spring-fed plunge pool at 5FN494.

Figure 41. Southwest view of the ramp-like natural gap in the cliff at Antelope Gulch. Small rock enclosures possibly used as hunting blinds are in the aspen grove in the background.

Finally, the surveyed terrain in the AGS north of Antelope Gulch has a site distribution distinctive in its own right. The open grasslands to the northwest of 5FN494 have a relatively low site density limited to IFs such as arrow points (Figures 36–37) and a single jasper source probably in pediment gravels (Figure 32). To the north and especially northeast, however, there are a number of low, rounded rock outcrops that exhibit a notably stronger pull on the occurrence of prehistoric sites (Figures 8, 32, and 33). Virtually every landform with exposed bedrock in this zone has an associated archaeological site, and artifact density consistently drops as one gains distance from an outcrop. In conclusion, the cliff feature at the Antelope Gulch site (5FN494); the adjacent spring-fed pool; nearby natural deposits of jasper, chert, and chalcedony that were utilized for toolstone; and the small rock outcrops north of Antelope Gulch that attracted settlement activity together define a very distinctive and visible cultural landscape.

The distribution of the 34 Historic period resources (25 sites, nine IFs) is of interest as well, although with the limitation of a smaller sample size than for prehistoric resources. The bulk of these resources can be associated with the mining, ranching, and logging industries. Mining and mineral exploration evidence has already been discussed in terms of the distribution of claim markers (cairn-and-post features) and prospect pits in the "Features" section above. As for logging, the presence of sawn pine, spruce, and fir stumps is a rather indisputable indication of logging throughout all of the wooded areas of the AGS. Not a single forested area surveyed by our crews lacks such evidence, and all of the stumps observed away from the county roads are very well-weathered indicating that the logging happened long ago. The best guess is that it coincided with the mining and prospecting activity ca. 1890–1930. Thus, the woodlands in this area represent secondary growth, although the presence of at least one culturally peeled tree and widely scattered examples of other large diameter trees suggest that logging did not involve 100% clear-cutting.

Surprisingly, ranching evidence pre-dating the modern era is not particularly abundant. There are no substantial building or structure ruins present such as line shacks, loading chutes, or stock ponds. Only short-term camps in the form of small trash scatters plus one loosely-constructed small pen or corral are present, and some or all of these could be due to other activities such as prospecting, logging, road or utility line maintenance, or recreational hunting. As expected, the distribution of these camps is somewhat random, although none is more than ⅓ of a mile from a modern county road.

Chronology and Cultural Affiliation

Temporally diagnostic artifacts have been documented from 23 of the 79 sites and three IFs with prehistoric components recorded in the survey area (Figure 42). Of those 23 sites, five have fairly convincing evidence of the presence of multiple prehistoric components—not including the Antelope Gulch site itself, 5FN494, with a wide variety of diagnostic points found over the years (Tucker 2001:Figures 1–2). The five AGS sites include two with both Early Archaic and Developmental period diagnostics (5FN2339, 2341), one with Early Archaic and Diversification period projectile points (5FN2437), one with Late Archaic and Developmental period hafted bifaces (5FN2588), and one with artifacts diagnostic of the Middle or Late Archaic and general post-Archaic periods (5FN2597). Of the remaining 18 sites and three IFs, three sites and one IF each have yielded diagnostic arrow points or point preforms of the Developmental and Diversification periods; two sites could date to either the Late Archaic or Developmental period; three sites date to the Late Archaic period; one site dates to the Middle or Late Archaic period; one IF dates to the Early Archaic period; and one site has a Late Paleoindian specimen (Cody complex; 5FN2346). Thus, Developmental period diagnostics are most common, followed by the Late Archaic and Diversification periods. This is not at all unusual for survey results in the Colorado mountains (e.g., Black 2004; Zier and Kalasz 1999).

Entirely lacking supplemental evidence from ceramic artifacts, the cultural affiliations of post-Archaic groups in the AGS are more difficult to identify on lithic evidence alone. The projectile points are not particularly helpful in that regard, bearing few stylistic attributes that distinguish indigenous mountain-dwelling populations from plains-based groups such as the "Plains Woodland" and Apishapa (Zier and Kalasz 1999). A few specimens have serrated blades (e.g., Figure 42i), which tend to be more characteristic in mountain than plains assemblages (Black 1991:11). Likewise, the raw materials are heavily weighted toward locally available cherts, jasper, and chalcedony as would be expected. But there are some exceptions to this pattern, suggestive of southerly connections. Four obsidian flakes—more typically found in post-Archaic than Archaic period sites—have been traced to sources in northern New Mexico (see Appendix II). Also, the projectile point found at 5FN2604 is made from material resembling Alibates dolomitic chert from the Texas panhandle; its style is diagnostic of the Late Archaic or Developmental period (Figure 42q).

In general, Archaic period sites in the AGS mirror the patterns seen on the post-Archaic sites. Not surprisingly, Late Archaic corner-notched points (Figure 42n, p) are more common than earlier projectile point styles, and Early Archaic points with convex bases (Figure 42w, y, z) slightly outnumber stemmed styles diagnostic of the Middle Archaic period (Figure 42r). In virtually all these cases, local styles and

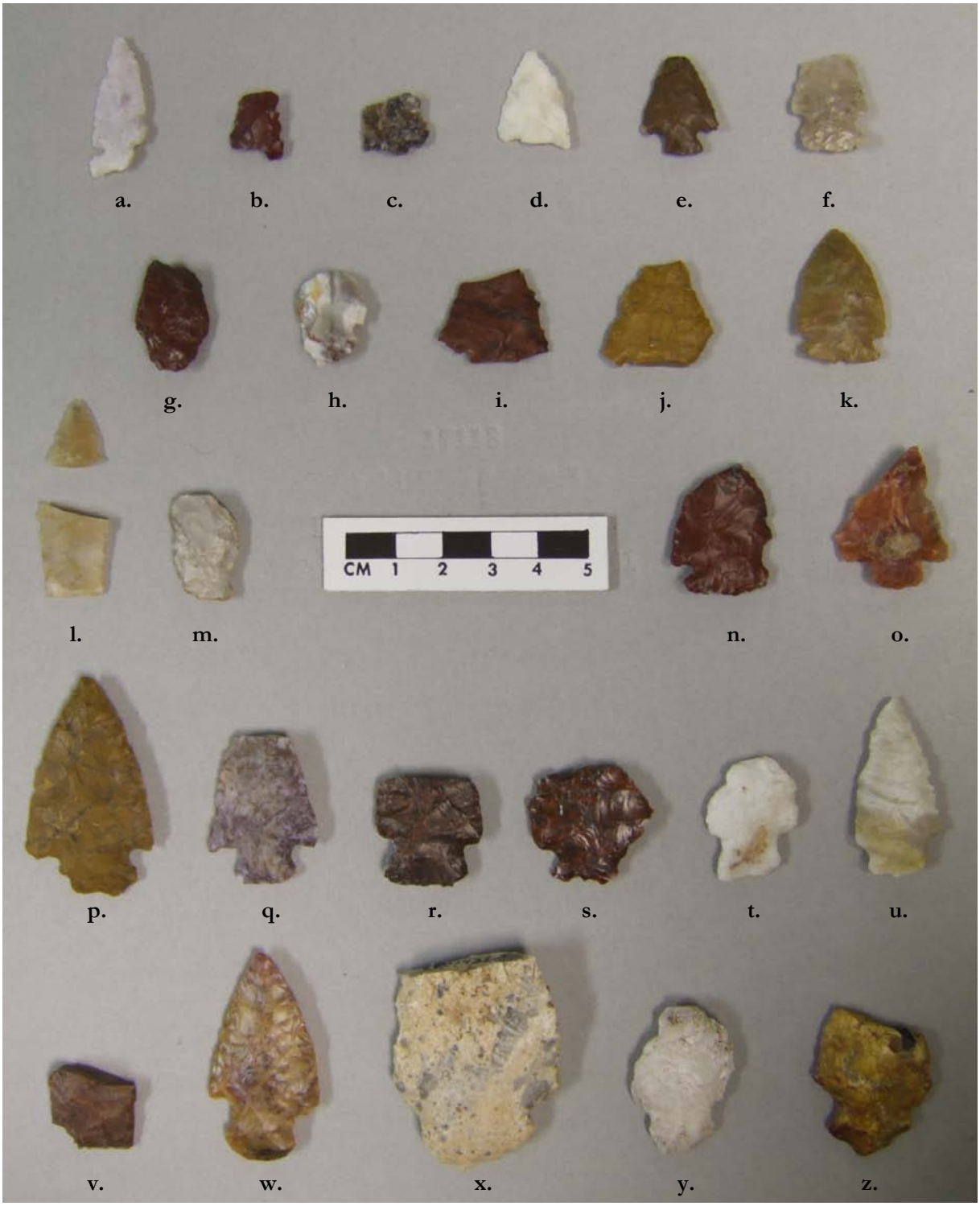


Figure 42. Projectile points and other hafted bifaces collected during the Antelope Gulch survey: **a**. 5FN2350–1, **b**. 5FN2441–1, **c**. 5FN2588–1, **d**. 5FN2344–3, **e**. 5FN2677–1, **f**. 5FN2339–1, **g**. 5FN2341–2, **h**. 5FN2437–2, **i**. 5FN2446–1, **j**. 5FN2605–1, **k**. 5FN2678–1, **l**. 5FN2669–2A & 2B, **m**. 5FN2435–1, **n**. 5FN2444–2, **o**. 5FN2585–2, **p**. 5FN2669–1, **q**. 5FN2604–2, **r**. 5FN2597–1, **s**. 5FN2588–2, **t**. 5FN2451–1, **u**. 5FN2348–1, **v**. 5FN2346–1, **w**. 5FN2453–1, **x**. 5FN2437–1, **y**. 5FN2339–2, and **z**. 5FN2341–1.

materials dominate, and there is little reason to interpret that occupations are not represented by local Mountain Tradition groups rather than by western plains bands (Black 1991:4). However, the earliest artifact style found in the AGS is the base of a typical short stemmed Cody complex spear point, or Eden-Firstview type, from 5FN2346 (Figure 42v). Although Eden-Firstview points have been found in the mountains, they are much more common on the western plains (e.g., Pitblado 2003: 210, Table 6.1).

The chronology of Historic period sites in the AGS apparently begins with the culturally peeled tree found at site 5FN2345. [Note: the Spanish military excursion against the Comanches led by de Anza in 1779 likely passed through or very near to the AGS (Scott 1975:Sheet 2), but no physical evidence of their journey survives]. Martorano (1999:160) used dendrochronology to date bark-peeling events in the San Luis Valley to as early as AD 1793, with the majority of the peeled trees pre-dating 1847. The Utes were considered the most likely group to have utilized this bark resource, although other tribes could not be ruled out. A similar chronology and affiliation is suspected for the current project area although, of course, tree-ring dating is necessary to confirm the chronological position of our single feature. Although ponderosa pine trees may live for 300–600 years (Wennerberg 2004), both the severity of the local environment and extensive evidence of past logging suggest that the peeled tree in the AGS is from younger growth; a 19th century age for the bark peeling activity here seems reasonable.

The non-Indian record in the AGS generally post-dates AD 1880, and is documented at 25 sites and nine IFs. As with the de Anza expedition, historical records show that earlier 19th century activities happened in the region, but no direct archaeological evidence was found in the project area. Fur traders and trappers likely explored Badger Creek and its tributaries after 1815. A bit later, Gold Rush prospecting started in the South Park region by 1859–1860 (Simmons 2002), and the Poncha Toll Road was in operation along the Ute Trail through the AGS in 1861 (Scott 1975:Sheet 1). Ira Mulock's IM Ranch was established just north of the AGS in 1872 and by the early 1880s that ranch was running thousands of head of cattle throughout the mountainous area southward toward the Arkansas River.

Although the local township was surveyed by 1881, land records related to ranching in Fremont County near the AGS only begin in 1890 (Table 3), and include a claim by Mulock's son Edson. Local mineral exploration represented by 17 features in the AGS likely started about the same time given the discoveries made at Cripple Creek in 1891 and the Whitehorn district in 1897, with dates on mineral patents for area claims starting in 1898 (Schrader 2000). Likewise, widespread logging in the AGS was probably contemporaneous with the mining activity, and emplacement of the

telephone line documented by our crews seems to have occurred not long after the forerunner of today's AT&T Corp. extended long distance service to Denver in 1899 en route to San Francisco. The most recent historical sites in the project area are the cairn-and-post features mostly found north of Antelope Gulch. Lumber attributes in the posts indicate post-1960 activity, and extensive lichen growth on associated cairn rocks suggests the activity may have peaked not long after that date. Indeed, the records search at the Cañon City office of the BLM by PAAC volunteers Wendy and Dennis Schiferl documented uranium claims made in the AGS during the period 1965–1978 by three different companies.

Material Culture: The Lithic Landscape

The archaeological survey at Antelope Gulch documented nearly 9,500 artifacts from all prehistoric sites and IFs. Not surprisingly, the vast majority of these materials are lithic items, including 9,414 pieces of flaked stone but only 24 ground stone artifacts. Also, as expected given the prevalence of locally available toolstones, flaked stone manufacturing by-products dominate in AGS sites with debitage, cores, and production-stage bifaces and unifaces (i.e., blanks and preforms) accounting for 98.5 percent of all flaked stone artifacts (n = 9,271). Apart from seven pieces of FCR outside of features and three stone manuports, the only observed materials not of flaked or ground stone are five bone fragments (four burned) from three sites and the bison horn from 5FN2651. Table 7 enumerates these data from the project area by artifact class. Figure 43 graphically depicts the same data for sites. See Appendix I for tables providing site-by-site artifact inventories.

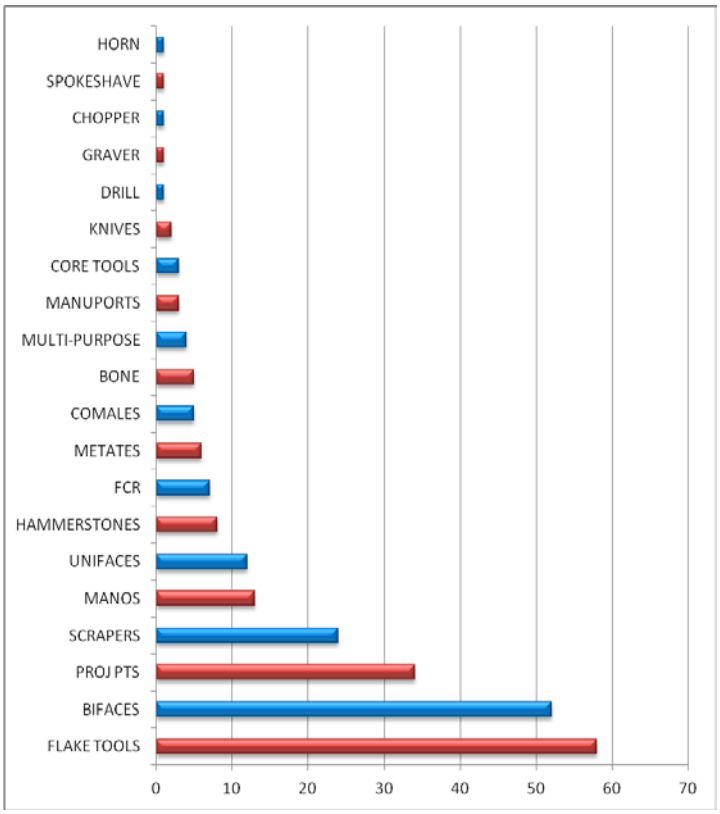
The flaked stone tools in the AGS represent typical forms found on most surveys in the mountains with just a couple of exceptions (Figures 44–45). At 5FN2345, a rare "burinated flake disk" was found that compares favorably with only a few other specimens in the central mountains, such as at 5GN409 east of Gunnison (Kvamme 1986:62–66, Figures 4.6–4.7). This discoidal artifact represents a discarded flake from which all edges had been previously removed using burin-type percussion blows; the resulting edge spalls may have been used as awls or borers, but were not found at 5FN2345. At two other sites in the project area, the presence of individual tools was only indirectly indicated by the presence of edge maintenance flakes retaining the original use wear evidence. At 5FN2661, the maintenance flake had unifacial wear on the beveled proximal end showing it had been removed from a scraper. However, more unusual are two maintenance flakes documented at 5FN2340 that display battered dorsal ridges (Figure 45l). Such hammerstone rejuvenation flakes are much more commonly observed on Ancestral Puebloan sites in the Four Corners area than on hunter-gatherer sites in the mountains (e.g., Emslie 1977:110–111).

Table 7. Tabulation of all prehistoric artifacts observed during the AGS survey.

ARTIFACT CLASS	TOTAL OBSERVED	PERCENTAGE
Bison horn sheath	1	.01
Bone fragments	5	.05
Bifacial Blank or Preform	54	.6
Unifacial Blank or Preform	12	.1
Core	230	2.4
Debitage	8,975	94.9
Cobble or slab manuport	3	.03
Chopper	1	.01
Comal (cooking slab)	5	.05
Composite tool (multi-purpose)	4	.04
Core tool	3	.03
Drill	1	.01
Expedient flake tool	61	.6
Fire-cracked rock (not in a feature)	7	.07
Graver	1	.01
Hammerstone	8	.08
Knife	2	.02
Mano/handstone	13	.1
Metate	6	.06
Projectile point	37	.4
Scraper	24	.3
Spokeshave	1	.01
TOTALS	**9,454**	**99.88**

Table 7 shows that the most common tools in the survey area are expedient flake tools, projectile points, scrapers, and manos (cores, production-stage bifaces and unifaces are lumped with debitage as manufacturing evidence, not tools *per se*). The total number of scrapers, in fact, is slightly higher because all four of the multi-purpose "composite" tools were used in part as scrapers, among other functions (two as knives, and one each as a chopper and spokeshave). Also, at least five projectile points show evidence of secondary use as knives or low-angle scraping tools (Figures 42i, 42n, 42t, 42w, and 42x).

The 24 ground stone tools represent a mix of formally shaped artifacts and expedient, unshaped or minimally shaped items. Interestingly, most of the 13 manos are formally-shaped specimens, three of which are bifacial (Figure 25). The more expedient, unshaped ground stone tools are found among the slab metate fragments or milling stones, and thin cooking slab fragments (comales). The only expedient, cobble mano was found at 5FN2439, and its smooth face with minimal pecking might have better functioned as a hide-rubbing tool or some other kind of polishing stone



(e.g., Adams 2002:91–97). Also, one unifacial mano at 5FN2591 showed additional use as a maul. Of interest as well is that all of the ground stone artifacts in the AGS were documented on sites south of Antelope Gulch, and none were found as IFs.

Figure 43. Artifact frequencies at sites in the survey area (IFs are not included).

Looking at raw material numbers survey-wide, Table 8 and Figure 46 depict the toolstone frequencies present in the AGS. See Appendix I for site- and IF-specific tabulations of these data. Given the number of sources of lithic raw materials in the Antelope Gulch region, it is no surprise that those local materials—jasper, other cherts, chalcedony, and agate—heavily dominate in AGS assemblages, collectively constituting over 97 percent of all flaked stone artifacts recorded on the survey. As noted previously, the quantity of jasper artifacts alone far outnumbers all other materials, representing fully 71.7 percent of the 9,414 flaked stone items observed in the area. The following chapter explores the lithic landscape of the AGS region from a broader geoarchaeological perspective.

One of the interesting details inherent in the AGS pattern is the popularity of jasper raw materials compared to the similarly abundant solid gray-colored cherts and the related opaque banded forms, sometimes called bull's eye agate, that were available to flintknappers from Leadville Limestone outcrops at 5FN1211, 5FN2451, 5FN2584, 5FN2592 (Figure 26), 5FN2593, and no doubt other quarries as yet unsurveyed. Clearly, local abundance was not the factor driving these resource procurement decisions, since both cherts and jaspers seem to be available in similar amounts. Nor are there obvious quality differences between these toolstones. Perhaps

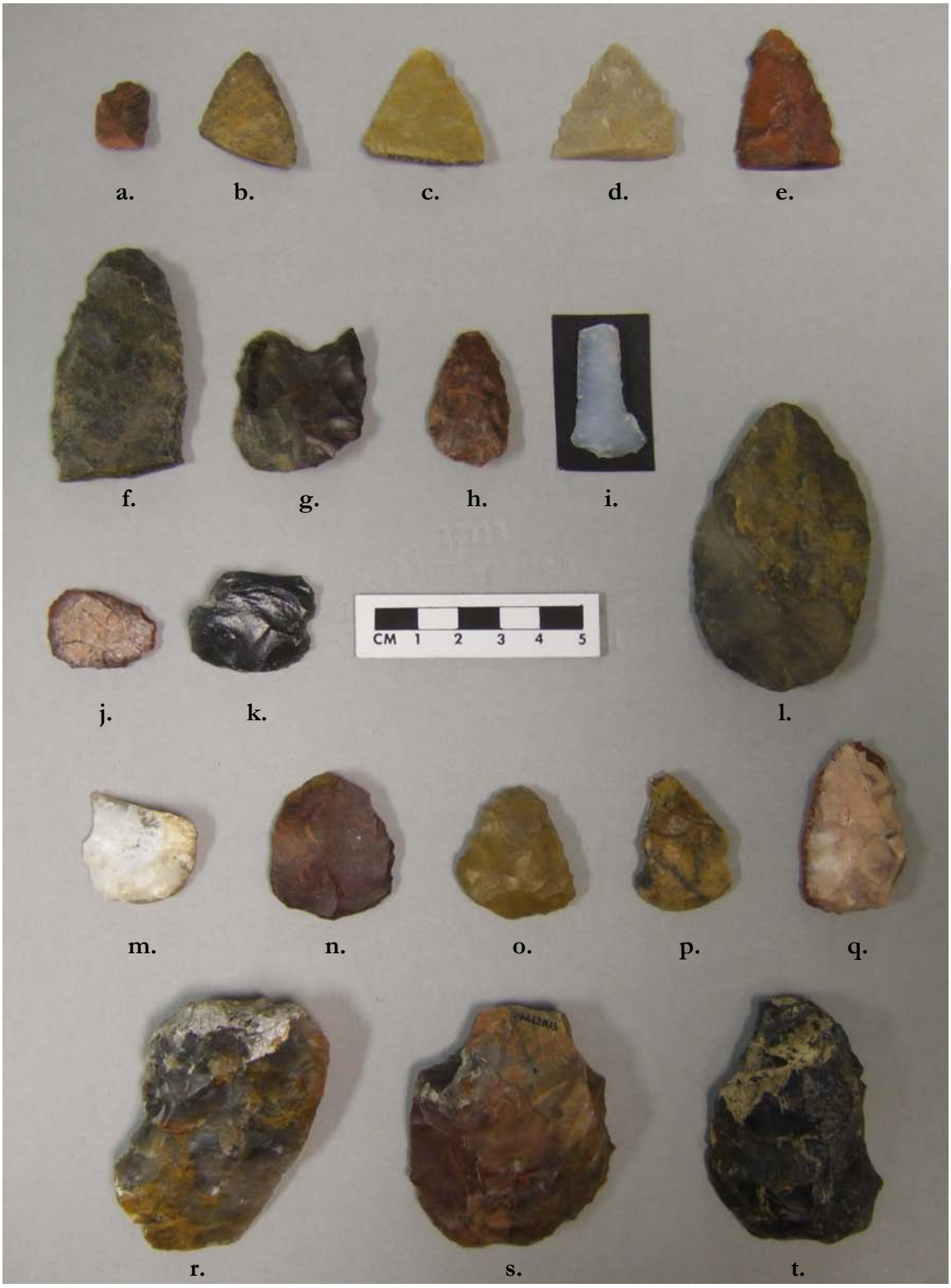


Figure 44. Flaked stone tools collected during the survey: **a**. 5FN2585–1, **b**. 5FN2604–1, **c**. 5FN2666–2, **d**. 5FN2663–1, **e**. 5FN2447–1, **f**. 5FN2596–1, **g**. 5FN2604–3, **h**. 5FN2585–3, **i**. 5FN2586–1, **j**. 5FN2437–3, **k**. 5FN2349–1, **l**. 5FN2341–3, **m**. 5FN2659–1, **n**. 5FN2663–2, **o**. 5FN2663–4, **p**. 5FN2344–2, **q**. 5FN2438–1, **r**. 5FN2340–1, **s**. 5FN2344–1, **t**. 5FN2448–1.

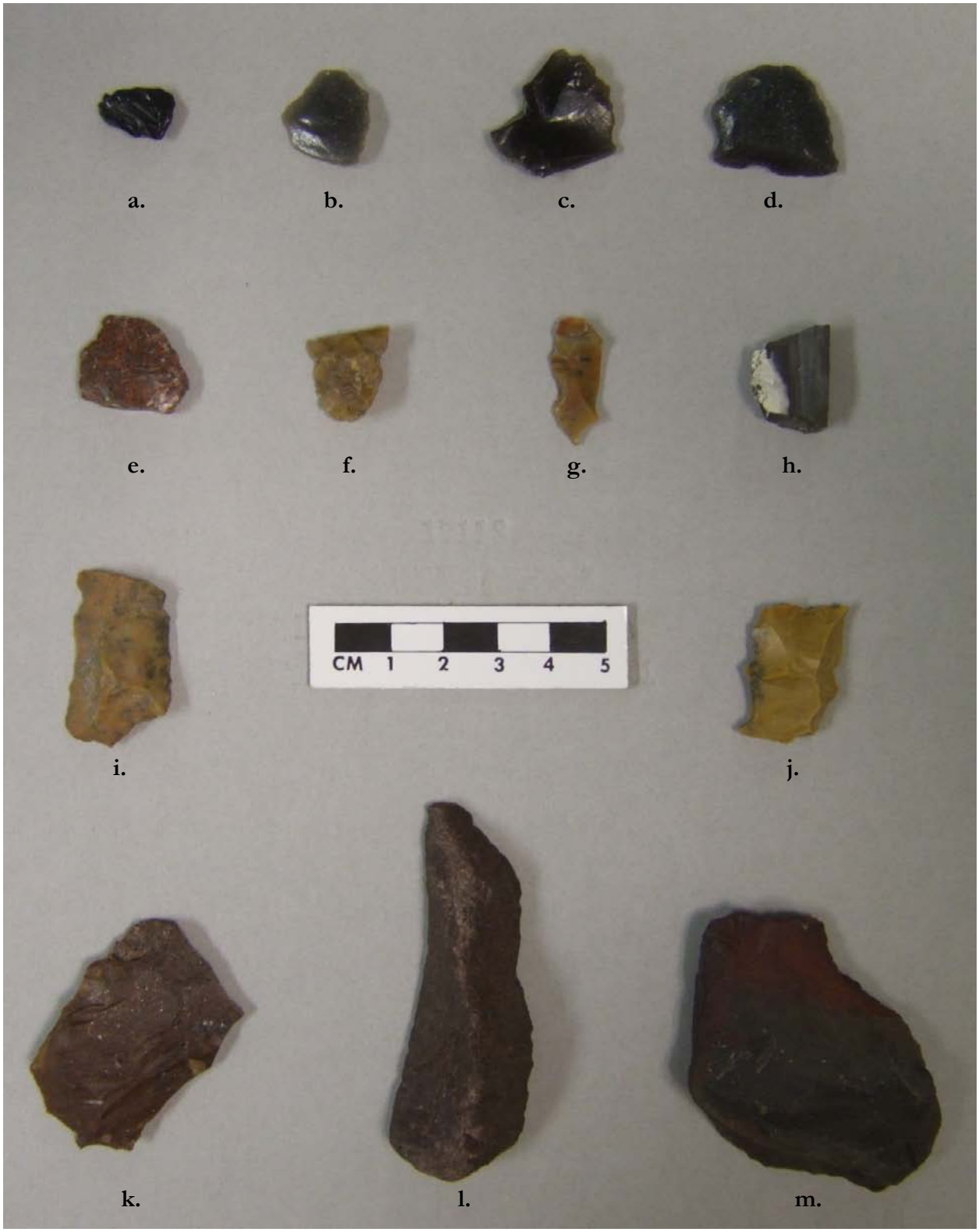


Figure 45. Other flaked stone tools collected during the survey: **a**. 5FN2601–3, **b**. 5FN2666–1, **c**. 5FN2663–3, **d**. 5FN2658–1, **e**. 5FN2602–3, **f**. 5FN2601–1, **g**. 5FN2602–1, **h**. 5FN2444–1, **i**. 5FN2601–2, **j**. 5FN2602–4, **k**. 5FN2602–2, **l**. 5FN2340–2, **m**. 5FN2450–1.

Table 8. Lithic material type frequencies in the Antelope Gulch survey area

Resource	Ag	Ct	Cy	Js	MS	Ob	PW	Qe	Ss	Ot	Totals
Sites	178	1103	1141	6708	26	11	22	158	21	21	9,389
IFs	1	14	6	38	0	1	0	1	0	0	61
# Total	179	1117	1147	6746	26	12	22	159	21	21	9,450
% Total	1.9	11.8	12.1	71.4	.3	.1	.2	1.7	.2	.2	99.9

Abbreviations in Table 8: Ag = agate (i.e., banded or dendritic chalcedony), Ct = chert, Cy = chalcedony, Js = jasper, MS = Morrison silcrete, Ob =obsidian, PW = petrified wood, Qe = quartzite, Ss = sandstone, Ot = other (8 siltstone, 5 rhyolite or similar igneous, 3 granitic, 2 macrocrystalline quartz, 1 conglomerate, 1 uncertain metamorphic, and 1 unknown wind-polished pebble). The total number of artifacts in this table includes 9,414 flaked stone artifacts, 26 pecked/ground stone artifacts, seven pieces of FCR scattered outside of features, and three lithic manuports.

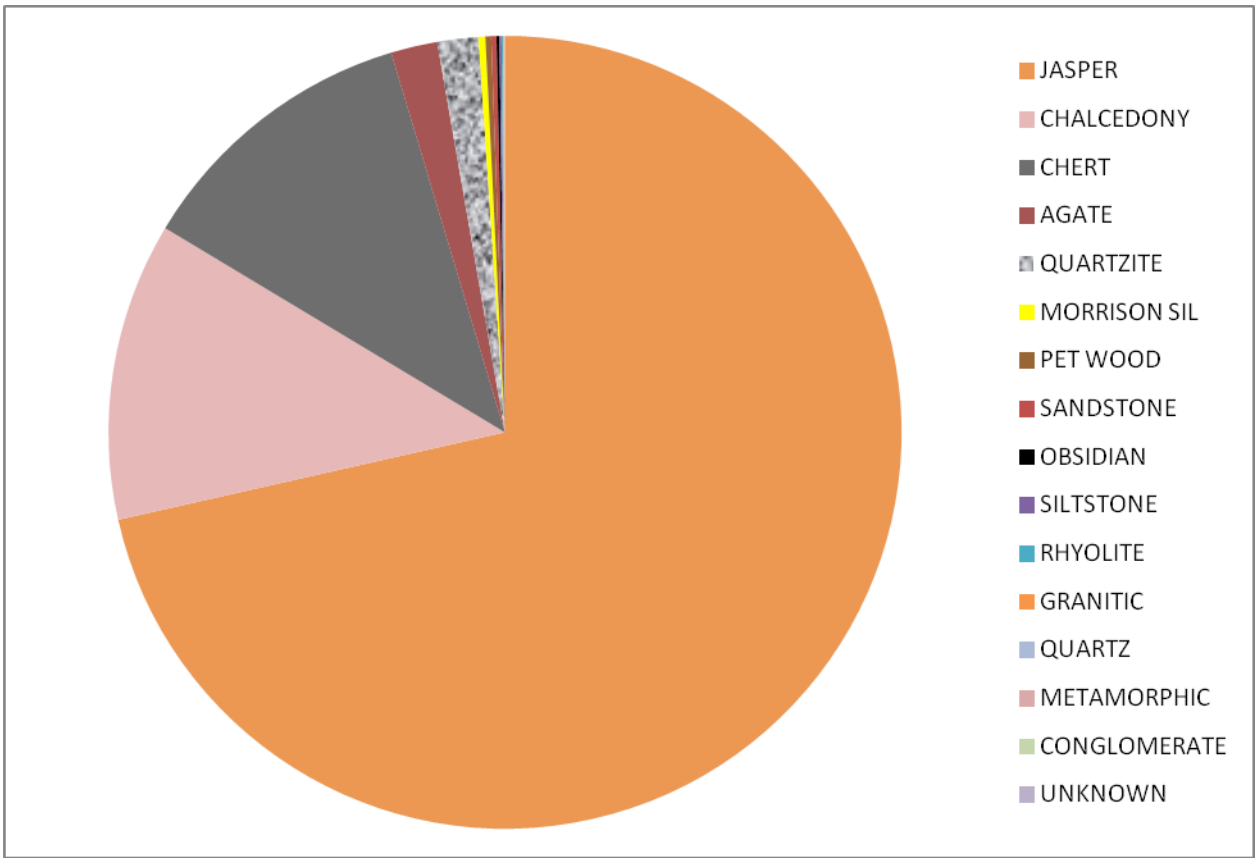


Figure 46. Toolstone frequencies on all sites in the AGS; IFs are not included in this chart.

it is the aesthetic factor—the more attractive color range of the jaspers (Figure 23)—that explains the much heavier reliance on the yellow-brown to brick red crypto-crystalline materials. This difference is readily apparent at sites in the vicinity of the gray chert quarries listed above. Although sites that are immediately adjacent to the

chert outcrops contain artifacts made from those materials, the sites that are only slightly more distant from the outcrops by just scores of meters have very little chert but lots of jasper.

Although the comparison is not an ideal one, a somewhat similar pattern is apparent in Middle Park, to the north of the AGS in Grand County. There, cherts from the Troublesome formation outcrop in a number of locations (Miller 2010:593; a.k.a. Kremmling chert or Miocene chert). They occur in variably banded and marbled colors of white, gray, brown, and tan with some translucent moss agate varieties also known. Nearby in the mountains bordering the west side of Middle Park, very high quality gray quartzite occurs in nearly unlimited quantities at Windy Ridge, and was quarried intensively for thousands of years (Bamforth 2006). Yet the quartzite appears to be common only on sites in the immediate vicinity of the source zone, whereas Troublesome chert dominates in most other site assemblages occurring at significantly greater distances from any particular primary or secondary source of it.

Another well-known toolstone source of the South Park region is silica-permineralized wood, a.k.a. petrified wood (Miller 2010:560), but it is noticeably rare in AGS assemblages considering the large quantities quarried in the Threemile Gulch area near Hartsel, less than 50 km north of our project area (Bender 2003; Bender and Friedman 2008, 2009; Bender et al. 2003; Friedman et al. 2003). Given the visual similarities of AGS area jaspers with the more completely silicified varieties of Threemile Gulch petrified wood, it is possible that our crews did not recognize petrified wood artifacts lacking relict wood structure. However, it seems more likely that the totals in Table 8 accurately reflect the lack of petrified wood on AGS sites due to the sheer abundance of the local jaspers.

The only clearly non-local material seen in the AGS is obsidian, of which five flakes (Figures 45b, 45d) and two flake tools (Figures 44k, 45c) were found on separate sites and an IF (see Shackley, Appendix II, this report). Shackley's 2012 sourcing study on a sample of five AGS artifacts traced four of them to sources in the Jemez Mountains of northern New Mexico: two flakes and a tool from El Rechuelos, and one flake tool from Valles Rhyolite (Cerro del Medio). The El Rechuelos source zone—a.k.a. Polvadera Peak—is some 290 km south-southwest of the AGS (straight line distance), while the Valles Rhyolite source is a bit farther south at about 310 km from site 5FN2663 in the project area. The fifth artifact, from 5FN2601 (Figure 45a), tested out to be a glassy form of iron ore or slag rather than a prehistoric flake of obsidian. The northern New Mexico origin of the four obsidian artifacts from the AGS is comparable not only to the findings of Bevilacqua and Wunderlich (2006:99) in the Gribbles Park area a short distance to the southeast, but also to sourcing results

on a sizable majority of all obsidian artifacts tested in Colorado (Ferguson and Skinner 2003:Figure 6).

Not included in the sourcing study above was the surprising, but ultimately insignificant, discovery of low-grade obsidian with quartz at 5FN2651 (Figure 47). Although five flakes of this brown-black glassy material were observed on site, no other evidence of use of this material was found nearby. The evidence shows that the obsidian was being tested, but that the vast majority of procurement effort at 5FN2651 focused on the higher quality jasper deposits (Figure 28). Mention also has been made of the Alibates-like material represented by the projectile point collected at 5FN2604 (Figure 42q). While this artifact cannot be definitively tied to the Texas panhandle source zone, the possibility does exist given other more securely identified Alibates specimens found in eastern Colorado and the San Luis Valley, particularly for the Paleoindian period (e.g., Emery and Stanford 1982:12; Jodry 1999:Table 6–11).

Figure 47. While most of the usable toolstone at site 5FN2651 is a high quality jasper, there are localized gradations to a lower quality obsidian containing quartz inclusions, as in this deposit which intruded a layer of Wall Mountain Tuff.

Finally, Table 9 provides details on the 88 collected items from the project area. Included are 26 projectile points (one in two pieces: Figure 42l); 26 lithic raw material samples (16 jasper, six chert, two chalcedony, one quartzite, one obsidian); ten scrapers, six bifaces, six flakes such as obsidian, two knives, two multi-purpose flake tools, two other flake tools with one worked edge, two cores, one drill, one uniface, one hammerstone rejuvenation flake, one spall of glassy iron slag mistaken for obsidian, one burned bone fragment, and one bison horn sheath. All these materials are stored by History Colorado-OAHP in Denver.

Table 9. Antelope Gulch artifact catalog, 2008–2011

Catalog #	Artifact Description	Comments & Metrics
5FN2339–1	gray-brown chalcedony, side/ corner-notched projectile point	Developmental period; 2.15 × 1.61 × 0.48 cm; neck width = 1.00 cm; mass = 1.7 g; broken tip
5FN2339–2	white chert side-notched projectile point, reworked blade, convex base	Early Archaic period; 3.25 × 2.15 × 0.57 cm; neck width = 1.26 cm; mass = 4.1 g; broken tip
5FN2340–1	unifacial knife, gray-brown chalcedony	7.15 × 4.26 × 1.85 cm; mass = 46.2 g
5FN2340–2	hammerstone rejuvenation flake, dark purple quartzite	one of two found in same area; 6.86 × 2.43 × 1.66 cm; mass = 26.2 g
5FN2341–1	side-notched projectile point fragment, convex base, yellow-brown jasper	Early Archaic period; 3.15 × 2.48 × 0.57 cm; neck width = 1.55 cm; mass = 4.1 g; broken blade
5FN2341–2	contracting stemmed projectile point, maroon jasper	Developmental period? 2.37 × 1.54 × 0.58 cm; max. stem width = 1.03 cm; mass = 2.1 g; broken tip
5FN2341–3	bifacial preform, gray-brown chert or petrified wood	6.92 × 4.24 × 1.32 cm; mass = 38.9 g
5FN2344–1	distolateral scraper, dendritic yellow and maroon jasper; broken proximal corners	6.10 × 4.98 × 1.47 cm; mass = 49.0 g
5FN2344–2	"thumbnail" end scraper, dendritic yellow jasper	3.40 × 2.30 × 0.57 cm; mass = 4.0 g
5FN2344–3	corner-notched(?) arrow point, white mottled chert	Developmental period; 2.15 × 1.56 × 0.30 cm; neck width = 0.61 cm; mass = 1.0 g; broken base
5FN2346–1	abraded, stemmed projectile point base, maroon jasper	Plano(?) period, possibly Cody complex; 1.77 × 1.90 × 0.57 cm; max. stem width = 1.73 cm; mass = 2.4 g; blade broken at top of stem

Catalog #	Artifact Description	Comments & Metrics
5FN2348–1	stemmed arrow point, white-gray-brown banded chalcedony	Developmental period; 3.70 × 1.80 × 0.53 cm; max. stem width = 1.19 cm; mass = 3.2 g; impact-fractured tip
5FN2349–1	proximal end scraper, obsidian	2.43 × 2.93 × 0.81 cm; mass = 5.6 g; sourced to El Rechuelos, New Mexico
5FN2350–1	Desert side-notched arrow point, white chalcedony	Diversification period; 3.13 × 1.21 × 0.32 cm; neck width = 0.63 cm; mass = 1.1 g; broken base corner
5FN2435–1	side-notched arrow point fragment, light gray chert	Diversification period; 2.19 × 1.47 × 0.49 cm; neck width = 1.07 cm; mass = 1.8 g; broken tip and one edge
5FN2437–1	large side-notched projectile point fragment, convex base, tan conglomeratic chert	Early Archaic period; 4.51 × 3.47 × 0.95 cm; neck width = 2.21 cm; mass = 17 g; broken tip
5FN2437–2	corner-notched arrow point, white-gray chert with red band	Developmental period; 2.00 × 1.48 × 0.61 cm; neck width = 1.06 cm; mass = 1.6 g; broken tip and one edge
5FN2437–3	composite flake tool [cutting & scraping], retouched & utilized, pink jasper	1.92 × 2.70 × 0.52 cm; mass = 2.9 g; fire-damaged; broken proximal corner
5FN2438–1	distolateral scraper, maroon jasper	4.23 × 2.55 × 1.05 cm; mass = 11.5 g; fire-damaged; slightly broken proximal end and one edge
5FN2441–1	unnotched arrow point fragment, maroon jasper	Diversification period; 1.45 × 1.20 × 0.40 cm; mass = 0.7 g; broken tip
5FN2444–1	burned bone fragment, unidentified medium-large mammal	striations along one surface may be cut marks or from scavenger chewing; 2.25 × 1.50 cm; mass = 1.8 g
5FN2444–2	corner-notched projectile point fragment, maroon jasper	Late Archaic period; 2.75 × 2.00 × 0.50 cm; neck width = 1.50 cm; mass = 2.9 g; broken tip and one shoulder
5FN2446–1	corner-notched projectile point fragment, one serrated edge, opposite edge reused as knife; maroon jasper	Late Archaic to Developmental period; 1.95 × 2.25 × 0.47 cm; neck width = 1.03 cm; mass = 2.2 g; broken tip, base, and shoulders
5FN2447–1	unifacial knife fragment, maroon jasper	3.50 × 2.60 × 0.50 cm; mass = 4.3 g; broken tip & proximal end
5FN2447–2	marbled tan-yellow-brown jasper raw material sample	10.57 × 10.28 × 8.66 cm; mass = 891.2 g
5FN2447–2	dendritic yellow-brown to maroon jasper material sample	10.71 × 8.68 × 5.38 cm; mass = 381.8 g
5FN2447–2	marbled tan-yellow jasper secondary core	9.64 × 6.45 × 3.68 cm; mass = 225.9 g

Catalog #	Artifact Description	Comments & Metrics
5FN2448–1	end scraper, black chert	6.05 × 4.35 × 2.15 cm; mass = 56 g
5FN2450–1	multi-purpose scraper, gray chert with red bands	4.97 × 4.89 × 1.12 cm; mass = 34.8 g; retouched and/or utilized on four edges
5FN2451–1	stemmed projectile point fragment, white chalcedony	Mid-Late Archaic period; 2.51 × 1.88 × 0.53 cm; max. stem width = 1.3 cm; mass = 2.7 g; broken tip and one shoulder
5FN2451–2	white to light gray chalcedony raw material sample	6.37 × 4.14 × 2.70 cm; mass = 59.1 g
5FN2451–2	medium gray chalcedony raw material sample	4.83 × 3.15 × 1.45 cm; mass = 17.6 g
5FN2451–3	dark brownish-gray chert secondary core	6.49 × 5.01 × 3.19 cm; mass = 113.1 g
5FN2453–1	stemmed projectile point with convex base, yellow-brown moss agate with pink and white inclusions	Early Archaic period; 4.5 × 2.3 × 0.59 cm; max. stem width = 1.5 cm; mass = 5.5 g; one broken shoulder
5FN2584–1	dendritic yellow-brown to maroon jasper material sample	5.96 × 5.05 × 2.05 cm; mass = 48.8 g
5FN2584–2	dendritic yellow-brown to maroon jasper material sample	8.20 × 5.75 × 5.16 cm; mass = 217.5 g
5FN2584–3	grayish-green quartzite raw material sample	4.94 × 2.93 × 1.41 cm; mass = 10.1 g
5FN2585–1	small biface fragment, dendritic maroon jasper	1.75 × 1.38 × 0.30 cm; mass = 0.9 g; broken tip
5FN2585–2	small corner-notched projectile point fragment, orange chalcedony; thermal damage	Developmental period; 2.94 × 2.34 × 0.60 cm; neck width = 1.07 cm; mass = 3.0 g; broken blade, potlidded
5FN2585–3	medium-sized bifacial preform, dendritic maroon jasper	3.40 × 1.95 × 0.66 cm; mass = 4.1 g
5FN2586–1	unifacial drill fragment with expanding stem, white chalcedony	3.25 × 1.83 × 0.59 cm; max. bit width = 1.16 cm; mass = 2.4 g; broken bit tip
5FN2588–1	tiny stemmed or corner-notched arrow point fragment, mottled pink-gray-black chert	Diversification period; 1.31 × 1.43 × 0.33 cm; neck width = 0.62 cm; mass = 0.7 g; broken blade and base
5FN2588–2	stemmed or corner-notched projectile point, maroon jasper; thermal damage	Late(?) Archaic period; 2.47 × 2.57 × 0.50 cm; neck width = 1.20 cm; mass = 3.2 g; broken blade and shoulder
5FN2592–1	banded light-to-medium gray chert raw material sample	9.85 × 5.91 × 5.35 cm; mass = 295.7 g
5FN2592–2	banded gray-brown chert raw material sample	8.43 × 4.88 × 3.98 cm; mass = 218.9 g
5FN2592–3	solid brownish-gray chert flake as material sample	3.97 × 7.28 × 1.90 cm; mass = 48.8 g

Catalog #	Artifact Description	Comments & Metrics
5FN2592–3	dark gray chert raw material sample, with brown patina	6.07 × 5.15 × 3.42 cm; mass = 104.1 g
5FN2592–3	banded gray-brown chert raw material sample	5.36 × 4.67 × 1.41 cm; mass = 48.1 g
5FN2592–4	solid brownish gray chert core reduction flake as material sample	7.52 × 8.04 × 2.82 cm; mass = 121.5 g
5FN2596–1	large biface fragment, dark brown-green-yellow dendritic chert/jasper	5.65 × 3.26 × 0.83 cm; mass = 17.8 g; broken base
5FN2597–1	stemmed projectile point fragment with expanding base, dendritic maroon jasper; thermal damage	Middle-Late Archaic period; 2.27 × 2.20 × 0.60 cm; neck width = 1.45 cm; mass = 3.2 g; broken blade
5FN2601–1	uniface fragment, yellow-brown chalcedony	1.72 × 1.55 × 0.70 cm; mass = 1.7 g; broken proximal end
5FN2601–2	retouched and utilized flake, dendritic yellow-brown jasper	3.16 × 2.01 × 0.75 cm; mass = 4.4 g; broken proximal end
5FN2601–3	flake-like spall, solid black glassy iron ore or slag	1.45 × 1.00 × 0.47 cm; mass = 0.9 g; broken edges; see Appendix II
5FN2602–1	thinning flake, dendritic yellow-brown jasper	2.36 × 0.98 × 0.42 cm; mass = 0.7 g; broken distal end
5FN2602–2	thinning flake, maroon Morrison(?) silcrete	4.40 × 3.96 × 0.58 cm; mass = 9.5 g; broken distal end
5FN2602–3	thinning flake fragment, dendritic maroon jasper; thermal damage	1.73 × 2.08 × 0.53 cm; mass = 2.3 g; broken edges
5FN2602–4	thinning flake, yellow-brown jasper	2.56 × 1.85 × 0.61 cm; mass = 3.2 g; broken distal end
5FN2604–1	edge-beveled triangular blade fragment, dendritic yellow-brown jasper	3.06 × 2.54 × 0.40 cm; mass = 2.8 g; broken proximal end
5FN2604–2	corner-notched projectile point fragment, light gray chert with pink-red streaks (Alibates-like)	Late Archaic or Developmental period; 3.13 × 2.33 × 0.54 cm; neck width = 1.06 cm; mass = 3.3 g; broken tip
5FN2604–3	bifacial composite knife-scraper fragment, dendritic dark brown-maroon jasper	3.57 × 3.15 × 0.88 cm; mass = 9.9 g; broken end
5FN2605–1	corner-notched projectile point fragment, yellow-brown petrified wood	Late Archaic or Developmental period; 2.26 × 2.28 × 0.43 cm; neck width = 1.21 cm; mass = 2.3 g; broken blade tip, base, and shoulder tips
5FN2651–1	yellowish-brown jasper spall as raw material sample	6.55 × 5.14 × 3.17 cm; mass = 101.6 g

Catalog #	Artifact Description	Comments & Metrics
5FN2651–2	black and brown obsidian with quartz, as raw material sample	7.19 × 5.43 × 2.77 cm; mass = 70.8 g
5FN2651–3	bison horn fragment	25.5 × 8.35 × 5.24 cm; mass = 163.8 g
5FN2652–1	brown jasper stone as raw material sample	8.40 × 8.08 × 4.65 cm; mass = 271.0 g
5FN2652–2	dendritic brown jasper stone as raw material sample	16.60 × 9.23 × 6.22 cm; mass = 776.0 g
5FN2658–1	obsidian thinning flake fragment	2.14 × 2.34 × 0.64 cm; mass = 3.0 g; broken distal end; sourced to El Rechuelos, New Mexico
5FN2659–1	patinated brown chalcedony end scraper fragment	2.48 × 2.82 × 0.55 cm; mass = 5.1 g; broken proximal end
5FN2663–1	yellow chalcedony biface blade fragment, distal end only	2.99 × 2.95 × 0.65 cm; mass = 5.3 g; broken proximal end; may be a preform
5FN2663–2	maroon jasper end scraper	3.55 × 2.97 × 0.61 cm; mass = 6.9 g; small break on proximal end
5FN2663–3	obsidian flake tool fragment	2.15 × 2.35 × 0.46 cm; mass = 2.2 g; both ends broken; both lateral edges retouched (one bifacially); sourced to Valles Rhyolite, New Mexico
5FN2663–4	yellowish-brown petrified wood end scraper	3.17 × 2.86 × 0.75 cm; mass = 6.8 g
5FN2666–1	obsidian thinning flake	1.74 × 1.70 × 0.34 cm; mass = 1.1 g; sourced to El Rechuelos, New Mexico
5FN2666–2	tan quartzite biface blade fragment, distal end only	3.04 × 3.01 × 0.62 cm; mass = 4.9 g; broken proximal end; may be a preform
5FN2667–1	veined yellowish-brown jasper core as raw material sample	5.27 × 4.16 × 2.70 cm; mass = 58.1 g; blocky, bifacial reduction
5FN2667–2	veined yellowish-brown jasper core as raw material sample	6.21 × 4.66 × 4.07 cm; mass = 152.5 g; blocky, multi-directional reduction
5FN2667–3	yellowish-brown jasper core as raw material sample	5.48 × 4.52 × 1.96 cm; mass = 44.3 g; blocky, bifacial reduction
5FN2669–1	large, corner-notched projectile point; veined, yellowish-brown jasper	Late Archaic period; 4.68 × 2.84 × 0.61 cm; neck width = 1.49 cm; mass = 6.9 g; comparable to Elko Corner-notched type
5FN2669–2A	light brown chalcedony biface blade tip fragment	1.47 × 1.26 × 0.31 cm; mass = 0.5 g; may be distal end fragment of artifact 5FN2669–2B
5FN2669–2B	light brown chalcedony stemmed projectile point(?) fragment, unifacial	1.97 × 1.60 × 0.40 cm; mass = 1.4 g; min. stem width = 1.26 cm; stem is very slightly contracting; may be proximal end fragment of artifact 5FN2669–2A

Catalog #	Artifact Description	Comments & Metrics
5FN2672–1A	yellow jasper pebble as raw material sample	4.93 × 4.19 × 3.06 cm; mass = 37.5 g
5FN2672–1B	yellow jasper pebble as raw material sample	2.08 × 1.75 × 1.38 cm; mass = 3.2 g
5FN2677–1	small corner-notched arrow point, brown jasper	Developmental period; 2.13 × 1.60 × 0.42 cm; neck width = 0.68 cm; mass = 1.3 g; broken blade tip and shoulder tip
5FN2678–1	small tri-notched arrow point, yellowish-brown chalcedony	Diversification period; 2.90 × 1.89 × 0.39 cm; neck width = 1.30 cm; mass = 2.1 g; basal notch is unifacial
PAAC–AGS–2011–1	dendritic yellowish-brown jasper nodule as raw material sample; rough, tan cortex	6.54 × 3.99 × 3.93 cm; mass = 96.4 g; this one & next 3 items are unmodified pebbles from non-cultural gravel deposits in SW¼ of Sec. 12, T51N, R10E
PAAC–AGS–2011–2	dendritic yellowish-brown jasper pebble as raw material sample; red edges from heat	3.65 × 2.56 × 1.33 cm; mass = 14.4 g
PAAC–AGS–2011–3	veined brown jasper pebble as raw material sample	3.94 × 2.79 × 1.80 cm; mass = 15.2 g
PAAC–AGS–2011–4	yellow jasper pebble as raw material sample	4.42 × 3.65 × 1.14 cm; mass = 15.0 g

*****Metric dimensions are in centimeters, maximum length × width × thickness unless otherwise noted (dimensions for broken items in parentheses); mass in grams.

Antelope Gulch and Chert Sources in Central Colorado

By Kevin D. Black and Aaron Theis

[Authors' note: This chapter is an adaptation of a conference paper delivered at the 10th biennial Rocky Mountain Anthropological Conference in Missoula, Montana on October 8, 2011, titled "Progress and Prospects in Geoarchaeological Research on Cherty Toolstone Sources in Central Colorado." The presentation was part of the symposium *Footprints in the Snow: Papers in Honor of Dr. James B. Benedict*, organized and chaired by Jason LaBelle of Colorado State University in Fort Collins. Certain background details in the paper about the Antelope Gulch Survey project and the local geological context have been described at length earlier in this report, and are omitted here.]

Background

Although the original survey plan for the AGS concentrated on a relatively small area along and near Antelope Gulch, our growing knowledge of toolstone resources based in small part on this project is motivation to broaden our attention to a wider region. Because a notable number of sites recorded on the AGS contained lithic source materials in the form of iron-rich cherts or "jasper," and a large majority of flaked stone artifacts in local assemblages are of the same material, the emphasis in this chapter is on a broad area in central Colorado with known jasper sources. In that respect, the purpose of this section is twofold. The first goal is to provide a comprehensive summary of the distribution and geological context of known toolstone sources in the region surrounding Antelope Gulch. The second goal is to provide examples of how data manipulation within Geographic Information Systems (GIS) can illustrate the geoarchaeological landscape through production of specialized maps, which can serve as a planning tool in future surveys investigating the occurrence of toolstone sources.

Toolstones in Central Colorado

The territory of interest herein stretches to the north and west in the Antero Reservoir-Buffalo Peaks area in western Park County; southward beyond Antelope Gulch to the Arkansas River valley below Salida in Fremont County; and eastward into the intermontane basin of South Park and the adjacent volcanic hills on the Fremont-Park County border (Figure 48). This area measures about 50 km northwest-to-southeast; most of the known toolstone sources along this axis occur in a relatively narrow band about 10 km wide (i.e., 500 km^2 or 193 mi^2). In a much more general study, Black (2000b:Figure 9.1) plotted the locations of all documented cryptocrystalline and microcrystalline silicate material sources in the Mosquito Range and Arkansas Hills sections of the Southern Rocky Mountains including chert, jasper, chalcedony, and agate. Surveys done subsequent to the production of that map have added a significant number of new sources within this zone, including the present study.

Nearly 30 individual sources of jasper have been documented in this region covering portions of Chaffee, Fremont, and Park Counties (Table 10), although survey coverage in the area as a whole is spotty at best. As previously described, the jasper label applies to oxidized iron-rich chert in the yellow-orange-red color range (e.g., Luedtke 1992:6). The AGS project results contributed almost 25 percent of the listed sites, albeit covering a relatively small area, suggesting that the actual number of sources in this region, especially for jasper, is much larger.

Figure 48. County map of Colorado showing the ca. 500 km^2 area described in the text, outlined by the red oval. Many, but not all, of the documented jasper quarries in this zone are marked with yellow dots; the map is adapted from Black (1993).

Intensive survey of truly vast spaces is the only way to determine the density of primary or secondary lithic sources in the region. Even sample surveys might not adequately characterize the toolstone landscape since we do not know whether chert and jasper sources are widely distributed within given geological formations, or are only present in restricted areas due to localized processes. Figure 49 depicts the parcels formally surveyed by archaeologists, the locations of which were obviously chosen based on factors other than surface geology. The 20 topographic maps shown define an area of over 300,000 ha (740,000 ac), of which 19,387 ha (47,886 ac) or only 6.5 percent has been surveyed. A bit higher percentage of the 500 km^2 zone within this block described above has been inventoried by archaeologists (7.6 percent or 11,942 of 157,100 ha). Within the area of the seven topographic maps for which digitized geological data are available, the survey coverage is higher still: 9,672 ha (23,900 ac) of 105,440 ha (260,550 ac), or 9.2 percent.

County	Site Number	Site Name, if any
Chaffee County [n = 4]	5CF84	Trout Creek
	5CF1398	unnamed
	5CF1399	unnamed
	5CF1416	unnamed
Fremont County [n = 22]	5FN48	unnamed
	5FN72	Jasper Hill
	5FN354	unnamed
	5FN387	unnamed
	5FN508	unnamed
	5FN785	unnamed
	5FN868	unnamed
	5FN870	unnamed
	5FN883	unnamed
	5FN985	unnamed
	5FN986	unnamed
	5FN1023	unnamed
	5FN2130	unnamed
	5FN2131	unnamed
	5FN2138	unnamed
	5FN2337	current survey, unnamed
	5FN2444	current survey, unnamed
	5FN2447	current survey, unnamed
	5FN2584	current survey, unnamed
	5FN2651	current survey, unnamed
	5FN2652	current survey, unnamed
	5FN2667	current survey, unnamed
Park County [n = 3]	5PA486	unnamed
	5PA521	Buffalo Springs
	5PA1004	unnamed

Table 10. Jasper toolstone quarries recorded in central Colorado.

The best-known lithic procurement area in this part of Colorado is the Trout Creek lithic source, site 5CF84, which includes outcrops, quarry pits, and workshop debris spread over more than 400 ha (1,000 ac) in Chaffee County, about 23 km north-northwest of Antelope Gulch at the north end of the Arkansas Hills (Chambellan et al. 1984). In the past, a general practice has been to attribute most

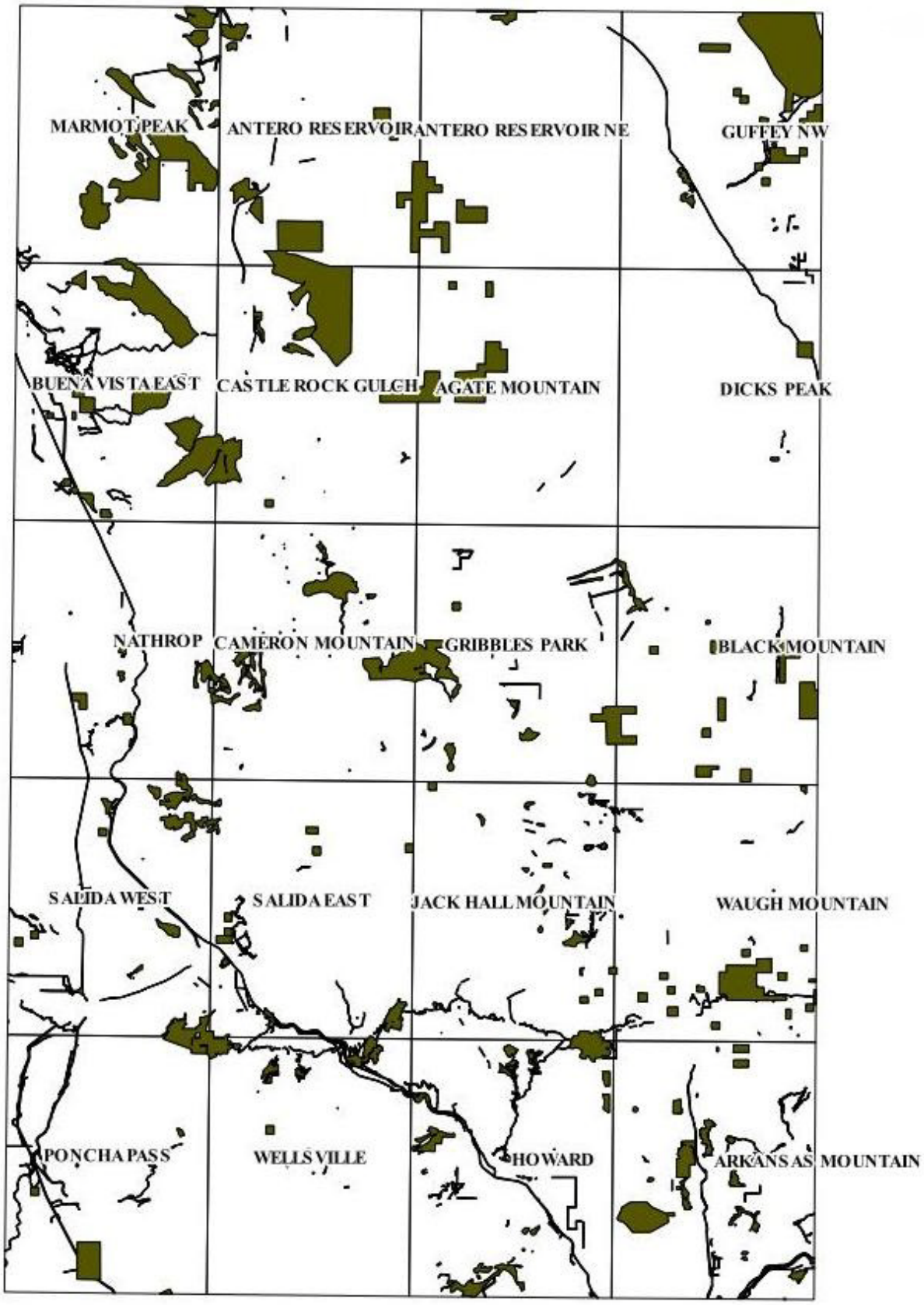


Figure 49. Survey coverage per 1:24,000 USGS topographic map, prior to the AGS project.

jasper-like cherts found in the region to this source area. Not surprisingly, the true situation with the lithic landscape is much more complicated.

Trout Creek material is mostly a yellow brown to dusky red jasper, often with black, green, or red inclusions. Commonly described as a dendritic chert, some Trout Creek materials have inclusions that are not dendritic in morphology. Paul Heinrich's (1984:89–90) analysis identified the toolstone as a silicified dolomite or dolomitic limestone with a potentially diagnostic relict texture dominated by "well preserved pseudomorphs of anhedral carbonate crystals." The most recent geologic mapping in this area indicates that the material occurs in slide blocks of late Eocene or Oligocene age which moved sections of Paleozoic rock northward down toward Trout Creek (Keller et al. 2004:22–23; Wallace and Keller 2003:15).

Heinrich (1984:88) preliminarily identified the host rock at Trout Creek as the Manitou formation, which is Early Ordovician limestone and dolomite. However, the more recent mapping suggests that some of what Keller et al. (2004:23) describe as "jasperoidal silica deposits" also may occur in the Fremont dolomite of Middle and Late Ordovician age.

We now know that many other jaspers occur in the same general region as the Trout Creek source, especially to the south in and near the mountains of the Mosquito Range and Arkansas Hills, and eastward into South Park. Some of these lithic source materials have dendritic inclusions macroscopically similar to Trout Creek, such as the materials found at the Jasper Hill site and 5FN1023 (Figure 50). These sites are only generally mapped in the Manitou or Fremont formations at the 1° × 2° scale (Scott et al. 1978); 7½' scale geologic mapping is not yet available for portions of our region of interest. Considering all the geologic data now available (e.g., Banks 1970; Lovering 1972; Miller 2010, among others), it is clear that jaspers in the Arkansas Hills region beyond Trout Creek occur in a diverse set of formations from Paleozoic to Tertiary in age.

Toolstones in the Antelope Gulch Survey Area

Our survey work in the AGS encountered 14 small lithic sources, seven of jasper (Table 10). Three other minor deposits of jasper in primary bedrock outcrops showed no evidence of procurement activity (5FN2599, 2655, 2672), but help demonstrate the widespread nature of such materials in the area. The geologic context of the natural jasper occurrences is quite diverse, in five different formations: Kerber, Leadville, Fremont, Wall Mountain, and either Antero or Quaternary pediment gravels (Wallace et al. 1999). Other chert, agate, chalcedony, quartzite, and low-grade obsidian

toolstone deposits are present in the same area, co-occurring in some of the same contexts as well as in the Chaffee (Dyer member) and Sharpsdale formations. In the absence of the newly recorded sources, much of the jasper from the AGS might readily be labeled with a Trout Creek provenance if seen out of context. In fact, some site forms generated on previous surveys near here have listed the Trout Creek site as the source of the artifacts represented in local assemblages. However, as variable as the raw material from Trout Creek is, the diversity in cherts and jaspers in the AGS locality is truly impressive (e.g., see Figure 23).

Figure 50. Dendritic and veined jasper from 5FN1023 resembles many other iron-rich cherts found in the Arkansas Hills region.

The Geoarchaeological Context

As noted in the Effective Environment chapter of this report, the South Park Basin is a huge syncline, geologically continuous with the east side of the Mosquito Range (Scarbrough 2001:3). Proterozoic and Paleozoic strata are most widely exposed in the rugged terrain that surrounds this topographically low syncline, in a roughly U-shaped distribution within the Arkansas Hills to the west and south, merging with the Front Range to the east in the Pikes Peak region (Scott et al. 1978). There are no

known toolstone sources from these most ancient Proterozoic strata. However, the same is definitely not the case for most of the Paleozoic formations. Many of these formations are exposed in the AGS, particularly south of Antelope Gulch.

At least 11 Paleozoic formations either have documented toolstone sources that were utilized prehistorically, or have that potential based on descriptions in geological reports (Table 1). In most of the region, these strata are exposed in relatively narrow zones flanking the east and west sides of the Mosquito Range and its Arkansas Hills section. Folded and offset by steep faults, the numerous Paleozoic formations represent a long sequence of marine and continental deposition interrupted by extended periods of erosion, or deposition followed by erosion. Total thickness of the entire sequence exceeds 1 km just south of the AGS (Wallace et al. 1999:1–3). A wide variety of quartzite, chert, and chalcedony sources have been recorded in these deposits, but for the purpose of this study the primary interest is in jasper-bearing rocks of the Manitou, Fremont, Leadville, Kerber, and Minturn formations.

The Manitou, Fremont, and Leadville formations are dominantly limestones and dolomites in which the cherty toolstones formed as "jasperoid," i.e. via siliceous replacement of the host carbonate rocks, as described by Lovering (1972:2–3, after Spurr 1898:219–220). While both the Kerber and Minturn formations (Pennsylvanian) have extensive sequences of arkose, shale, siltstone, and sandstone, both also exhibit carbonate rock deposits that are more susceptible to silica replacement than are non-calcareous rock types (Lovering 1972:6). Basic geological references on these formations in central Colorado include Anderson (1970), Banks (1970), Berg (1960), Berg and Rold (1961), De Voto (1971, 1972, 1980), Gerhard (1974), Stevens (1961), and Sweet (1961).

Although Mesozoic deposits are widely recognized toolstone sources in other areas, such as for Morrison silcrete and Dakota quartzite (Black 2000b), they are not well-exposed in the territory of interest here. Instead, it is the volcanic activity of the Cenozoic record in this region that is of greater interest in terms of toolstone sources. The "central Colorado volcanic field" described by McIntosh and Chapin (2004) produced an extensive series of late Eocene and Oligocene extrusive deposits extending from the Sawatch Range on the west to the Wet Mountains and northern Sangre de Cristo Range on the south, to the Castle Rock area on the east. The Thirty-nine Mile volcanic area immediately east and southeast of the AGS is the largest remnant of this activity (McIntosh and Chapin 2004:205). Replacement cherts such as the silicified woods quarried for toolstone in the eastern part of South Park are among the source materials recently documented in this volcanic landscape (Bender 2003; Bender and Friedman 2008, 2009; Bender et al. 2003; Friedman et al. 2003). Although detailed geologic mapping has not yet occurred in the Hartsel area, the silica source

for this fossil wood may be overlying volcanic tuff, as is the case at nearby Florissant Fossil Beds National Monument (Foos and Hannibal 1999).

Among the many other igneous formations that originated from this area are the Badger Creek Tuff and Gribbles Park Tuff (Oligocene), which Bevilacqua and Wunderlich (2006:102) suggest as possible sources of jaspers in the Gribbles Park parcel they surveyed. However, they considered redeposition of Manitou formation jasper into Quaternary pediment gravels as the more likely origin. The Antero formation (Oligocene) very slightly pre-dates the Badger Creek Tuff but originated from the same caldera (McIntosh and Chapin 2004:Table 1), and its units of tuff and tuffaceous sandstone form distinctive white cliffs in this region (Wallace et al. 1999). As in the Gribbles Park examples, one of the AGS toolstone sources documented during the current survey (5FN2667, Figures 31–32) is mapped near the boundary of Quaternary pediment gravels with an underlying volcanic formation, in our case the Antero formation. While the surface characteristics at 5FN2667 suggest the veined jasper is in pediment gravels, the Antero formation does include a layer of pebble and cobble conglomerate that could also be the jasper source. Farther north in the Arkansas Hills, the Antero formation has limestone beds with localized jasperoid described as "white, gray, and orange-brown chalcedony" (Wallace and Keller 2003:16).

With its source caldera far outside the Thirtynine Mile volcanic area, the Wall Mountain Tuff (Late Eocene) is both the most widespread individual igneous formation and the most visually prominent in the AGS region. It forms the low cliff some have described as a bison jump feature at the Antelope Gulch site, 5FN494 (Tucker 2001). Locally, it also contains chert and jasper toolstone, and low-quality obsidian (Figures 28, 47). The welded tuff itself was used on occasion for flaked stone tool manufacture as well, such as in the Front Range area where it may be labeled as rhyolite. However, the Wall Mountain rhyolite is not of toolstone quality in the immediate AGS area.

Quaternary pediment gravels are mapped as "deposit 3" (Pleistocene) in a widespread portion of the AGS around Antelope Gulch in the northwest portion of the project area (Wallace et al. 1999:6) and, with the possible exception of 5FN2667, include very sparsely distributed pebbles and stones of jasper, chert, and chalcedony. These gravels also occur as a thin veneer or lag deposit on the sediments accumulated around Wall Mountain Tuff bedrock outcrops north and east of 5FN494. In general, the jasper pebbles in these gravels are too small and widely scattered to have been the target of procurement activity. On the other hand, prehistoric flintknappers may have "high-graded" the gravel deposits, removing the rare larger nodules of usable toolstone, leaving little evidence behind of such limited procurement events.

This review of the diverse contexts of jasper and other cryptocrystalline toolstones in central Colorado, while geologically fascinating, presents a daunting database for archaeologists seeking to describe and interpret ancient landscape use in the region. Gaining a better understanding of the diverse geological occurrences of these toolstone deposits is an obvious starting point. As mentioned earlier in this report, the fact that very similar appearing toolstones are present in so many formations representing such a wide age range—from the carbonate rocks of the Ordovician period (Manitou and Fremont formations) to the extrusive igneous deposits of the Eocene and Oligocene epochs (Wall Mountain Tuff and Antero formations)—suggest the possibility of a common origin such as regional hydrothermal activity (Lovering 1972:35–36). Unfortunately, Heinrich (1984:91) draws a sharp distinction between the relict structure visible in Trout Creek chert at 5CF84 and the microscopic textures of hydrothermal cherts described by Lovering (1972). On the other hand, because the process of silica replacement can preserve many of the physical features of the host rock including the original color, texture, and even fossils (Heinrich 1984:91; Lovering 1972:46), it should be possible to at least define the provenance of artifacts and raw materials transported away from their source to the formation of origin.

Clearly, many more sources of jasper and similar cherts remain to be documented in this region, no doubt including some significantly larger than the sources we have recorded in the AGS. This reinforces the need to be cautious in assuming that the Trout Creek source accounts for the bulk of jasper artifacts in central Colorado. It is also cause for us to propose the definition of a jasper toolstone source zone in this region whose boundaries are tentatively set within the area circumscribed in Figure 48. Even if the Trout Creek label endures as a geographical reference for the zone, it should be realized that the colorful, smooth-textured silicate rocks here occur in a wide range of geological contexts dating from Ordovician to Quaternary in age, and over a much larger area. These toolstones are most often found in limestones, dolomites, and extrusive igneous deposits, and are least likely to be associated with plutonic igneous rocks and most metamorphic rocks (Lovering 1972:6).

GIS Mapping in Lithic Provenance Studies

The availability of digitized geologic maps covering at least a portion of our territory of interest provides us with the opportunity to explore how these data might be used in a GIS environment for both analytical and survey planning purposes. Digitized maps and shape files are available from the Colorado Geological Survey (CGS), whose staff has been conducting geologic mapping at the 1:24,000 scale in central Colorado since 1996. Quadrangles already completed, in progress, or planned

for mapping in the AGS region are part of the "Colorado Rift Project" component to their overall STATEMAP Program (Colorado Geological Survey 2011). Finished maps are available online at geosurveystore.state.co.us/c-33-124000-quadrangles.aspx, but Mr. Theis obtained shape files from mapping efforts as yet unpublished through the courtesy of Nicholas Watterson, Hydrogeologist, at the CGS.

In this section, we combine those geological data with information from the statewide archaeological site and survey database maintained at the Office of Archaeology and Historic Preservation (OAHP), at History Colorado in Denver. The GIS system in current use at OAHP is ArcView 3.2a, which will soon be updated to a much newer version of ArcView. Figure 49 above illustrates how survey data can be mapped in a format that provides a very informative overview of inventory coverage or the lack thereof. Topographic map overlays in the "holes" in survey coverage, particularly using DEM files, can help prioritize future project locations in a mountainous setting such as central Colorado. Combining such maps with ground-level photographic coverage provides a sound basis for decision-making to target new survey areas. Steep topography, access routes, vegetation cover, and other useful landscape details can be more accurately taken into account during the survey planning stage.

Two other kinds of maps are presented here as examples of the utility of this approach. The project employed two GIS software packages: one proprietary package, ArcView 3.2a, and one open source package, Quantum GIS, version 1.7 'Wroclaw.' File types utilized in the project included raster representations of the 1:24,000 USGS Quadrangle maps for the primary base layer, and vector shapefiles consisting of polygons and points as overlays. The ability to turn individual shapefiles, or layers, off and on offers unparalleled flexibility when presenting information as determined by the purpose of the map.

For this project, analysis was rather straightforward, requiring only the following operations: clip, dissolve, identify, and extract. Shapefiles utilized in the project came from the OAHP shapefile collection, and included the Colorado Counties shapefile and the USGS Colorado Quad Index, both of which were clipped to represent the extended study area that shows the location of jasper sources on quads that do not have refined geological data. A second clip represents the study area for which CGS had 1:24,000 geological quads available. The Colorado Geological Survey provided 1:24,000 geological shapefiles to OAHP for the following USGS Quad maps: Antero Reservoir, Buena Vista East, Castle Rock Gulch, Cameron Mountain, Gribbles Park, Jack Hall Mountain, and Marmot Peak.

Custom shapefiles, hand digitized by Mr. Theis, included the Antelope Gulch survey area and recorded jasper sources. Mr. Theis produced the jasper sources shapefile by first running a file search on the OAHP site files database to obtain a list of sources. Second, an examination of individual site forms from the list was necessary to confirm the validity of the data. Finally, digitization of the forms into a polygon shapefile completed the process.

The geological shapefiles were the most time consuming due to the number of geoprocessing techniques required. Each of the seven 1:24,000 geological shapefiles first had to be dissolved into geological formations in order to par the data into a more manageable format. The identification of relevant geological formations was next, accomplished by simply highlighting the relevant rows. Last was extraction of the relevant formations from the geological file to create a new shapefile. Once this process was complete, the seven 1:24,000 shapefiles were merged into one file in order to perform the "clip" function to determine the surveyed area of each formation.

The shape files available from CGS allow mapping of individual geological formations, and Figure 51 shows such details for Paleozoic strata in a 3D perspective across the Arkansas Hills, from the AGS northward to the Trout Creek source area. The base map here is from Google™ Earth. Individual sites of all types recorded on the AGS (not just the quarries) are plotted in this example, but of course any other data could be shown in relation to the geological formations, such as surveyed lands or planned land developments that may be cause for future inventories.

The same kind of geological data are presented in Figure 52, but in a two-dimensional plan view with 7½' USGS topographic map boundaries shown. Whether the map is done isolating on a single formation or on groups of them as in Figures 51–52, one can estimate both the acreage available to examine per formation and how much of each formation has been surveyed by archaeologists. In Figure 52, the total area shown for the Manitou formation covers 1,471.89 ha or 3,637.14 ac, of which the OAHP database records that 237.14 ha or 585.98 ac have been surveyed (i.e., 16.1 percent). For all Paleozoic formations illustrated in Figure 52, the total area represented is 7,864.64 ha or 19,433.94 ac, and the current survey coverage is 1,534.31 ha or 3,791.37 ac (19.5 percent).

Figure 53 is the last example to present. We have mentioned the broad area over which the Wall Mountain Tuff was deposited, originating at an as-yet undefined caldera in the Sawatch Range west of the AGS and trending northeastward into Douglas and Elbert Counties. This figure shows just a small portion of that vast terrain, where digitized data are available in the AGS region. Here, the total area for

the formation on fourteen 1:24,000 geological quad maps is 1,801.54 ha or 4,451.69 ac, and the current survey coverage is 259.85 ha or 642.11 ac (14.4 percent).

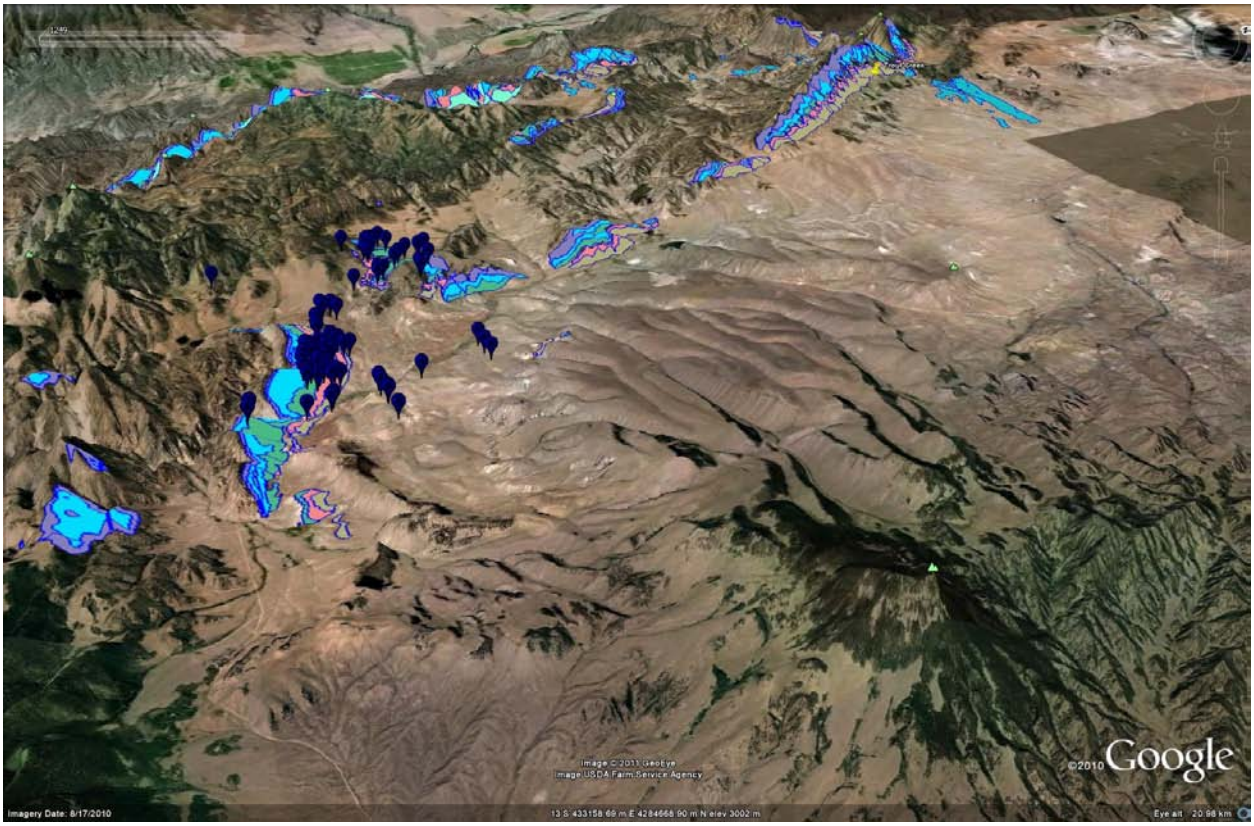


Figure 51. Sites recorded in the AGS, shown as dark blue points, are mapped in relation to colored Paleozoic strata in an overlay on a Goggle Earth™ image. This 3D perspective provides a northwest view across the Arkansas Hills toward the Upper Arkansas Valley near Nathrop. Black Mountain is the peak visible at lower right, and Trout Creek site 5CF84 is marked with a yellow pin at top right.

One must keep in mind that these acreage figures are indeed approximations, regardless of the precision with which GIS software allows us to calculate the area of a polygon. That is because there is a limit to the precision with which boundaries of a geological formation or surveyed area can be shown at the scale of a 1:24,000 map. In the case of surveyed project boundaries that do not coincide with the cadastral grid of 1 mi^2 sections, error may be introduced in several ways: 1. how archaeologists draw those limits on their maps; 2. how GIS specialists translate the boundaries from field maps (assuming hard copies of field maps were used, as opposed to direct data entry in the field); and 3. the orienteering skill of the field crew chief in defining one's position on the ground in the absence of obvious cultural or natural markers such as fence lines or canyon rims, and when not employing GPS technology (an increasingly rare choice). However, these sources of error should be relatively small ones that are far outweighed by the quantity and quality of spatial information obtained.

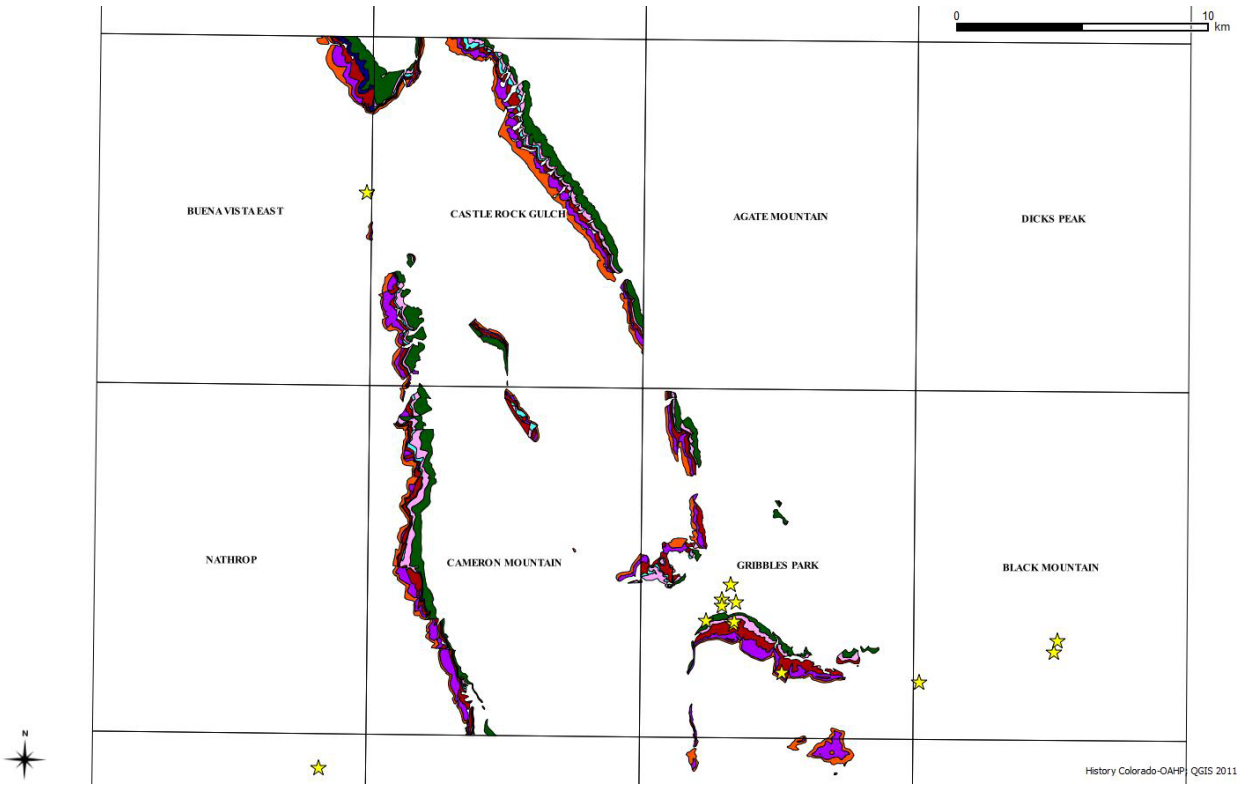


Figure 52. Plan view of 7½' USGS topographic map boundaries shown in relation to early-middle Paleozoic geological formations and toolstone quarries (yellow stars) in the AGS. Formations depicted are the Manitou, Harding, Fremont, Chaffee (Parting and Dyer members separated), and Leadville. Note that shapefiles for the formations are not available on certain 7½' USGS maps outlined in this figure, such as Agate Mountain.

Discussion

Recent surveys in central Colorado, including the PAAC inventory at Antelope Gulch, have significantly added to the body of data on toolstone resources in the region. It is now clear that previous assumptions about the provenance of yellow-orange-red-brown chert or jasper artifacts from the region based solely on macroscopic characteristics were focused too narrowly on the Trout Creek source, clearly warranting a broader perspective on toolstone provenances, taking into account the diverse geographical and geological presented here. Future surveys may widen the territory of relevance even further but, for the time being, we are defining a central Colorado jasper source zone extending across adjoining portions of Chaffee, Fremont, and Park Counties.

Visually comparable cherty toolstones within this zone occur in multiple bedrock contexts ranging in age from Ordovician to Oligocene, as well as in secondary gravel

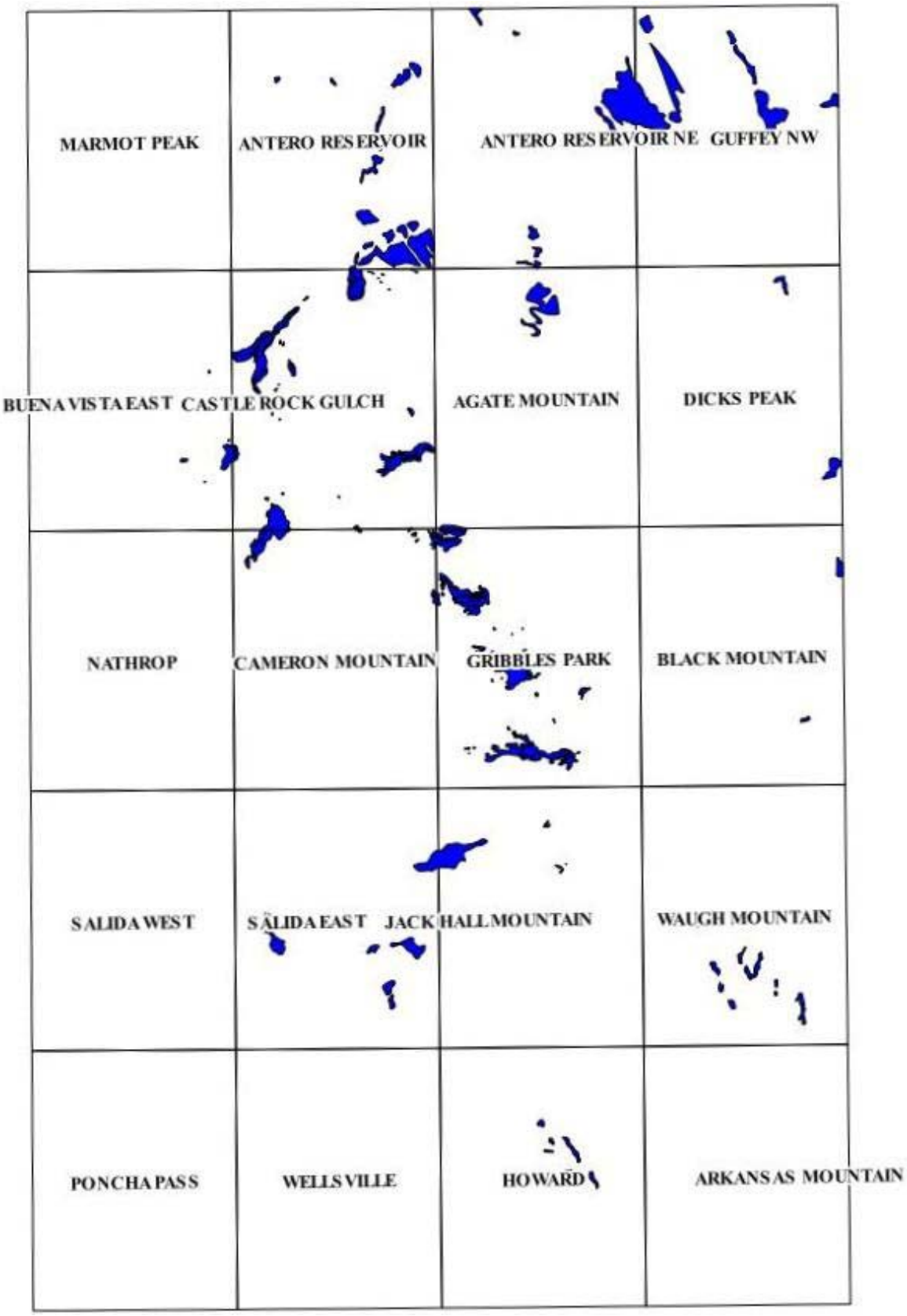


Figure 53. Plan view of 7½' USGS topographic map boundaries and the Wall Mountain Tuff.

deposits of the Pleistocene (and in modern river beds). Regional hydrothermal activity may be a primary, common factor in the formation of many of these materials through silica replacement of the varied host rocks. Future provenance studies within this zone should include approaches such as trace element analysis, microscopic texture studies, and microfossil evidence, considering the fact that relict structures are often retained during the silica replacement process.

The tools now available to aid in planning new projects brighten future prospects for better defining the geoarchaeological landscape in central Colorado. The availability of digitized geologic maps at the 1:24,000 scale has led us to explore how such geospatial data may be juxtaposed with comparably scaled information about the archaeological landscape. It is apparent that GIS-based mapping of this sort holds great promise both for interpreting the current record on toolstones in central Colorado, and for providing far more comprehensive overviews of survey coverage useful for planning new inventories. While the large number of formations in the AGS region that contain cherty toolstones may suggest that new surveys in any randomly selected area would have a good chance of finding new sources, this situation is by no means a universal one. The ability to plan surveys that accurately target specific toolstone-bearing formations is clearly expedited using these methods.

Evaluations and Recommendations

The Management Information Form (MIF) at the beginning of this report summarizes the significance evaluations for the 80 sites and 22 IFs recorded in the AGS, in terms of their eligibility for the National Register of Historic Places (NRHP). In general, eligibility assessments tended to be conservative ones, favoring conservation of the cultural resources whenever possible. Since there was no known current or planned threat of land disturbing activities in the AGS at the time of the survey—illicit artifact collecting or digging being an unpredictable, seemingly random activity—there was no perceived need for immediate test excavations to definitively evaluate the significance of sites considered potentially eligible for the NRHP. However, we were unaware of plans for wildfire mitigation through the clearing of brush and downed timber, which took place in 2011 south of Antelope Gulch.

Twenty-eight of the 80 sites are evaluated ***potentially*** eligible for the NRHP. Should future developments threaten these sites and avoidance is not possible, additional measures should be taken to determine their research potential. Test excavations, instrument mapping, and controlled surface collecting are among the management recommendations made for these 28 sites. In addition, tree-ring dating is

recommended on the possible culturally-peeled tree at site 5FN2345, and occasional monitoring is suggested at 5FN2601 where artifacts are exposed at the edge of a ranch road. Forty-four sites are evaluated not eligible for the NRHP based on poor physical integrity, minimal potential for intact buried remains, and/or the presence of surface assemblages limited in quality and quantity of cultural materials. Likewise, all 22 IFs are inherently insignificant resources that are evaluated not eligible for the NRHP.

The remaining eight sites in the AGS—all prehistoric—are evaluated eligible for the NRHP based solely on the surface evidence. One of these eight, 5FN2597, also has a Historic period component but it does not contribute to the significance of the site. All but one of these eight sites are south of Antelope Gulch, and four are adjacent to the arbitrarily-defined "site box" of 5FN494: 5FN2597, 2598, 2651, and 2663. Six of these sites have at least one surface artifact concentration and three have other features including a hearth (5FN2344), stone quarry pits along with possible hunting blinds (5FN2651), and a spaced stone enclosure (5FN2663). All eight sites have good potential for intact buried remains, albeit only 5FN2344 has direct evidence for subsurface materials. Test excavations are recommended at seven of these sites to more precisely define the extent of buried material, and controlled surface collections of artifacts also are recommended at 5FN2344, 2447, and 2663. Finally, monitoring is recommended at prehistoric quarry 5FN2651, where a very significant deposit of jasper has been targeted by modern day rock hounds and, perhaps, rock shop suppliers.

Although it was not intensively re-surveyed by the AGS field crews, Antelope Gulch site 5FN494 also deserves attention regarding suggestions on future management options. The "site box" mentioned above refers to the rectangular area measuring 600 m N-S × 500 m E-W (30 ha or 74.1 ac) currently used to define the boundary of the site. This shape stems from the survey work done at the site by CAS volunteers in 1985–1986, as reported in Tucker (2001). Essentially, the rectangle identifies the maximum extent of the CAS survey work, not the maximum extent of archaeological materials present around the core area of the site where stone enclosure features were once clustered. This is readily apparent from the results of the AGS work that intensively inventoried the entire perimeter of the 5FN494 site box and recorded ten sites immediately adjacent to it. All ten of the sites extend into the site box by varying amounts, but those overlapping areas were not examined in any detail by our crews. Thus, future field work is recommended toward the goal of eliminating the overlap by shrinking the site box to more accurately enclose the core area of the Antelope Gulch site. An instrument map of 5FN494 that precisely defines the primary site features—stone enclosures, hunting blinds, spring-fed pool, and cliff—would help serve this goal.

Also, the repeated episodes of vandalism at 5FN494, whether due to intentional artifact collecting or unintentional damage to stone circle features, has been on-going at least since the site was first thoroughly documented in 1985 (Tucker 2001). The most recent such illicit activities resulted in our initial site inspection with volunteer Becky Donlan in late May, 2007 (Figure 2). Shortly thereafter, following discussions with state archaeologist Susan Collins, then-district manager Kit Page with the State Board of Land Commissioners authorized the installation of several signs in the site vicinity restricting off-road activities. In the short-term, at least, these signs appear to have had the desired effect. Long-term vigilance, with occasional monitoring of the site area, is advised given the high profile of the site's landscape and widespread knowledge about its archaeological significance. A formal site stewardship program for the site would be ideal.

On the positive side, our survey results show that illicit excavation is not a significant problem in the area, and that surface "arrowhead" hunting is more prevalent at sites closer to 5FN494 than at sites more remote both from the Antelope Gulch site and from the local county roads. All of the additional recommendations offered here relate specifically to what our survey crews did not quite finish on our ultimate "wish list" for the area. Most obvious, from a glance at Figure 4, is that the project area boundaries defining the acreage surveyed by PAAC crews have a few inset wedges of unsurveyed property, all of which would be good areas for additional work to define a more compact, contiguous survey block. In the author's opinion, the highest priority among these is the triangular area on a north-facing ridge slope bounded by County Road 1B on the west, the wooded ridge top on the south, and the foot of the slope on the north. The CAS chapter field project that resulted in Tucker's (2001) article made note of a possible "lithic quarry" on the slope (OAHP site files, inventory form for 5FN494), in the vicinity of a mineral prospect pit spotted by one of our crews at a distance.

Four additional recommendations relate to previously observed resources in the area. One suggestion is for more survey coverage in the higher elevations of the wooded ridge system south and southwest of the AGS survey boundary. Tucker's (2001:10) report mentions a hike made by the CAS field crew to the ridge top overlooking Steer Creek, where they spotted three lithic scatters and two bark-peeled trees. More formal surveying to verify these findings is warranted there. Also, site 5FN777—a purported lithic source for red, white, and blue chalcedony—is on BLM property about 150 m east of a spring and the canyon of Badger Creek, and has never been adequately defined. Although Tucker (2001:15) noted evidence of recent artifact collecting on his latest site visit in 1991, the original site document in OAHP files dating to 1974 mentions the presence of two large corner-notched projectile points (Late Archaic period?) found on an arroyo cutbank about 2 ft (60 cm) below the

modern surface. Additional site documentation and mapping appears to be in order for this resource.

To the northwest of 5FN777, Riddle and Kane (1990) recorded site 5FN893 on USDA Forest Service land just west of the AGS as part of a 295 ac survey in 1988. The northeast limit of the site was defined at a fence just east of the property boundary between US Forest Service and state-owned lands. However, our survey did not extend westward to that fence line, so additional survey is recommended to define the full extent of the eastern site area on state-owned lands. Our final recommendation is for thorough survey coverage just north of the AGS along the Fremont-Park County boundary where numerous prospect pits and a mine are shown on the 7½' topographic map for Gribbles Park (USGS 1994). The geological mapping report of Wallace et al. (1999:15–18) describes test results on samples collected from this zone showing anomalously elevated quantities of arsenic, copper, lead, and silver. Historical records and mineral patents indicate the mining here was for these silver-copper ores in the distinctive red beds of the Kerber and Sharpsdale formations (Pennsylvanian).

Summary and Conclusions

The AGS project has generated a wealth of new data on the prehistoric archaeological record of central Colorado, particularly regarding flaked stone technology and raw materials. Information on Late Holocene use of local landscapes is especially abundant, notably in the Late Archaic through Diversification periods ca. 1300 BC-AD 1450. The survey covered about 794 ac straddling Antelope Gulch, an east-flowing tributary of Badger Creek in the northwestern corner of Fremont County. This work resulted in the recording of 80 sites and 22 IFs, the majority of which represent prehistoric American Indian activities. The most common site types here by far are open lithic scatters, camps, and quarries. These are typified by flaked stone debitage of diverse raw materials, flaked stone tools clearly skewed toward hunting and faunal processing implements, a small number of ground stone tools on less than ¼ of the sites, and procurement activity focused on high quality, crypto-crystalline silicate-rich rocks, particularly colorful cherts or jasper.

Highest site densities are found: 1) at the margins of wooded areas where the forests give way to open grasslands; 2) along the larger east-flowing tributaries of Badger Creek, including Antelope Gulch; 3) on the crest of ridges both north and south of County Road 2; and 4) in proximity to bedrock knolls north of Antelope Gulch. For the most part, these high-density areas offer a consistent set of attractions such as the proximity of Badger Creek as a probable north-south travel corridor; mixed conifer forests for fuel, shelter, construction materials, and bark; expansive

views of surrounding terrain to the north, east, and south; and access to numerous knappable toolstone outcrops. Beyond these favored areas, a sparser scatter of sites and IFs is found with lowest densities in the open grassland in the northwest part of the AGS, and on the steeper forested ridge slopes south of County Road 2.

One hundred and twenty-five features have been documented at 52 sites and nine IFs within the AGS, over half of which are artifact concentrations. Ten thermal features such as hearths and fire-cracked rock concentrations also have been recorded, along with numerous other ashy, burned areas that may or may not be cultural. A few project area artifacts are exposed on rodent backdirt, wind-thrown tree root balls, and in road berms, arroyos, and washes indicating the presence of significant buried deposits within 50 cm of the present surface. Much deeper arroyo cuts show that alluvium has accumulated at least 1.5–2.0 m in depth along the larger drainages. Historic period sites and features mostly represent logging, mineral prospecting, and ranching activity in the period 1880–1930; the most common features are trash scatters and prospect pits. Cairns are also common north of Antelope Gulch, but most appear to represent uranium claims made ca. 1965–1978.

The prehistoric settlement patterns in the survey area are undoubtedly influenced by the large number of toolstone deposits present. But other landscape features nearby also were added attractions to hunter-gatherer groups throughout the prehistoric era. The combination of such features is not only archaeologically evident, but is prominent enough visually to propose the definition of a prehistoric cultural landscape centered on the widely-known Antelope Gulch site, 5FN494. The critical landscape features to include here are the toolstone outcrops showing procurement activity in proximity to Antelope Gulch, the spring-fed pool and low cliff of Wall Mountain Tuff at 5FN494, and the cluster of low, rounded bedrock knolls northeast of 5FN494 (also composed of Wall Mountain Tuff).

From a wider, regional perspective, the large number of toolstone deposits in the AGS has led to a consideration of the lithic resources available in a 50 km × 10 km zone centered on the eastern foot of the Arkansas Hills. This zone has almost 30 documented quarries for jasper, along with sources of other chert, chalcedony, agate, petrified wood, and quartzite. Given that survey coverage is no more than 20 percent in any portion, and averages less than ten percent, the actual number of toolstone sources exploited prehistorically must be significantly higher. Also, among the jasper sources are some dendritic varieties that are visually quite comparable to the Trout Creek quarry materials at 5CF84 in the northern part of the zone.

Throughout the region, many archaeologists have assumed that jasper artifacts on sites both in central Colorado and surrounding areas likely originated at 5CF84.

Clearly, however, the situation is much more complex, and in this report the author has strongly urged that archaeologists think of the Trout Creek quarry not as a point resource for jasper but, rather, that the Trout Creek quarry is just one large node within a central Colorado jasper source zone. From a landscape perspective, then, the central Colorado sources of jasper can be interpreted similarly to Alibates dolomitic chert in the Texas panhandle or Knife River flint (KRF) in western North Dakota, both materials of which occur intermittently over large swaths of territory. The primary difference in the AGS region is geological. Whereas Alibates and KRF materials occur in single geological formations, the central Colorado jaspers are found in at least five bedrock formations as well as in secondary gravel deposits. It was once thought that the local jasper was mainly associated with the Manitou formation (Ordovician), but the AGS survey results alone show the fallacy of that conclusion.

As noted, the AGS quarries not only yielded jasper (yellow-brown to red chert), but a number of other cryptocrystalline rock types such as agate, chalcedony, and neutral-colored chert. Yet, while all of these materials and a few others are found as artifacts on local sites, with very rare exceptions they are found in lower numbers than is the jasper. A quarry for dark gray chert such as 5FN2592, for example, has a mostly dark gray chert artifact assemblage, but sites little more than 100 m away from those same outcrops contain predominately jasper artifacts. The common thread is that almost all lithic artifacts in the AGS are from local source materials. The rare but obvious exceptions are four obsidian artifacts all sourced to outcrops in the Jemez Mountains of northern New Mexico 290–310 km south of the project area; three other obsidian artifacts not submitted for trace element analysis also are likely non-local. A low-grade obsidian native to jasper quarry site 5FN2651 is represented by a handful of flakes at that site alone.

Chronologically, the Developmental period ca. AD 100–1050 is best represented in the AGS, with notable numbers of Early Archaic, Late Archaic, and Diversification period resources also present. Paleoindian and Middle Archaic materials are found in the project area in very low numbers, about what one might expect from the archaeological record elsewhere in the central Colorado mountains. On the opposite end of the time scale, the local Historic period record mostly dates to the 1880–1930 period, but both earlier and more recent activities have been documented. American Indian activities of the pre-reservation era are represented only by a single bark-peeled ponderosa pine tree. Well within Ute tribal territory, the bark harvesting activity in the AGS is most likely of Ute affiliation albeit other tribes are known to have used the South Park region historically, and to have used pine bark both as a subsistence item and as a utilitarian material. No earthenware ceramic artifacts have been found during the survey.

Early non-native activity may be represented by Gold Rush-era mineral exploration in the form of a couple prospect pits. However, most of the Historic period record in the project area relates to post-rush prospecting, logging, and ranching beginning in the 1870s. Uranium claims made in 1965–1978 and marked by cairn-and-post features extend the mining evidence into the modern era.

The combination of data from both prehistoric and historic cultural resources found in the AGS, and from nearby localities such as Gribbles Park (Bevilacqua and Wunderlich 2006), provide a good starting point for examining general geographical patterns in the archaeological record. For example, in this report the question was posed as to whether or not the South Platte-Badger Creek divide north of the project area was any kind of cultural boundary or frontier in any period. In a nutshell, the preliminary answer appears to be "no." Prehistoric archaeological sites in the AGS do not contain any styles of artifacts that are more common to the north or south, and raw materials utilized are mostly local. Even the handful of non-local obsidian artifacts from the AGS sourced to northern New Mexico quarries is not indicative of a heavier southern influence since the same pattern for obsidian is found farther north (e.g., Black 2004:89). Likewise, Historic period resources in the AGS are typical types of sites found throughout the nearby mountains in all directions.

Finally, the training provided to our PAAC volunteers in the Antelope Gulch area has been a great opportunity for them to experience the archaeological record in a different landscape context than they may have encountered previously. The large number of toolstone deposits in the AGS results in a high density of sites and artifacts that, while enjoyable to find, can be a challenge to document. Yet our avocational volunteers maintained their enthusiasm and effort regardless of the circumstances. A thousand thanks to all 44 of them!

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Appendix I

Project Data Tables

Table I-1. Artifact inventories for all sites in the Antelope Gulch survey area

SITE #	DEB	CO*	BF	UN	PP	DR	FT	GR	KN	SC	CH	HM	CM	MN	ME	MP	CP	CT	SP	FCR	BB	HR	TOTALS
5FN2337	187	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**190**
5FN2338	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**10**
5FN2339	238	0	2	0	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**244**
5FN2340	198	1	1	0	0	0	0	0	1	0	0	2†	0	0	0	0	0	0	0	0	0	0	**203**
5FN2341	31	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**35**
5FN2342	73	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**76**
5FN2343	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**11**
5FN2344	151	0	1	2	3	0	1	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	**162**
5FN2345	228‡	1	3	1	0	0	5	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**239**
5FN2346	106	5	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**115**
5FN2347	65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**65**
5FN2348	292	0	2	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**297**
5FN2349	44	0	3	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**49**
5FN2350	240	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**242**
5FN2351	174	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**176**
5FN2433	138	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**141**
5FN2434	145	1	2	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	**150**
5FN2435	9	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**10**
5FN2436	50	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**52**
5FN2437	63	3	1	1	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**71**
5FN2438	138	5	0	0	0	0	0	0	0	3	0	0	1	1	0	0	0	1	0	0	0	0	**149**
5FN2439	115	3	1	0	0	0	1	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	**123**
5FN2440	131	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**133**
5FN2441	32	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**36**
5FN2442	196	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	**199**
5FN2443	27	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**31**
5FN2444	107	4	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	**116**
5FN2445	7	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	**11**
5FN2446	230	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**233**
5FN2447	221+	56+	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**280**
5FN2448	30	0	2	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	3	0	**38**
5FN2449	126	16	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**143**
5FN2450	57	6	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**64**
5FN2451	193	11	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	**208**
5FN2152.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5FN2584	22	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**26**
5FN2585	38	3	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**46**
5FN2586	43	3	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**48**
5FN2587	13	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	**17**

SITE #	DEB	CO*	BF	UN	PP	DR	FT	GR	KN	SC	CH	HM	CM	MN	ME	MP	CP	CT	SP	FCR	BB	HR	TOTALS
5FN2588	143	2	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**148**
5FN2589	62	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**64**
5FN2590	145	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	**148**
5FN2591	335	0	1	1	0	0	2	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	**341**
5FN2592	94	5	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**103**
5FN2593	155	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**157**
5FN2594	24	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**25**
5FN2595	72	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**75**
5FN2596	8	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**10**
5FN2597	244	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**248**
5FN2598	156	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**157**
5FN2601	52	2	0	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**59**
5FN2602	137	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**140**
5FN2603	69	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**72**
5FN2604	148	2	2	0	1	0	2	0	0	3	0	0	0	0	0	0	1	0	0	0	0	0	**159**
5FN2605	190	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**193**
5FN2606	229	0	0	0	0	0	3	0	0	0	0	0	0	2	0	0	0	0	0	0	1§	0	**234**
5FN2607	67	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**70**
5FN2608	136	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**138**
5FN2609	192	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**195**
5FN2644	262	1	1	0	0	0	1	0	0	1	0	0	0	0	3	0	1	0	0	0	0	0	**270**
5FN2645	289	3	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**293**
5FN2646	47	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**48**
5FN2647	194	0	5	0	1	0	1	1	1	1	0	1	0	1	1	0	0	0	0	0	0	0	**207**
5FN2648	176	5	0	0	3	0	9	0	0	2	0	1	0	0	1	0	0	0	0	5	0	0	**202**
5FN2649	42	5	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**49**
5FN2650	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**45**
5FN2651	25	5	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	**33**
5FN2652	224	44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**268**
5FN2653	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**34**
5FN2659	43	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	**46**
5FN2660	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**24**
5FN2661	72	0	0	0	0	0	1	0	0	1¶	0	0	0	0	0	0	0	0	0	0	0	0	**74**
5FN2662	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**14**
5FN2663	171	0	1	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	**175**
5FN2664	187	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**188**
5FN2665	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**57**
5FN2666	23	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**24**
5FN2667	147	5+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**152**
5FN2668	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**6**
5FN2669	6	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**8**

SITE #	DEB	CO*	BF	UN	PP	DR	FT	GR	KN	SC	CH	HM	CM	MN	ME	MP	CP	CT	SP	FCR	BB	HR	TOTALS
TOTALS	**8923**	**229**	**52**	**12**	**34**	**1**	**58**	**1**	**2**	**24**	**1**	**8**	**5**	**13**	**6**	**3**	**4**	**3**	**1**	**7**	**5**	**1**	**9393**

Historic Items Only

***Cores**: includes tested cobbles

2†: maintenance flakes off hammerstones

228‡: includes 1 burinated flake disk

1§: not burned

1¶: maintenance flake off a scraper

Key to abbreviations, Table I-1 (top row): DEB = debitage; CO = core; BF = biface; UN = uniface; PP = projectile point; DR = drill; FT = flake tool; GR = graver; KN = knife; SC = scraper; CH = chopper; HM = hammerstone; CM = comal/cooking slab; MN = mano; ME = metate/millingstone; MP = manuport; CP = composite tool (multi-purpose); CT = core tool; SP = spokeshave; FCR = fire-cracked rock; BB = burned bone; HR = horn.

Table I-2. Artifact inventories for all IFs in the Antelope Gulch survey area

SITE #	DEBITAGE	CORES	BIFACES	PROJ PTS	FLAKE TOOLS	TOTALS
5FN2452	2	0	0	0	1	**3**
5FN2453	0	0	0	1	0	**1**
5FN2454	0	0	2	0	0	**2**
5FN2599	0	0	0	0	0	**0**
5FN2600	0	0	0	0	0	**0**
5FN2654	5	0	0	0	1	**6**
5FN2655	2	0	0	0	0	**2**
5FN2656	9	0	0	0	0	**9**
5FN2657	0	0	0	0	0	**0**
5FN2658	1	0	0	0	0	**1**
5FN2670	7	0	0	0	0	**7**
5FN2671	0	0	0	0	0	**0**
5FN2672	6	1	0	0	1	**8**
5FN2673	0	0	0	0	0	**0**
5FN2674	6	0	0	0	0	**6**
5FN2675	0	0	0	0	0	**0**
5FN2676	0	0	0	0	0	**0**
5FN2677	0	0	0	1	0	**1**
5FN2678	0	0	0	1	0	**1**
5FN2679	0	0	0	0	0	**0**
5FN2680	0	0	0	0	0	**0**
5FN2681	14	0	0	0	0	**14**
TOTALS	**52**	**1**	**2**	**3**	**3**	**61**

Table I-3. Artifact materials for all prehistoric sites in the Antelope Gulch survey area

SITE #	CT	JS	CY	AG	QE	MS	OB	ST	QZ	GN	SS	MR	IG	BO	HR	PW	UK	CG	TOTALS
5FN2337	5	180	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**190**
5FN2338	4	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**10**
5FN2339	14	215	13	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	**244**
5FN2340	16	174+	8	1	2	1	0	1	0	0	0	0	0	0	0	0	0	0	**203**
5FN2341	12	20	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	**35**
5FN2342	20	44	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	**76**
5FN2343	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**11**
5FN2344	6	122	16	13	3	0	0	1	0	0	1	0	0	0	0	0	0	0	**162**
5FN2345	35	174	13	6	4	2	0	4	0	0	1	0	0	0	0	0	0	0	**239**
5FN2346	12	84	14	3	1	0	0	0	0	0	1	0	0	0	0	0	0	0	**115**
5FN2347	16	9	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**65**
5FN2348	57	199	38	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	**297**
5FN2349	4	42	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	**49**
5FN2350	13	176	45	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	**242**
5FN2351	6	162	5	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**176**
5FN2433	5	126	5	0	4	0	0	0	0	0	1	0	0	0	0	0	0	0	**141**
5FN2434	3	144	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	**150**
5FN2435	1	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**10**
5FN2436	0	41	7	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	**52**
5FN2437	4	55	11	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**71**
5FN2438	3	140	3	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	**149**
5FN2439	9	87	9	0	11	4	0	0	2	0	0	0	1	0	0	0	0	0	**123**
5FN2440	0	112	15	0	5	0	0	0	0	0	1	0	0	0	0	0	0	0	**133**
5FN2441	6	26	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**36**
5FN2442	20	139	39	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**199**
5FN2443	1	27	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**31**
5FN2444	5	104	4	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	**116**
5FN2445	1	4	4	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	**11**
5FN2446	23	130	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**233**
5FN2447	8	258+	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**280**
5FN2448	6	22	5	0	0	0	0	0	0	0	2	0	0	3	0	0	0	0	**38**
5FN2449	7	9	54	73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**143**
5FN2450	16	7	38	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	**64**
5FN2451	41	91	74	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**208**
5FN2584	1	20	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	**26**
5FN2585	3	27	8	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	**46**
5FN2586	1	44	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**48**
5FN2587	2	13	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	**17**

SITE #	CT	JS	CY	AG	QE	MS	OB	ST	QZ	GN	SS	MR	IG	BO	HR	PW	UK	CG	TOTALS
5FN2588	12	123	4	1	7	1	0	0	0	0	0	0	0	0	0	0	0	0	**148**
5FN2589	3	49	11	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**64**
5FN2590	43	75	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**148**
5FN2591	59	225	53	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0	**341**
5FN2592	66	27	9	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**103**
5FN2593	104	35	8	2	6	2	0	0	0	0	0	0	0	0	0	0	0	0	**157**
5FN2594	1	21	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**25**
5FN2595	56	14	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**75**
5FN2596	0	6	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**10**
5FN2597	38	188	21	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**248**
5FN2598	8	93	50	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	**157**
5FN2601	12	38	7	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	**59**
5FN2602	1	112	6	4	2	2	1	0	0	0	0	0	2	0	0	10	0	0	**140**
5FN2603	0	69	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	**72**
5FN2604	**22***	108	24	0	0	0	0	0	0	0	0	0	1	0	0	4	0	0	**159**
5FN2605	11	125	8	23	11	10	0	0	0	0	0	0	0	0	0	5	0	0	**193**
5FN2606	3	217	6	5	0	1	0	0	0	1	1	0	0	1	0	0	0	0	**235**
5FN2607	0	68	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**70**
5FN2608	2	110	3	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	**138**
5FN2609	11	167	2	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**195**
5FN2644	24	209	33	0	2	0	0	0	0	0	1	0	1	0	0	0	0	0	**270**
5FN2645	20	134	138	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**293**
5FN2646	10	29	5	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	**48**
5FN2647	15	104	80	3	3	0	0	0	0	1	1	0	0	0	0	0	0	0	**207**
5FN2648	18	161	5	5	7	0	0	0	0	1	5	0	0	0	0	0	0	0	**202**
5FN2649	5	40	0	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	**49**
5FN2650	43	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**45**
5FN2651	2	23	2	0	0	0	**5†**	0	0	0	0	0	0	0	1	0	0	0	**33**
5FN2652	0	268	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**268**
5FN2653	8	24	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**34**
5FN2659	6	34	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	**46**
5FN2660	1	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**24**
5FN2661	2	62	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**74**
5FN2662	0	13	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**14**
5FN2663	13	151	10	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	**175**
5FN2664	50	135	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**188**
5FN2665	40	15	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**57**
5FN2666	4	2	15	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	**24**
5FN2667	0	152+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**152**
5FN2668	3	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**6**
5FN2669	1	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**8**

SITE #	CT	JS	CY	AG	QE	MS	OB	ST	QZ	GN	SS	MR	IG	BO	HR	PW	UK	CG	TOTALS
TOTALS	1103	6708	1141	178	157	26	11	8	2	3	20	1	5	5	1	22	1	1	9393

22*: includes 1 Alibates-like chert point [5FN2604–2]

5†: obsidian with quartz in jasper outcrop

Key to abbreviations, Table I-3 (top row): CT = chert; JS = jasper; CY = chalcedony; AG = agate; Qe = quartzite; MS = Morrison silcrete/silicified sediment; OB = obsidian; ST = siltstone; Qz = quartz (macrocrystalline); GN = granitic; SS = sandstone; MR = metamorphic, unidentified; IG = igneous, unidentified; BO = bone; HR = horn; PW = petrified wood; UK = unknown (smooth pebble); CG = conglomerate.

Table I-4. Artifact materials for all IFs in the Antelope Gulch survey area

SITE #	CT	JS	CY	AG	QE	OB	TOTALS
5FN2452	0	1	1	1	0	0	3
5FN2453	0	1	0	0	0	0	1
5FN2454	0	2	0	0	0	0	2
5FN2599	0	0	0	0	0	0	0
5FN2600	0	0	0	0	0	0	0
5FN2654	4	1	1	0	0	0	6
5FN2655	0	1	1	0	0	0	2
5FN2656	3	6	0	0	0	0	9
5FN2657	0	0	0	0	0	0	0
5FN2658	0	0	0	0	0	1	1
5FN2670	1	6	0	0	0	0	7
5FN2671	0	0	0	0	0	0	0
5FN2672	0	8	0	0	0	0	8
5FN2673	0	0	0	0	0	0	0
5FN2674	2	3	0	0	1	0	6
5FN2675	0	0	0	0	0	0	0
5FN2676	0	0	0	0	0	0	0
5FN2677	0	1	0	0	0	0	1
5FN2678	0	0	1	0	0	0	1
5FN2679	0	0	0	0	0	0	0
5FN2680	0	0	0	0	0	0	0
5FN2681	4	8	2	0	0	0	14
TOTALS	14	38	6	1	1	1	61

No Lithics (Historic Only)

Key to abbreviations, Table I-4 (top row): CT = chert; JS = jasper; CY = chalcedony; AG = agate; Qe = quartzite; OB = obsidian.

Table I-5. Historic period resources in the Antelope Gulch survey area

SITE #	# Cairns	# Posts	Nail Types	Other Metal	Other Artifacts	Other Features	Comments
5FN2338	0	0	None	None	None	3 Prospect pits, 1 trench	
5FN2341	0	0	None	1 soldered can	None	None	
5FN2345	0	0	None	None	Wood scrap	2 Prospect pits, 1 peeled tree	**"Hummocky" area may be prospecting, too**
5FN2349	0	0	None	None	1 log [post?]	2 Prospect pits	
5FN2350	0	0	Both cut & wire	Soldered cans, bailing wire, straps	Stoneware, glass, wood	None	**Logging camp**
5FN2434	0	0	None	None	None	1 Prospect pit	
5FN2436	0	0	None	None	None	1 Prospect pit	
5FN2440	0	0	None	None	None	1 Pen or corral [log]	
5FN2444	0	0	None	tobacco tins, baling wire	bottle glass, wood	None	**Camp next to utility line**
5FN2445	0	0	None	Both soldered & crimped cans, horseshoe, vice grips, sheet scrap	sawn wood	None	**Camp next to utility line & road**
5FN2446	0	0	None	Crimped cans, can opener, perforated strap	bottle cap	None	**Camp next to utility line & road**
5FN2152.1	0	**4***	None	Bolt & nut	5 glass insulators	1 Utility line	**Probably AT&T telephone**
5FN2584	0	0	14 wire	Crimped cans & lid, tub frags	milled lumber	Small mine & spoil pile	
5FN2592	1	1	None	Can & lid	None	1 Prospect pit	
5FN2594	0	0	None	None	None	Excavated cut into hillside	**"Lone Pine" peridot mine**
5FN2597	1	1	4 wire	None	Wood lathe pcs	None	
5FN2599	0	0	wire	lard bucket	milled board	1 Prospect pit	
5FN2600	1	0	None	None	None	None	
5FN2601	0	0	None	1 glassy iron slag	None	None	**Mistaken for obsidian**
5FN2603	0	0	None	Can & lid, clock parts, cartridge cases, wire, strap	None	None	**Cache**
5FN2646	0	0	None	None	shoe leather	None	**Next to utility line**
5FN2647	0	0	None	6 soldered cans	None	None	**Near utility line**
5FN2649	0	0	None	Tobacco tin	None	None	
5FN2652	0	0	None	Cans (food, milk, bleach, oil)	bottle glass	None	**Pit probably for jasper**

SITE #	# Cairns	# Posts	Nail Types	Other Metal	Other Artifacts	Other Features	Comments
5FN2653	0	0	Cut & wire	Cans, wire, sheet metal	milled lumber	1 Prospect pit	**Camp**
5FN2657	0	0	None	None	None	1 Prospect pit	
5FN2660	2	1	None	Can, bucket	None	None	
5FN2668	3	1	None	Barbed wire	Wood lathe pcs	None	
5FN2669	3	1	7 wire	None	None	None	
5FN2671	2	0	None	None	None	None	
5FN2673	1	1	3 wire	None	1 log [post?]	None	
5FN2675	1	1	None	None	None	None	
5FN2676	1	1	4 wire	None	None	None	
5FN2679	2	1	2 wire	None	Wood lathe pcs	None	
5FN2680	2	1	4 wire	None	Wood lathe pcs	None	
TOTALS	**20**	**14**					

4* = telephone posts

Table I-6. Features on sites and IFs in the Antelope Gulch survey area

Site #	Lithic Conc.	Quarry Pit	Hearth/ FCR	Rock Align	Stone Circle	Hunt Blind	Pen/ Corral	Utility Line	Prospect Pit	Tree Peel	Cairn	Cache
5FN2152.1								1				
5FN2337	2											
5FN2338									4			
5FN2339	1											
5FN2340	2											
5FN2341												
5FN2342												
5FN2343												
5FN2344	1		1									
5FN2345	1								3	1		
5FN2346	1											
5FN2347												
5FN2348	2											
5FN2349									2			
5FN2350	1											
5FN2351	1											
5FN2433	1		1									
5FN2434	1								1			
5FN2435												
5FN2436	1		1						1			

Site #	Lithic Conc.	Quarry Pit	Hearth/ FCR	Rock Align	Stone Circle	Hunt Blind	Pen/ Corral	Utility Line	Prospect Pit	Tree Peel	Cairn	Cache
5FN2437												
5FN2438	4											
5FN2439	1		1									
5FN2440							1					
5FN2441												
5FN2442	1											
5FN2443												
5FN2444	1											
5FN2445												
5FN2446	2											
5FN2447	1											
5FN2448												
5FN2449	1											
5FN2450	1											
5FN2451	2		1									
5FN2584									1			
5FN2585												
5FN2586												
5FN2587												
5FN2588												
5FN2589												
5FN2590	1											
5FN2591	2											
5FN2592									1		1	
5FN2593												
5FN2594									**1***			
5FN2595												
5FN2596												
5FN2597	1										1	
5FN2598												
5FN2599									1			
5FN2600											1	
5FN2601												
5FN2602												
5FN2603	1											**1**
5FN2604												
5FN2605												
5FN2606	4											
5FN2607	1											
5FN2608	5											

Site #	Lithic Conc.	Quarry Pit	Hearth/ FCR	Rock Align	Stone Circle	Hunt Blind	Pen/ Corral	Utility Line	Prospect Pit	Tree Peel	Cairn	Cache
5FN2609	4											
5FN2644	4											
5FN2645	1											
5FN2646				1								
5FN2647	4		1									
5FN2648	2		4									
5FN2649	1											
5FN2650	1											
5FN2651		2				2						
5FN2652		1										
5FN2653	1								1			
5FN2657									1			
5FN2659												
5FN2660											2	
5FN2661												
5FN2662												
5FN2663	2				1							
5FN2664												
5FN2665	1											
5FN2666												
5FN2667	2											
5FN2668											3	
5FN2669											3	
5FN2671											2	
5FN2673											1	
5FN2675											1	
5FN2676											1	
5FN2679											2	
5FN2680											2	
TOTALS	**67**	**3**	**10**	**1**	**1**	**2**	**1**	**1**	**17**	**1**	**20**	**1**

*Peridot

Appendix II

An Energy-Dispersive X-Ray Fluorescence Analysis of Obsidian Artifacts from Fremont County, South-Central Colorado

by
M. Steven Shackley, Ph.D.
Archaeological X-Ray Fluorescence Spectrometry Laboratory
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GEOARCHAEOLOGICAL XRF LAB

ARCHAEOLOGICAL X-RAY FLUORESCENCE SPECTROMETRY LABORATORY
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LETTER REPORT

AN ENERGY-DISPERSIVE X-RAY FLUORESCENCE ANALYSIS OF OBSIDIAN ARTIFACTS FROM FREMONT COUNTY, SOUTH-CENTRAL COLORADO

23 May 2012

Kevin Black
Office of Archaeology and Historic Preservation
History Colorado Center
1200 Broadway
Denver, CO 80203

Dear Kevin,

As you suspected, all the artifacts were produced from one of the sources in the Jemez Mountains, one from Valles Rhyolite (Cerro del Medio), and three from El Rechuelos, the latter available as secondary deposits in the Rio Chama and Rio Grande north and east of the Jemez Mountains (Shackley 2005; Table 1 here). One sample was not obsidian, the high Fe and Mn suggest iron ore or slag (Table 1).

The samples were analyzed using a Thermo Scientific *Quant'X* EDXRF spectrometer in the Archaeological XRF Laboratory, Albuquerque, New Mexico. Source assignments were made by comparison to published source standard data and the source standard collection at this laboratory (Shackley 1995, 2005). Instrumental methods can be found at http://www.swxrflab.net/anlysis.htm. Analysis of the USGS RGM-1 standard indicates high machine precision for the elements of interest (Govindaraju 1994; Table 1 here).

Sincerely,

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Shackley, M.S., 1995, Sources of archaeological obsidian in the Greater American Southwest: an update and quantitative analysis. *American Antiquity* 60(3):531–551.

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Table 1. Elemental concentrations for the archaeological samples. All measurements in parts per million (ppm).

Sample	Ti	Mn	Fe	Rb	Sr	Y	Zr	Nb	Source
2663	975	404	10571	168	12	41	170	63	Valles Rhyolite (Cerro del Medio)
2349-1	921	391	7412	145	12	19	68	44	El Rechuelos
2658	984	453	8213	167	13	24	74	49	El Rechuelos
2601-3	7089	1191	65775	2	75	17	46	0	not obsidian
2666-1	1060	421	8273	151	14	23	67	47	El Rechuelos
RGM1-S4	1576	283	13336	148	110	27	216	6	standard

Appendix III

OAHP Site and IF Forms

[under separate cover]

NOTE: These forms and the map in Appendix IV
contain locational information that is not available to the public,
and is exempt from the federal Freedom of Information Act.

The Office of Archaeology and Historic Preservation (OAHP) is authorized to restrict access to this information by CRS 24-72-205ff, CRS 24-80-40-5ff, the Archaeological Resource Protection Act (ARPA) of 1979 (as amended), and National Register Bulletin 29.

See OAHP's "Dissemination of Information – Policy/Procedure" document (index #1333) for further information.

Appendix IV

Project Area Map with Cultural Resources Plotted

[under separate cover]