Introduction

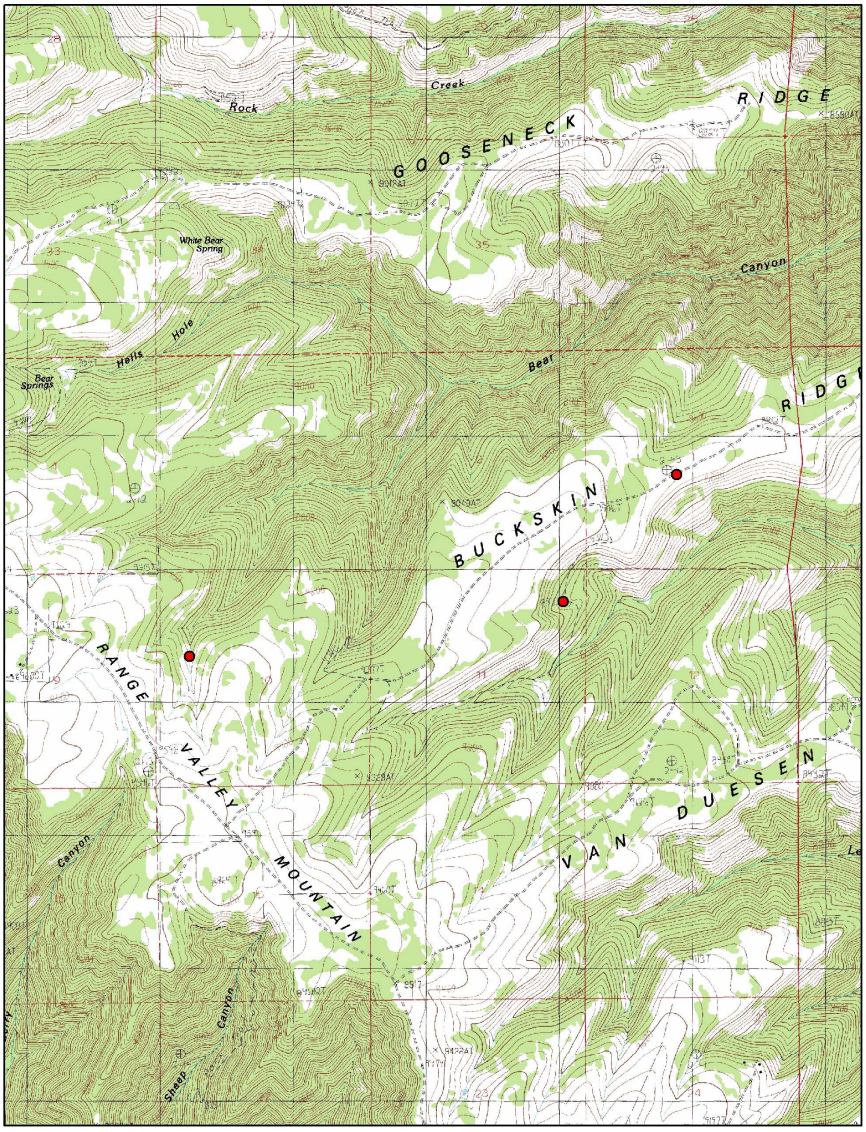
Preliminary investigations were conducted July 31, 2006, to August 4, 2006, at two Archaic residential base camps (42Cb2178, 42Cb2186) and one historic homestead (42Cb2185) in an effort to develop a long-term data recovery plan. All three sites are located in high-elevation settings on the West Tavaputs Plateau and are on lands previously owned by the Utah Division of Wildlife Resources (DWR), but traded into private ownership through a three-way land exchange involving DWR, the Butch Jensen family and Hunt Oil. These sites were initially identified by Montgomery Archaeological Consultants (MOAC) in 2004 and were at that time recommended as eligible for the National Register of Historic Places (Mrstik and Patterson 2004). The Antiquities Section of the Utah Division of State History subsequently entered into a contract with the Colorado Plateau Archaeological Alliance to develop a data recovery plan for the three sites. The initial phase included a more detailed documentation of the sites through site mapping and systematic surface collections, and limited test excavations to determine the nature and extent of buried deposits. These data will provide the framework for future data recovery as permitted by the current landowners.

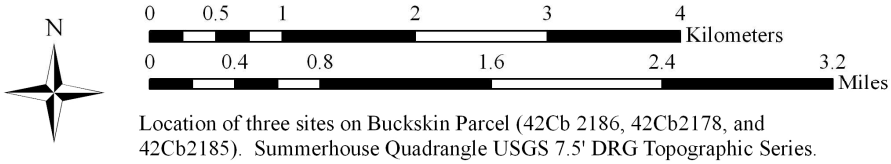
Environmental Setting

All three sites considered during the course of Phase I data recovery are located on the West Tavaputs Plateau, a south-to-north tilted Eocene formation within the Book Cliffs-Roan Plateau section of the Colorado Plateau; all are located at elevations between 8,700 and 9,600 feet elevation (Figure 1). The western and southern peripheries of the West Tavaputs Plateau are demarcated by the formidable escarpment of the Book Cliffs visible to motorists today as they travel U.S. 6 from Price to Green River. The Book Cliffs are primarily Cretaceous-age sandstones, whereas the overlying plateau deposits are later Tertiary-age deposits. Most of the sediments located between Nine Mile Canyon to the north and the top of the plateau to the south (where all three sites are located) have been attributed to Green River Formation deposits, whereas Range Creek Canyon immediately to north is primarily earlier Colton Formation deposits (Stokes 1986; Witkind 1988).

The West Tavaputs Plateau, situated behind the Book Cliffs, rises to elevations of more than 10,000 feet and is characterized by rugged, often impassable topographic features that could have inhibited transhumance. The highest points on the upper plateau are Bruin Point (10,285 feet) north of Sunnyside and Patmos Head (elevation 9,851 feet) to the east of East Carbon. Below these high points are expansive, forested plateau areas, most at an elevation of about 9,000 feet. This plateau area provides critical snow pack that feeds into Range Creek to the south, Nine Mile Canyon to the north and Rock Creek Canyon to the east.

The Book Cliffs define the western and southern edges of the plateau, and form the southern edge of the Uinta Basin section of the Colorado Plateau, as traditionally defined. The deeply dissected canyons of the West Tavaputs Plateau are not impenetrable, but direct





Location of three sites on Buckskin Parcel (42Cb 2186, 42Cb2178, and 42Cb2185). Summerhouse Quadrangle USGS 7.5' DRG Topographic Series. Map scale is at 1:39,000 resolution.

Figure 1

access to the plateau is limited to a handful of selected locations (e.g., the Green River corridor, Horse Canyon, Price River, Whitmore Canyon and Soldier Creek Canyon). Most evidence of aboriginal exploitation in this region was concentrated along narrow canyon environments with perennial streams like Nine Mile Creek, Range Creek and Rock Creek, and perhaps Price River, although this drainage has never been comprehensively investigated. The higher plateau is characterized by a general paucity of permanent flowing water, but an abundance of springs. There is very little documented evidence of hunting and gathering in the higher plateau, although this undoubtedly reflects a paucity of research into higher-elevation adaptations in the region.

On the West Tavaputs Plateau generally, hydrological patterns reflect small rivers and streams, often in deeply dissected sandstone canyons, that are characteristic of the northern Colorado Plateau. Climatologic patterns are generally similar to winter-dominant rainfall patterns common to the northern Great Basin, but with strong influence from the Southwest's summer monsoon weather pattern. Annual precipitation ranges from 6 inches in the plateau's southern deserts to 25 inches in upper reaches of the plateau; precipitation increases proportionally with elevation, and the number of frost-free days decreases proportionally (BLM 1980:1).

The region is situated on the climatic transition zone between the winter-wet/summer-dry zone to the west and north, and the summer-wet/winter-dry zone to the south and east. Located south of the summer-dry northwestern Plains and on the northern periphery of the summer-wet greater Colorado Plateau, Tavaputs Plateau climates would be affected by even minor shifts in the jet stream. The seasonal shift of the jet stream from the north in the summer and the south in the winter produces distinctive seasonal patterns of precipitation in the western United States (Hidore and Oliver 1993). In the winter, the jet stream is positioned over the northern tier of the western states, and Pacific storms track the jet stream eastward over California, Washington and Oregon into Utah, Colorado, Wyoming and Montana, dropping their moisture on the Rocky Mountains.

The northward migration of the jet stream in summer produces a stronger onshore flow along the Gulf of Mexico and the Gulf of Cortez. This results in frequent summer convectional thunderstorms throughout the Colorado Plateau. Historic records indicate more precipitation falls during the summer months than during the winter months, reflecting the summer monsoonal weather patterns characteristic of the Colorado Plateau. Most precipitation occurs from May through August, except at higher elevations where heavy snow accumulates during the winter months.

Prevailing winter-storm tracks originate in the northern Pacific Ocean, moving easterly. These storms are relatively dry by the time they reach the eastern Wasatch Plateau, resulting in low amounts of precipitation for most of the plateau. Summer storms are normally associated with maritime tropical air masses that originate in the Gulf of Mexico and flow northward, resulting in summer thunderstorm activity as warm air is forced over the mountains. These high-intensity storms frequently peak in August and are generally localized (BLM 1980:1).

Throughout the region, droughts occur on average once every five years and usually last one or two years. Temperature patterns vary widely according to the diverse topography. Summer temperatures above 90 degrees Fahrenheit are common throughout the region, whereas winter temperatures of less than 10 degrees Fahrenheit are typical. The Green River area on the southern periphery of the Tavaputs Plateau experiences the widest extremes, with temperatures ranging from -42 degrees to +112 degrees Fahrenheit, a phenomenon attributed to the dry air and valley exposure (BLM 1980:2).

Floral resources are predominantly taxa characteristic of the Upper Sonoran Life Zone. Although specific floral species vary greatly according to local environments, a catalog of species is similar to that of the eastern Great Basin (Goodrich and Neese 1986; Woodbury 1960), but with subspecies differences unique to the northern Colorado Plateau. The vegetation of the West Tavaputs Plateau varies greatly according to elevation, aspect and soil type. Vegetation grades from a desert shrub community dominated by shadscale, greasewood, saltbush and grasses in lower elevations (less than 5,000 feet elevation) to a pinyon-juniper zone with sagebrush, rabbitbrush, greasewood and grasses at elevations of 5,000 to about 7,000 feet elevation. An alpine zone of aspens, firs, spruce, pine, mountain mahogany and meadows characterizes areas above 7,000 feet elevation (BLM 1980, 1992).

The fauna within the West Tavaputs Plateau has been categorized as part of the Uinta Basin Province of the Northern Great Plains Faunal Area (Durrant 1952, 1963). The broader Tavaputs Plateau ecosystem is home to more than 300 different taxa (mammals, birds, reptiles, amphibians and fish), most of which were probably exploited by prehistoric human populations for food, feathers, apparel, bone and shelter. Subsistence activities were probably focused on the procurement of specific, high-return resources, although some faunal resources were likely exploited opportunistically. Remnants of large fauna such as deer, elk, antelope and bison have been documented in archaeological contexts, but these data may reflect a sampling bias due to the better preservation of large faunal bones. Most fauna found in the region today are assumed to have been present in prehistoric contexts, although some species have been extirpated in historic times (e.g., wolf, grizzly bear). Other extirpated species like bighorn sheep, turkey and bison have been reintroduced in recent times.

Of the more than 300 animal species recorded in the region (BLM 1980) fewer than two dozen have been documented in archaeological contexts at sites on the West Tavaputs Plateau. This may be due to several factors, among them differential preservation; the small size of bone specimens, which prohibits species-level identification; comparative abundance of certain species; dietary preferences; and the spatial distribution of species due to fluctuating climates and corresponding changes in faunal habitats. It is also likely that morphologically similar species (e.g., white-tailed jackrabbits versus black-tailed jackrabbits) cannot be distinguished in the archaeological record. Some larger fauna, in particular bear, are conspicuously absent in the archaeological record.

Previous Research

The remarkable archaeological resources of the West Tavaputs Plateau have been the focus of archaeological interest for more than a century, promulgated by an eclectic mix of antiquarians, enthusiastic amateurs and pioneers in the then-emerging science of archaeology. This descriptive and highly speculative research was focused predominantly in the Nine Mile Canyon drainage, accessible by road since the late 1880s and with a thriving ranch community of local residents familiar with the cultural resources of that area. Very little early research was reported from other drainages on the plateau (i.e. Range Creek, Price River, Desolation Canyon).

Aside from Nine Mile Canyon, the archaeological resources of the greater West Tavaputs Plateau remained *terra incognita* until the summer of 1931 when the Claflin-Emerson Expedition arrived at the Pace Ranch in lower Nine Mile Canyon. This expedition, sponsored by the Peabody Museum at Harvard University and directed by Donald Scott, split into three exploration parties. One was dispatched to investigate the resources of Nine Mile Canyon, another to investigate upper Nine Mile Canyon and Argyle Canyon, and the third to investigate unexplored plateau drainages to the south of Nine Mile Canyon (Scott 1931). The third party ascended Cottonwood Canyon, crossed the upper plateau at Willow Springs (Figure 2) just north of the three sites considered here and then dropped into Range Creek via Gooseberry Canyon. They were likely the first archaeologists to visit the upper plateau, although no archaeological observations were recorded there. These archaeologists later described cultural resources in Range Creek, Snap Canyon, Rock Creek Canyon, Jack Canyon and Rock House Canyon, all of them Green River tributaries on the West Tavaputs Plateau.

Figure 2: Claflin-Emerson Expedition at Willow Springs in 1931 (Peabody Museum U-31-750)

A second archaeological expedition passed through the upper plateau in 1934 when Leonard Leh, an assistant professor of anthropology at the University of Colorado, conducted a short reconnaissance on horseback through Range Creek Canyon, beginning near the headwaters of the canyon above Sunnyside (Leh 1937). No mention was made of archaeological resources in the upper plateau region. In fact, subsequent archaeologists in the region largely ignored the upper plateau, which is devoid of large surface architecture and rock art that characterizes Range Creek to the south and Nine Mile Canyon to the north. The first significant investigation appears to have been a 1977 Class II survey that examined 29 quarter-sections on the West Tavaputs Plateau, of which only five had archaeological sites (Hauck 1979:215). At least four of the survey blocks were in higher elevations of the plateau, but no sites were observed in these blocks.

Three areas near the upper plateau were also surveyed in 2003 by Utah State University in anticipation of land sales by the School and Trust Lands Administration (Benson and Simms 2003). Seven sites were identified in the Cedar Ridge parcel, including two lithic scatters, a short term prehistoric camp, a historic camp, remnants of a wickiup structure, a residential structure under a shallow overhang and one camp with prehistoric and historic components. One historic ranch camp was identified in the Bishop Ridge parcel and one lithic scatter in the Flat Canyon parcel. Artifacts were generally rare. The report offered no interpretive discussion of cultural resources found within the parcels or the region generally.

The only other major research conducted in the upper plateau region appears to be a simple random sample survey of 25 percent of a 2,788-acre project area that was part of the Buckskin land exchange between DWR, Hunt Oil and the Jensen family wherein the three eligible sites considered here were identified. This survey identified seven historic sites and two prehistoric sites, and predicted with a 95 percent confidence level that 10 to 51 sites would be found within the entire project area (Mrstik and Patterson 2004).

Site 42Cb2178

Site 42Cb2178 is located along the west side of an ephemeral, unnamed wash (Figure 3) that drains south to north into Rock Creek Canyon, and is located just west of Buckskin Ridge. This site was initially documented by Montgomery Archaeological Consultants (MOAC) in September 2004 when it was described as a large dispersed lithic scatter. Artifacts identified at the site included late-stage reduction flakes and flake fragments, six bifaces or biface fragments, one portable milling stone, one mano, one unknown groundstone tool, one Elko corner-notched point and one Gypsum point that were determined to be consistent with an Archaic occupation. The site was described as 118 by 50 meters. No features were identified at that time and no artifacts were collected (Mrstik and Patterson 2004).

Data recovery efforts reported here occurred in three phases: Field documentation of site parameters and surface artifacts, limited test excavations and laboratory analysis. Crews with the Colorado Plateau Archaeological Alliance (CPAA) and Utah Division of State History (DSH) relocated site 42Cb2186 on August 2, 2006, and the spatial extent of

the site was redefined. Crews confirmed MOAC's initial site description of a large, dispersed scatter of lithic debitage and stone tools. The site dimensions were slightly smaller than defined by MOAC, measuring 102 by 46 meters (Figure 4), but a greater number of formal tools were identified, including four groundstone tools, 18 bifaces or biface fragments, one Gypsum-like projectile point and one Elko corner-notched point (the Elko side-notched point was not re-identified). Additionally, test excavations revealed charcoal and burned bone. The ratio of formal tools to stone debitage was unusually high. All artifacts were consistent with a high elevation camp used repeatedly for hunting activities, stone tool maintenance and limited plant processing, probably during Archaic times. Consistent with MOAC findings, no features were observed on the site surface, and no subsurface features were identified during subsequent test excavations.

Figure 3: Site 42Cb2178 overview, looking (ca.) south to north (J.D. Spangler)

Site Documentation

Beginning outside the south and east edge of the parameters defined by MOAC, crew members walked parallel transects roughly three meters apart in a northerly direction paralleling the bottom of the ephemeral wash that defined the eastern boundary of the site. The site examination continued north until no additional artifacts were observed within 50 meters of the last observed artifact. The crew then returned to the south paralleling the previous transect, also with 3 meter separation, until no additional artifacts were observed within 50 meters of the last observed artifact. Crews continued to work north-south transects to the west until no additional artifacts were observed. In an attempt to locate all tools identified by MOAC, additional informal east-west transects

were employed at portions of the site where the artifacts were initially identified. Additionally, informal transects were walked on the east side of the ephemeral wash, which is considerably steeper and more eroded. No artifacts were observed east of the wash and the eastern site boundary was determined to be the bottom of the wash.

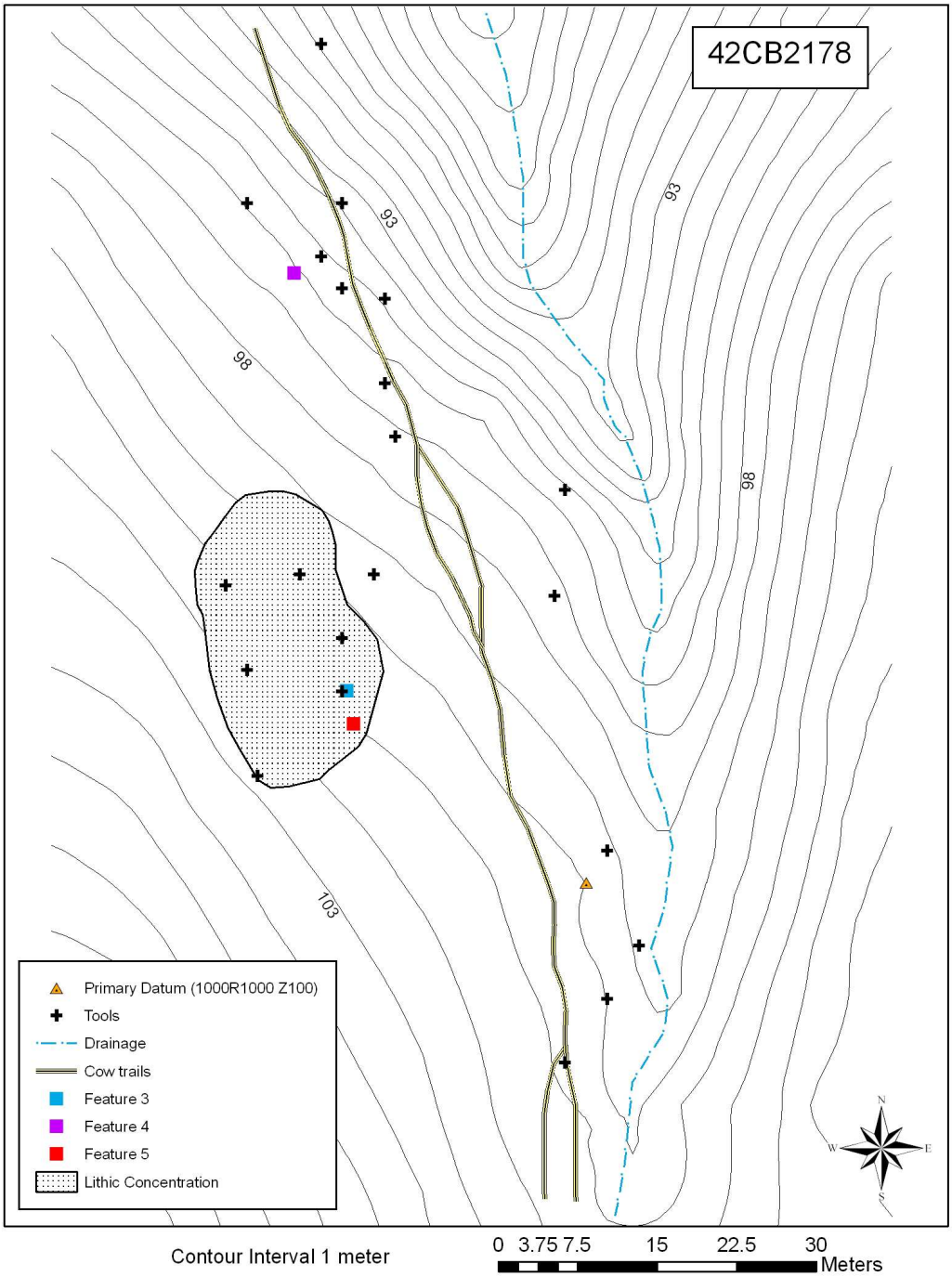


Figure 4: Site map of 42Cb2178 (S. Arnold)

A total of 76 stone artifacts were identified on the site surface and were pin-flagged. Additionally, all stone tools were marked with flagging tape to assist in the formal mapping of the site with a total station. The distribution of surface artifacts revealed no significant concentrations of artifacts, although there appears to be a slightly greater concentration of formal tools along the ephemeral wash where they had likely eroded. Generally, artifacts were dispersed widely across an open area with a slight slope, located just above (south) a natural spring. The overall density of artifacts was sparse, ranging from 1 to 5 per square meter. Again, the heaviest concentration of artifacts was located near the wash and a cattle trail, both of which featured significant erosion.

A mapping station was established at the MOAC datum near the southeast periphery of the site. A second datum was later established on the northern periphery (down slope) of the site to compensate for the slope and lack of visual reference for that area of the site. Mapping of the site included documentation of the site parameters, contours of slopes on both sides of the wash and exact location of all formal tools. Once the location of all formal tools had been determined, all chipped-stone tools were collected for future analysis. All groundstone tools were photographed *in situ* but were not collected.

The entire assemblage of artifacts observed at 42Cb2178 was recorded and mapped with a Sokia total station. Formal chipped-stone artifacts were mapped, described and collected for further analysis. Subsurface artifacts that were encountered during the course of test excavations were recorded, bagged, given field specimen numbers and returned to the archaeology lab at the University of Utah for analysis. While in the lab, they were also catalogued and cleaned for repository in the Utah Museum of Natural History. Broad, general categories such as debitage, biface, projectile point, groundstone, etc. were used to initially separate the artifacts into general groups based on material type, morphological attributes and implied function. Each of those categories was then subdivided into smaller categories as needed. None of the tool stone materials occur naturally on-site.

A total of 114 artifacts was observed during the investigation of site 42Cb2178. The assemblage consisted of lithics, bone and charcoal. The lithic assemblage was comprised of flaked-stone tools, debitage, and groundstone. Seventy-six stone artifacts were observed on the surface of the site, 20 of which were flaked tools and four of which were groundstone implements. The twenty flaked tools were given field specimen (FS) numbers and collected for future analysis. A lithic debitage inventory was also performed through which all debitage was counted, and the material type, color and respective stages of reduction were noted.

In addition to the surface artifacts, 38 artifacts were observed and collected from two test excavation units (Feature 3 and Feature 5). These artifacts were comprised of flaked stone tools (n=2), lithic debitage (n=27), bone (n=8) and charcoal (n=1). All of these were given field identification numbers and the provenience information was documented, after which they were collected and subsequently analyzed. The charcoal element was collected for possible radiocarbon dating.

Test Excavations

Three test pits were subsequently excavated in an attempt to determine if subsurface cultural deposits were indeed present. One test unit revealed shallow deposits overlying bedrock, and a second revealed no artifacts in a 95-centimeter deep profile. The third test unit yielded charcoal, obsidian, chert and bone that firmly established the potential for subsurface deposits. No formal subsurface features were identified, although there remains considerable potential for such features. All artifacts recovered from the test units were collected for analysis.

Feature 3, the westernmost of the three test pits, was located on a relatively flat surface about 20 meters west of the ephemeral wash and on the eastern edge of concentration of lithic debitage. The point initially identified as Gypsum-like was also collected from this area. Test excavations continued over a two-day period beginning August 2, 2006. The selected 1-by-1-meter area was cleared of small sagebrush and bunch grass, and was excavated in arbitrary 10-centimeter levels, using trowels, picks and flat shovels. All deposits were sifted with 1/8th inch mesh screens, which revealed four lithic flakes. The stratigraphy featured wet, dark loamy soils with pebble-sized sandstone. No distinct breaks in soil characteristics were observed, and no unequivocal evidence of subsurface features was identified. Bedrock was encountered at 10 centimeters below present ground surface (Figure 5), where the excavation was terminated and the test pit filled.

Figure 5: Feature 3 test pit at 10 cm bpgs. Trowel points north (J.D. Spangler)

Feature 4 was located on the northern periphery of the site and was selected because of a cutbank with exposed soils in profile. Several lithic flakes, a mano, a metate and a some chipped stone tool fragments were located along the same cutbank. On August 2, 2006, a test pit was initiated to obtain a visual reference on local soil stratigraphy. The natural profile was extended to 1 meter wide and 0.95 meters deep (Figure 6). Soils were gray-brown loams mixed with silt, sandstone gravel and cobbles. The top 10 centimeters of the profile revealed root intrusions. The next 50 centimeters revealed gray-brown soils mixed with sandstone gravels, and the next 20 centimeters was characterized by an abundance of sandstone cobbles in a dry, compacted matrix. Underlying the cobble layer was a layer of light tan clay. The sediments were not screened and no artifacts were observed in the back-piles. The test pit was photographed, sketched and refilled.

Figure 6: Feature 4 test pit at 0.95 meters depth. Trowel points north (J.D. Spangler)

Feature 5 was a 1-by-1-meter test pit located near the southwestern edge of the site, and about 2 meters south of the Feature 3 excavation unit (Figure 7). The location was chosen because of the lithic debitage concentrated in the area and the potential of the locale to reveal subsurface deposits. On August 3, 2006, the selected 1 meter-by-1 meter area was cleared of small sagebrush and bunch grass, and was excavated in arbitrary 10-centimeter levels, using trowels, picks and flat shovels. All deposits were sifted with 1/8th inch mesh screens. Excavation of the top 10 centimeters revealed the presence of a root zone with gray-brown loamy soils intermixed with sandstone gravels. Three pieces of obsidian, several chert flakes and one large vertebrate were recovered from this level. The bone, likely that of a large herbivore, was collected for subsequent analysis. In addition, an ash stain with charcoal flecks and small charcoal chunks was observed in the

northwest corner of the unit in association with a single chert flake. The excavation continued from 10 to 20 centimeters through loosely compacted gray-grown soils and silts, revealing a continuation of artifacts, including five chert flakes, three obsidian flakes and a projectile point tip or biface tool fragment. The ash staining visible at 10 centimeters disappeared at about 12 centimeters below present ground surface, although small pieces of charcoal continued to be observed during screening. The excavation was terminated at 20 centimeters below present ground surface. The feature was then photographed, sketched and re-filled.

Figure 7: Feature 5 test pit at 20 centimeters bpgs. Trowel points north (J.D. Spangler)

Chipped-Stone Artifacts

Artifacts observed at 42Cb2178 were predominantly biface tools, projectile points, utilized flakes and lithic debitage consisting of chert and chalcedony, with small amounts of quartzite and the obsidian from Feature 5 excavations. All but two of the 52 flakes observed on the site surface were tertiary flakes, all of which were indicative of *Middle-Stage* reduction activities (34) or were fragments (17). One flake was an *Early-Stage* secondary flake and another was a *Middle-Stage* secondary flake. These data suggest that the primary activity was stone tool maintenance and construction of stone tools from reduced cores or blanks brought to the site. White and opaque chalcedony appears to have been the preferred material (30), followed by chert (red, gray, black, white, tan and orange) with 16 flakes. White, purple, black-tan striped and black quartzite constituted the remainder of the assemblage (6). There are no known local sources for these materials, although cobbles are commonly found along the Green River in the Desolation Canyon corridor (ca.) 10 kilometers to the east.

Debitage. An inventory of the morphological characteristics of 79 pieces of flaked stone debitage was performed. A total of 52 pieces of debitage were observed on the surface of the site, comprised of various colors of quartzite, chert, and chalcedony. Two of these pieces showed evidence of heat damage, one in the form of potlidding (small, circular spalls of stone caused by overheating the host stone), and the other being discolored. An additional 27 pieces of debitage were encountered in the two test units: four flakes in Feature 3 and 23 flakes in Feature 5. This assemblage consisted of various colors of chert, chalcedony, and quartzite, as well as six flakes of obsidian.

The analysis of chipped stone debitage, conducted on site, focused on the basic features of the flakes themselves. The first step in the analysis process was to determine a flaking stage: primary, secondary or tertiary. This was determined by the amount of cortex present on the dorsal surface of the artifact. A primary flake retains roughly 95 percent cortex on the dorsal surface, a secondary flake 1-94 percent, and a tertiary flake has no cortex at all.

The second step in the analysis was to make a determination of the stage of reduction (early, middle or late) represented by each individual flake in the assemblage. This determination was based on multiple variables that included but were not limited to platform preparation characteristics, flake size and shape, and the total number and direction of dorsal scars. The criteria used, as well as the method for identifying the stage of reduction, follows Wenker (2000), and is a simplified version of Flenniken (2002).

Early-Stage flakes are those that can be classified as having been produced during the initial stages of core reduction by hard-hammer percussion techniques. These flakes typically include broad, simple platforms with little or no platform preparation, a thick transverse cross-section, a low frequency of dorsal flake scars, and quite often cortex remaining on the dorsal surface. *Middle-Stage* flakes are characterized as having a prepared platform, often multi-faceted, that represents a small segment of a prepared and often dulled (by grinding) bifacial tool edge. Also known as biface-thinning or biface-reduction flakes, these may also exhibit some combination of the following attributes: 1) a thin, transverse cross-section, 2) an expanding, "teardrop" shape with feathered terminations, 3) multiple flake scars originating from varied directions, 4) a lipped platform, and 5) little or no cortex on the dorsal surface. *Late-Stage* flakes (i.e. pressure flakes) are usually very small, narrow and elongated flakes with multiple dorsal flake scars. They exhibit platforms prepared by grinding, are multi-faceted, and they contain no cortex on the dorsal surface. For those pieces that are either incomplete or do not exhibit the characteristics needed to identify which stage of reduction produced them, the category of "*fragment*" is often used. A "*utilized flake"* can be defined as a flake that has not been modified after its removal from a core, but shows signs of obvious use-wear such as micro-flaking or edge rounding.

Using these criteria, all surface debitage (n=52) was analyzed on-site (no surface debitage was collected). Two secondary flakes were observed: One Secondary/Early Stage and one Secondary/Middle-Stage. Thirty-three Tertiary/Middle Stage and 17

Tertiary/Fragments were noted. Debitage encountered and collected from the test units (n=27) included: one Tertiary/Early Stage, 21 Tertiary/Middle Stage, three Tertiary/Late Stage, and two Tertiary/Fragments (see Table 1).

Table 1: Analysis of lithic debitage from 42Cb2178

	Early	Middle	Late	Fragment		Total	%
Primary (>95%)							
Secondary (1-94%)	1	1		1		3	3.7%
Tertiary (0%)	1	53	3	19		76	95%
Total	2	54	3	20		79	
%	2.5	67.5	3.7	25			

Note: Percentages were rounded to the nearest tenth of a percent.

Chipped-Stone Tools. Chipped stone tools can be defined as stones from which flakes have been removed as a result of human use. This category includes both formal and expedient tools such as unifaces, bifaces, projectile points and drills, and it is distinguishable from groundstone artifacts. A total of 20 chipped stone tools were observed during the course of investigations at 42Cb2178, including one utilized flake, 17 bifaces and two projectile points.

Bifaces are tools that have been shaped by the intentional removal of flakes from both sides by percussion (Whittaker 1994). They lack hafting elements (notches or stems) that would identify them as projectile points, and have therefore been placed in their own category. The classification system used on the 42Cb2178 assemblage combines the biface manufacturing stages defined by Wenker (2000) and Whittaker (1994).

There are three stages of biface manufacture. *Stage 1* bifaces exhibit only minimal modification and may be indistinguishable from bifacial cores. These bifaces represent the initial stages of raw material procurement and/or testing. *Stage 2* bifaces include those items in the initial stages of thinning, and they feature controlled flaking around part or all of the tool edge. The flaking is irregular and flake scars usually do not cross the midline of the tool. *Stage 3* bifaces represent the stages of thinning the item's cross section (through soft-hammer percussion) without diminishing the outlined shape of the tool. With *Stage 4* bifaces, initial shaping comes into play, and the item's final shape is initiated. *Stage 5* bifaces are completely thinned, and final shaping is being or has been performed. Pressure flaking may also be applied. These can be classified as highly symmetrical. These bifaces exhibit well-controlled flaking and the edges are straight and regular.

A total of 17 bifaces were observed at 42Cb2178: one Stage 1, one Stage 3, four Stage 4 and eleven Stage 5 (see Table 2).

Table 2: Biface tools from 42Cb2178

FS No.	Mat. Type	Stage	Weight (g)	Measurements LxWxTH	Comments
1	Quartzite	**5**	1.1	14.5 x 15.4 x 4.4 mm	
2	Chert	**5**	4.1	33.4 x 27.6 x 4.5 mm	Tip fragment- possible knife
4	Chalcedony	**3**	5.3	37.5 x 25 x 6.4 mm	
5	Chalcedony	**5**	0.8	11.5 x 15.4 x 4.2 mm	
6	Chalcedony	**5**	2.4	23.7 x 17.6 x 5.5 mm	
7	Chalcedony	**4**	1.2	28.5 x 10.2 x 4.0 mm	
8	Quartzite	**4**	4.9	30.2 x 27.3 x 6.5 mm	
11	Quartzite	**4**	2	25.0 x 18.6 x 5.1 mm	Tip fragment
12	Chert	**5**	7.2	28.1 x 25.5 x 7.2 mm	Mid-section
13	Chert	**4**	0.4	10.1 x 15.8 x 3.3 mm	
14	Chert	**1**	30.1	57.2 x 34.8 x 20.6 mm	Core
15	Chert	**5**	1.5	20.0 x 23.4 x 3.9 mm	
16	Quartzite	**5**	0.3	12.8 x 5.6 x 3.8 mm	Base fragment
17	Chert	**5**	4.7	30.6 x 24.5 x 5.1 mm	Base fragment- possible knife
18	Chert	**5**	1.8	26.4 x 16.8 x 4.0 mm	
20	Quartzite	**5**	0.7	8.6 x 17.5 x 4.1 mm	Base fragment
23.5	Chert	**5**	0.3	14.1 x 12.1 x 2.9 mm	Tip fragment

Projectile Points. The projectile points from 42Cb2178 were placed into the commonly accepted categories for Great Basin projectile points, as outlined by Thomas (1981). Table 3 shows the measurements for the two projectile points (see also Figure 8). Two identifiable projectile points were observed and collected. The first specimen (FS 9) is a grey chert, corner-notched projectile that had been re-worked. This point exhibited pressure flaking and two corner-notches. Although the tip has broken off and both tangs are broken, there is enough material intact for typological identification as an Elko Corner-notched point. Through re-sharpening and possible re-shaping due to use or breakage, it no longer looks like an Elko series point.

The second projectile point (FS 10) was constructed of gray and purple mottled chert with whitish quartzite inclusions. This specimen is lanceolate shaped and has a broken tip. It had been pressure flaked, and has a small concavity on its base. According to Thomas (1981), this point would be typed as a Humbolt, although it may reflect an altered shape resulting from re-sharpening (cf. Bettinger, O'Connell, and Thomas 1991).

Figure 8: Two projectile points from 42Cb2178. Point on left is FS 9, on right is FS 10 (A. Yentsch)

Table 3: The analysis of two projectile points following Thomas (1981)

Site	FS Number	Material	Length (mm)	Width (mm)	Weight (grams)	PSA (°)	DSA (°)	NO (°)	BIR (mm)	LM (mm)	WM (mm)	WB (mm)	Classification (Thomas 1981)
42Cb2178	FS 9	Chert	35.5-B	20.8-B	3.4	115	170	45	1.0	8.1	20.9	11.1	ECN
42Cb2178	FS 10	Chert	40.4-B	16.5	4.4	NS	NS	NS	0.98	NM- NS	15.3	11.3	HUM

NM= NO MEASUREMENT POSSIBLE
NS= NO SHOULDER
UN= UNDETERMINED
B= BROKEN; BUT MEASUREABLE
ECN= ELKO CORNER-NOTCHED
HUM= HUMBOLT
OK= OUT OF KEY

Groundstone Artifacts

Additionally, four groundstone tools were identified during the 2006 documentation of 42Cb2178. Groundstone tools were largely expedient implements constructed of locally available sandstone that exhibited minimal use and minimal expenditure of energy in their construction (Figure 9). All were observed on the surface and most were fragmentary. Three metate fragments and one intact one-hand mano were observed but not collected (all were photographed). The "unknown" groundstone tool identified by MOAC was not relocated. Groundstone artifacts observed in 2006 are summarized in Table 4.

Table 4: Groundstone Tools observed at 42Cb2178

Tool No.	*Tool Description*	*Tool Dimensions*	*Tool Material*
3	Metate fragment	12.5 x 9 x 3.5	Gray sandstone
6	Metate fragment	44 x35.5 x 6.5	Tan sandstone
8	One-hand mano	12 x 8.5 x 4.5	Tan sandstone
9	Metate fragment	11 x 11.5 x 4.5	Tan sandstone

Note: All groundstone tools located on site surface and were left *in situ*.

Collectively, this assemblage is reflective of longer-term encampments where plant resources were exploited, probably by female members of the band. This area currently offers few economic plant species, and none in any abundance, although the presence of a nearby spring may have afforded some plant resources not evident in August 2006. If environmental conditions were similar in prehistory, it is possible that floral resources were procured elsewhere and brought to the site for processing. The absence of deeply worn groundstone and the abundance of chipped stone tools conducive to hunting and meat processing suggest that plant processing was a minor part of prehistoric activities here and may have been incidental to hunting activities.

Figure 9: Expedient groundstone tools from 42Cb2178. Upper left, Tool 6; upper right, Tool 8; lower left, Tool 3; lower right, Tool 9 (J.D. Spangler)

Bone

A total of eight pieces of bone were collected from the test units at 42Cb2178, all encountered in Feature 5. Seven of these pieces are too small and fragmentary to make any identification as to a particular bone or species. The eighth sample, however, is an intact vertebrae that is most likely from an artiodactyl (deer or elk). Table 3 provides weight and measurement data for all bone artifacts.

Table 5: Bone artifacts from 42Cb2178

FS #	Quantity	Weight (g)	Measurements LxWxTH
22.6	1	0.1	13.6 x 5.9 x 3.1 mm
22.7	1	0.2	12.5 x 6.2 x 4.9 mm
22.8	1	0.2	10.6 x 6.4 x 1.3 mm
22.9	1	0.0g	4.5 x 3.0 x 1.5 mm
24.4	1	0.1	6.5 x 4.9 x 2.3 mm
24.5	1	0.0 g	6.4 x 4.2 x 2.0 mm
24.6	1	0.0 g	4.5 x 3.7 x 2.8 mm
25	1	64.1	73.6 x 121.3 x 53.3 mm

Note: All bone artifacts were found in Test Unit (F5).

Discussion

The abundance of chipped-stone tools at 42Cb2178 suggests that maintenance of tools for game procurement and animal processing was a significant activity. The ratio of finished stone tools to debitage is exceptionally high, suggesting this site was utilized repeatedly over a longer period of time, rather than a single episode event. The 20 chipped-stone tools recovered in 2006 were all constructed of non-locally available chert, quartzite and chalcedony. These consisted of two projectile points, utilized flakes and biface fragments, some of which may have been projectile points. Most of the assemblage was too small or fragmentary to permit classification. The two projectile points are both consistent with types (Humboldt and Elko corner-notched) defined for the Archaic period on the northern Colorado Plateau.

Concave-base, lanceolate points have been invariably labeled as Pinto shoulderless, Humboldt concave-base and McKean lanceolate points. In fact, there is little morphological difference between Pinto shoulderless and Humboldt concave-base points (Holmer 1978, 1986). Lanceolate points have been recovered in stratigraphic contexts in the eastern Great Basin and northern Colorado Plateau dating between about 6000 and 4000 B.C., and between about 3000 and 1000 B.C. at sites in the central and western Great Basin (e.g., Swallow Shelter, O'Malley Shelter). Holmer labeled the earlier series as Humboldt points (Early Archaic) and the latter series as McKean points (Middle Archaic) (1986:100).

For the eastern Great Basin and northern Colorado Plateau, Humboldt points were assigned a temporal range of about 5600 to 4100 B.C. (Holmer 1978:67). However, this temporal range is suspect for the northern Colorado Plateau where Humboldt points are not particularly common. In fact, any discussion of the spatial and temporal ranges of Humboldt points are hampered by the paucity of corroborative radiocarbon data from the northern Colorado Plateau, and the morphological similarities between Humboldt and other lanceolate points that may have resulted in erroneous field identifications.

No Humboldt points were recovered at Cowboy Cave, and only small numbers of Humboldt points were recovered at Sudden Shelter, where one point came from Stratum 6

and another from Stratum 5, which yielded a radiocarbon date of 6670 ±180 years B.P. (B.C. 5577 calibrated). Later Strata 6 and 7 both contained Humboldt points but these were not radiocarbon dated. Stratum 8 did not contain Humboldt points, but it returned at date of 4980±90 years B.P. (B.C. 3718 calibrated). Based on 2 Sigma calibrations, it could be argued the temporal range of Humboldt points on the northern Colorado Plateau began about 6000 B.C. and continued perhaps as late as 4000 B.C., although the terminal date is problematic given the absence of direct radiocarbon data.

Little has been written about the functional aspects of Humboldt points. Aikens (1970) argued that lanceolate points like Humboldt points were associated with the procurement of bison and mountain sheep, in contrast to Pinto points that were better suited for deer hunting. However, he offered no explanation as to why lanceolate points would have been a better technology for bison or sheep, or how that assumption could be tested in the archaeological record. It should be noted that Frison (1991) has argued that large side-notched points, not lanceolate points, were the preferred point type for bison hunting on the northwestern Plains. The paucity of research into the functional advantages of certain point types makes any conclusive statements extremely speculative, particularly for the northern Colorado Plateau.

Geib has argued that Elko corner-notched points are a defining material culture trait of the Initial Archaic period from 8030 to 6840 B.C. (calibrated ranges) in the Glen Canyon region, and that they were used concurrently with Pinto Series and Sand Dune side-notched points (1996:38). However, these temporal interpretations are not widely accepted, and evidence from stratified cave sites on the northern Colorado Plateau and Great Basin have repeatedly demonstrated the difficulty in assigning definitive temporal ranges for any of the Elko Series points (cf. Holmer 1986). None of the more complete points from 42Cb2178 are consistent with arrow points, which appear in this region about A.D. 100 (McKibbin 1992). The Elko side-noted point described in 2004 by MOAC was not re-identified. The temporal implications of Elko Series points are discussed in greater detail in the section related to 42Cb2186. It should be noted that laboratory analysis did not verify MOAC's field identification of the Gypsum point.

Most of the chipped-stone tools recovered in 2006 were bifaces, most of them fragmentary, although some are large and may have been knives. Two of the tools were worked on one surface and may have been scrapers used for hide preparation or other post-hunting game processing. Given the concurrence of groundstone tools, it is likely the encampment was a bi-gender activity site. Collectively, these data suggest that 42Cb2178 was a longer-term hunting camp utilized primarily for pre- and post-hunting activities, in particular stone-tool maintenance. It is likely these encampments occurred during the summer or early fall during forays into higher elevations to procure deer and elk. The camp was likely utilized during the Archaic period, although the paucity of temporally diagnostic artifacts precludes speculation as to whether the camp was utilized repeatedly over many millennia or during a much narrower sequence during the Archaic.

Site 42Cb2186

Site 42Cb2186 is located along a relatively flat, narrow portion of Buckskin Ridge that separates Buckskin Canyon to the south and Bear Canyon to the north (Figure 10). This site was initially documented by Montgomery Archaeological Consultants (MOAC) in September 2004 when it was described as a large dispersed lithic scatter consisting primarily of late-stage reduction flakes and flake fragments. Tools observed at the site consisted of five bifaces or biface fragments, a single-handed mano, a two-handed mano, three portable milling stones and two unknown groundstone tools, as well as an Elko corner-notched point and a Summit stemmed point that were deemed consistent with the Middle Archaic. The site was described as 201 meters long by 84 meters wide. No features were observed at that time and artifacts were not collected (Mrstik and Patterson 2004).

Figure 10: Overview of site 42Cb2186 looking (ca.) west to east. Vehicle at datum (J.D. Spangler)

Crews with the Colorado Plateau Archaeological Alliance (CPAA) and Utah Division of State History (DSH), as well as a representative of the current land owner, relocated site 42Cb2186 on July 31, 2006, and the spatial extent of the site was redefined. Crews confirmed MOAC's initial site description of a large, dispersed scatter of lithic debitage and tools. However, the re-documentation demonstrated that the spatial boundaries of the site were significantly greater than those defined by MOAC (see Figure 11), and a significantly greater number of formal tools were identified. The site actually measures about 383 meters east-west by 136 meters north-south, and a total of 30 chipped-stone and 8 groundstone tools were identified. The ratio of formal tools to stone debitage was unusually high. All artifacts were consistent with a high elevation camp used repeatedly for hunting activities, stone tool maintenance and limited plant processing, probably during Archaic times. Consistent with MOAC findings, no features

were observed on the site surface, and none were identified during subsequent test excavations.

Site Documentation

Beginning outside the western site parameters defined by MOAC, six crew members walked parallel transects roughly three meters apart in a easterly direction paralleling the existing two-track road. The site examination continued in an easterly direction until no additional artifacts were observed within 50 meters of the last observed artifact. The crew then returned west along the southern periphery of the site, also with 3 meter separation, until no additional artifacts were observed within 50 meters of the last observed artifact. The same strategy was then employed on the north side of the two-track road. In an attempt to locate all tools identified by MOAC, additional informal north-south transects were employed at portions of the site where the artifacts were initially identified. Given the precarious steepness of the slope below Buckskin Ridge, no attempt was made to survey those areas. No artifacts were observed on the northern edge of the ridge at the point where it drops into Bear Canyon.

A total of 101 artifacts were identified and pin-flagged. Additionally, all stone tools were marked with flagging tape to assist in the formal mapping of the site with a Sokia total station. The distribution of surface artifacts revealed no significant concentrations of artifacts, although there appears to be a slightly greater concentration of formal tools in the western-middle portion of the site (Figure 11). Generally, artifacts were dispersed widely across the flat ridge in situations that militated against significant movement of artifacts due to erosion. The density of artifacts rarely exceeded three per square meter, and across most of the site the density was less than one per square meter.

A mapping station was established next to the two-track road near the approximate center of the site. The MOAC datum, located on the western periphery of the site, was not used for this purpose given the large spatial extent of the site and the desire to secure visual reference for the entire site. Mapping of the site included documentation of the site parameters, contours of the ridge top and exact location of all formal tools. Once the location of all formal tools had been determined, all chipped-stone tools were collected for future analysis. All groundstone tools were photographed *in situ* but were not collected.

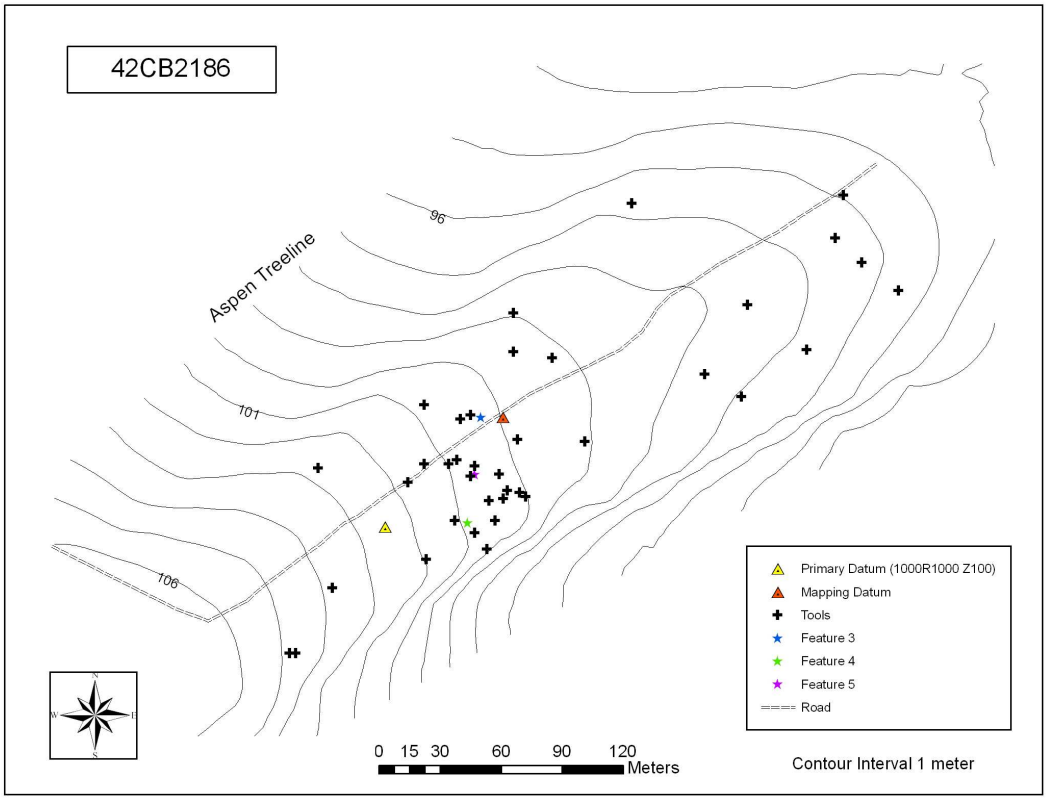


Figure 11: Site map of 42Cb2186 (S. Arnold)

Test Excavations

In an attempt to determine if subsurface cultural deposits were present at the site three 1-by-1 meter test pits were subsequently excavated. Feature 3 was the northernmost of the three test pits and was located 0.22 meters north of the two-track road. This location was selected because of the comparatively greater number of lithic artifacts within a small area (ca. 5) and the potential for significant depth of soils. Test excavations continued over a three-day period beginning July 31, 2006. The selected 1-by-1 meter area was cleared of small sagebrush and excavated in arbitrary 10-centimeter levels, using trowels, picks and flat shovels. All deposits were sifted with 1/8th inch mesh screens. The stratigraphy of the soils, although not distinct, featured wet, dark loamy soils near the surface, becoming lighter and sandier with increased depth. No distinct breaks in soil characteristics were observed, and no unequivocal evidence of subsurface features was identified. However, sparse cultural materials were recovered to a depth of 50 centimeters below present ground surface (Figure 12).

Figure 12: Feature 3 test pit at 10-20 centimeters bpgs, looking east to west (J.D. Spangler)

The first 10 centimeters yielded sparse tertiary flakes (ca. one per 5-gallon bucket of soil) and one long projectile point. It appears the point was initially stemmed, but the broken base gives it the appearance of a corner- or side-notched point. This level featured moist loamy soils with root intrusions. From 10 to 20 centimeters, the moist soils were well developed with residual sandstone, pebbles, gravel, sand and organics. A concentration of stones with relatively flat upper surfaces was located at the bottom of this level (Figure 13). A few tertiary flakes were found throughout this level. At the bottom of the level around the concentration of stones were located several pieces of bone, lithic flakes and charcoal, all of which were collected for analysis. Given the tight configuration of the stones and absence of similar stones around it or above it, it is possible the concentration is a remnant of a cultural feature, although there is little supporting data for this.

After sketching the concentration, the stones were removed and the excavation continued to a depth of 30 centimeters. Soils were indistinguishable from those removed from the 10 to 20 centimeter level. Large fragments of burned juniper were located in this level, as well as sparse tertiary flakes. Some rodent disturbance was observed in this level and it extended downward to almost 50 centimeters below present ground surface. From 30 to 40 centimeters, the soils were drier, lighter in color and more sandy, but were otherwise similar to those above. This level yielded additional tertiary flakes. The excavation was continued to a depth of 50 centimeters where several stones were encountered that appear to define a primarily stone layer. This level yielded additional sparse tertiary flakes, charcoal and possible juniper. The excavation was terminated at this point, although it is possible that cultural materials extend below the rock layer.

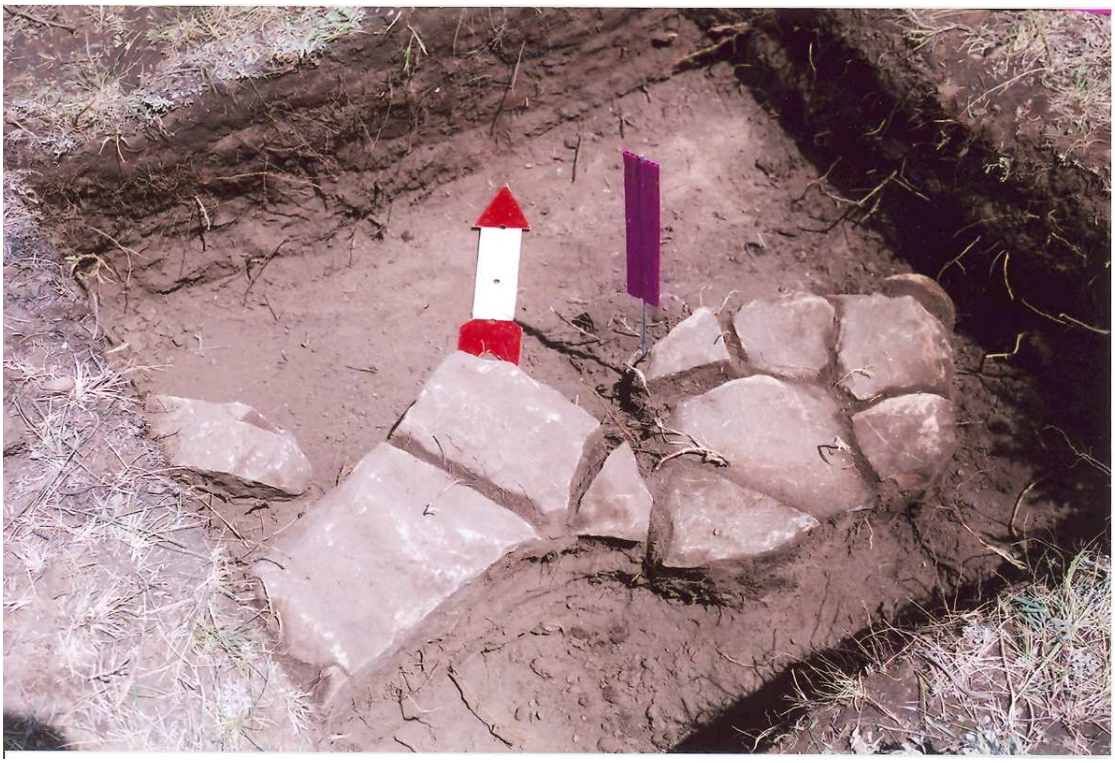


Figure 13: Feature 3 test pit at 30 centimeters bpgs, looking north (J.D. Spangler)

Feature 4, the second 1-by-1 meter test pit was located on the southern periphery of site just before the flat ridge drops precipitously into Buckskin Canyon. It was selected because of a semicircular alignment of eight unmodified small stones (Figure 14); the feature measured 70 centimeters by 70 centimeters and had the appearance of a possible fire ring. The test pit was situated so as to bisect the alignment and expose possible interior profiles. Small tertiary flakes were located 1 meter to the southeast of the test pit, and 1.2 meters to the east. The surface of the test area featured sparse vegetation that was removed prior to excavation. The west side of the test area outside the alignment was first excavated to a depth of 10 centimeters. The soils were dark brown, finely sorted and loamy, and the test area revealed root intrusions.

A large, solidly set stone was encountered on the northwest side of the test area just below present ground surface, prohibiting further excavations in that portion of the test pit. No artifacts were observed in the first 10 centimeters of deposits. The alignment on the east side of the test area was then sketched and photographed, and the stones removed. Excavation of this half revealed the same soil characteristics as the west half, with no evidence observed of stone oxidation, charcoal or other artifacts. It was determined the alignment is likely a natural configuration. The excavation was continued to a depth of 20 centimeters, but was terminated at this point due to the absence of cultural materials (Figure 15).

Figure 14: Rock alignment at Feature 4 test pit area prior to excavation (J.D. Spangler)

Feature 5, the third 1-by-1 meter test pit, was located on the southern portion of the site about 15 meters south of the two-track road and in a straight north-south line and about halfway between Features 3 and 4. It was selected arbitrarily with no surface indication of buried deposits. The surface was cleared of vegetation and the test area was excavated to a depth of 10 centimeters (Figure 16). Soils consisted of brown loam and silts intermixed with small sandstone pebbles, hand-sized cobbles and sandstone slabs. No artifacts were observed in the screened deposits, with the possible exception of small flecks of charcoal. Given the absence of unequivocal evidence of cultural deposits, the excavation was terminated at this point.

Figure 15: Feature 4 test pit at 10 centimeters bpgs, looking north (J.D. Spangler)

Figure 16: Feature 5 test pit at 20 centimeters bpgs. Trowel points north (J.D. Spangler)

Chipped-Stone Artifacts

Artifacts observed at 42Cb2186 were predominantly biface tools, projectile points, utilized flakes and lithic debitage consisting of chert and chalcedony, with smaller amounts of quartzite and limestone flakes. A total of 63 flakes were identified, of which 57 were tertiary flakes. Of these, three were *Early-Stage* reduction flakes, 33 were *Middle-Stage* reduction flakes, four were *Late-Stage* reduction flakes and 17 were fragments. These data suggest that the primary activity at this site was stone tool maintenance and construction of stone tools from reduced cores or blanks brought to the site. Only five were secondary flakes, two indicative of *Early-Stage* reduction and three of *Middle-Stage* reduction. A single primary flake was indicative of *Early-Stage* reduction. Chert (red, gray, black, white, tan and brown) appears to have been the preferred material with 38 flakes, followed by white chalcedony with 21 flakes. Limestone (one flake) and quartzite (three flakes) constituted an insignificant part of the overall assemblage. There are no known local sources for these materials, although cobbles are common along the Green River in the Desolation Canyon corridor (ca.) 10 kilometers to the east.

The lithic analysis for 42Cb2186 was comprised of two stages, an on-site analysis of all uncollected lithic debitage found on the surface and an off-site analysis of collected biface tools at the University of Utah Archaeological Center, as per Wenker (2000). The collected materials were comprised of formal tools from the surface, as well as those artifacts recovered from limited test excavations. Analysis of the entire assemblage is based on replicative experiments, in addition to standard lithic analysis methods used by the University of Utah Archaeological Center (see discussion above for 42Cb2178 regarding methodology). Projectile points were assigned to type classification based on

comparison samples from the Utah Museum of Natural History collections. The chipped-stone tools collected from 42Cb2186 are summarized in Table 6.

Debitage. Debitage was analyzed using replicative data, along with morphological characteristics found on the flakes themselves. With these techniques debitage was ascribed to a certain reduction stage. Flaking stage determinations (i.e. primary, secondary, tertiary) are based on the amount of cortex present on the dorsal surface. The next step was to determine at what point in the reduction sequence (i.e. early, middle or late) individual flakes were produced. This determination is based on multiple variables including platform preparation of diagnostic flakes. For example, *Early-Stage* reduction equates to hard hammer percussion characterized by large unprepared platforms. *Middle-Stage* reduction equates to soft-hammer percussion or biface thinning, multi-faceted platforms prepared by grinding, and multi-directional flake scars on the dorsal surface. *Late-Stage* reduction equates to pressure flaking and small multi-faceted platforms prepared by grinding, and they are generally thin (relative to mid-stage flakes). Hard-hammer percussion or *Early-Stage* flakes would be associated with initial core reduction, as well as the creation of a very rough biface blank; *Middle-Stage* or biface thinning would be associated with soft hammer percussion thinning or reduction of the rough biface blank; and *Late-Stage* or pressure flaking would be associated with final tool production and re-tooling events. Because of its fragmentary nature, non-diagnostic debitage, including potlids, angular debris and flake fragments with no defining characteristics, were not assigned to a reduction stage although features such as percent of cortex and material type were recorded.

Table 6: Chipped-Stone Tools from 42Cb2186

Tool No.	*Tool Description*	*Height (cm)*	*Width (cm)*	*Thick(cm)*	*Material*
1	Side-notched, rocker-based point	2.5	2	0.3	Gray chert
3	Elko eared point base	2.4	2.2	0.4	Red-brown chert
4	Biface fragment	3.5	3.3	0.6	Gray-brown chert
5	Corner-notched point fragment	2.1	1.4	0.4	Red chert
7	Concave base point fragment	1	1.3	0.3	Gray chert
10	Biface fragment	1.8	2.2	0.4	White chert
11	Side-notched point base	2	1.7	0.3	Tan chalcedony
12	Utilized flake fragment	2.6	1.6	0.5	White chalcedony
13	Biface fragment	2.8	2	0.7	Red chert
15	Utilized flake fragments (2)	4	2.7	1.0	White chert
16	Side-notched point base	2	2	0.3	White chert
17	Biface fragment	2.5	2.7	0.5	Black chert
18	Utilized flake	3.3	2	0.5	Tan-gray chert
19	Biface fragment	1.5	1.8	0.6	Black chert
20	Drill	2.4	2.4	0.4	Gray-black chert
21	Biface fragment	2.5	2.4	0.2	Tan chert
22	Biface fragment	3	2.6	0.7	Tan chert
23	Biface fragment	1	1.2	0.2	White chalcedony
24	Point base fragment	2	2	0.2	White chert
25	Biface fragment	3.7	3.8	0.3	Tan chert
26	Triangular biface fragment	4.1	3.3	0.5	Gray-black chert
28	Elko side-notched point base	2.7	2.7	0.3	White chalcedony
29	Complete point	3.3	1.8	0.5	White chalcedony
30	Notched point base fragment	1.8	1.5	0.4	Gray-white chert
32	Biface midsection	3.6	1.6	0.3	White chalcedony
34	Drill fragment	2.9	2.2	0.3	Tan chert
35	Point stem	1.7	1.3	0.2	White chalcedony
36	Biface midsection	1.5	1.5	0.3	White-gray chert
37	Point base fragment	2.4	1.5	0.2	Red chert
38	Concave point base	1.1	1.5	0.2	Gray chert

The assemblage analyzed here is comprised of both collected and uncollected materials from 42Cb2186. A total of 129 artifacts were inspected and their characteristics recorded. These included 97 flakes and 32 formed tools. Debitage included 63 flakes from the surface and 34 flakes from subsurface. However, because the characteristics of the materials recorded from the surface and those found in limited test excavations were essentially identical, the two assemblages were combined for analysis (see Table 7). Material types within the debitage assemblage included 74 percent multicolored varieties of chert, 22 percent white or translucent chalcedony, with the remained 4 percent being quartzite and local limestone.

Table 7: Debitage recorded from 42Cb2186.

	Early	**Middle**	**Late**	**Fragment**	**Total**
Primary	1	0	0	0	1
Secondary	2	3	0	0	5
Tertiary	3	56	5	27	91
Total	6	59	5	27	**97**

Chipped-Stone Tools. In addition to the debitage, 32 formed tools were also found. These include 14 projectile points (discussed separately), two drills, two utilized flakes and 14 bifaces. The two drills were constructed from chert with the tips or "drill" end having been broken off. The remaining fragments were roughly oval shaped, un-notched bases with short stems extending from the edge where the tip should have been. Utilized flakes were also found on the surface of this site. For this analysis, a utilized flake was defined as a flake or flakes that have not been modified after their removal from the core but show obvious signs of wear. This determination involves a decision as to whether certain small scale morphological traits (i.e. micro-flake scars) are the product of incidental use or accidental contact. Based on this definition, two utilized flakes were observed, both constructed of light colored tan or gray chert and exhibiting use wear patterns consistent with minor cutting and or scraping activities.

The remaining tools from this assemblage are included under the general term "biface" tools. There were 14 bifaces found on site that were grouped into three different categories or stages of reduction based on the following definitions and criteria.
Stage 1 bifaces, also known as tested cobbles, are items that may not immediately appear obvious as bifaces, and they may be indistinguishable from amorphous or bifacial cores. However, their function differed from cores in that tested cobbles represent the initial stage of raw material procurement and testing in the trajectory of large percussive biface production. Stage 2 bifaces are items displaying bifacial flaking around part or all of the tool's edge. Flake scars are deep and do not cross the center of either face. Scars from the bulbs of percussion are prominent from hard-hammer use. The cortical edge surfaces have been removed and a bifacial edge has been established around much of the item. No Stage 1 or Stage 2 bifaces were identified at 42Cb2186.

Stage 3 bifaces are items representing the initial stages of soft-hammer percussion directed toward the initial stage of thinning the items' cross section without unduly diminishing the outlined shape of the tool. No steps are taken toward shaping. Flake scars show diffuse bulbar scars from soft hammer use. The width-to-thickness ratios are still low (greater than 3:1). Stage 4 bifaces are items representing the final stages of soft-hammer percussion primarily directed toward thinning the items cross section. Shaping also comes into play, and the final tool outline is started. Flake scars show diffuse bulbar scars from soft hammer use. Width-to-thickness ratios increase (approaching 4:1). Stage 5 bifaces are those bifaces that have been completely thinned and have been shaped into final form or are completed. Pressure flaking may also be applied. Width-to-thickness ratios exceed 4:1 or 5:1. The assemblage from 42Cb2186 included three Stage 3 bifaces, two Stage 4 bifaces and nine Stage 5 bifaces. All are incomplete and all are made from a variety of different-colored chert.

Projectile Points. All projectile points and point fragments were analyzed as per Thomas (1981), and six were found to be consistent with established point types (Table 8). The projectile points included four Elko corner-notched points made from chert or chalcedony and one Elko eared point made from red chert. All of the Elko Series points are fragmentary, but enough of the bases and notches remain to allow classification. In addition, one complete Gatecliff split-stem point made from white chert was also identified. The remaining points were too fragmentary to allow classification but general observations could still be made. These include three corner-notched points, all made from chert, one side-notched point made from chert and four point fragments had no defining characteristics and were described only generally as "projectile points." The projectile points are illustrated in Figure 17.

Table 8: Projectile points for 42Cb2186, following Thomas (1981)

FS Number	Material	Length (mm)	Width (mm)	Weight (grams)	PSA (°)	DSA (°)	NO (°)	BIR (mm)	LM (mm)	WM (mm)	WB (mm)	Classification (Thomas 1981)
23.1	Chert	32.8	16.63	2.8	115	220	112	.95	10.31	16.63	11.71	GSS
22.1	Chalcedony	26.46B	20.13	4.2	134	155	24	NM	3.71	27.75	20.13	ECN
2.1	Chert	24.03B	17.24B	2.2	125	NM	67	NM	9.26	NM	13.09	EE or ECN
7.1	Chert	18.16B	17.0	1.5	143	184	32	NM	9.93	NM	16.94	ECN or EE
4.1	Chert	12.88B	20.60B	1.5	145	144	36	NM	8.35	NM	14.92	ECN or EE
32.6	Chert	27.89B	12.37	1.6	115	113	99	1.00	5.40	12.37	10.34	ECN

NM= NO MEASUREMENT POSSIBLE
B= BROKEN; BUT MEASUREABLE
ECN= ELKO CORNER-NOTCHED
EE= ELKO EARED
GSS= GATECLIFF SPLIT STEM

NOTE: REMAINING EIGHT PROJECTILE POINTS WERE TOO FRAGMENTARY ID

Figure 17: Projectile points from 42Cb2186. Upper row left, FS 7.1; center FS 4.1; right FS 11.1; bottom row left, FS 2.1; center left FS 221.1; center right, FS 32.6; right, FS23.1 (J. Boomgarden)

Groundstone Artifacts

Additionally, at least eight groundstone tools were identified during the 2006 documentation of 42Cb2186. Groundstone tools were largely expedient implements constructed of locally available sandstone that exhibited minimal use and minimal expenditure of energy in their construction (Figure 18). All were observed on the surface and most were fragmentary. These consisted of one intact metate, four metate fragments, one intact two-hand mano, an intact one-hand mano and one mano fragment. Four additional groundstone tools identified by MOAC were not relocated. Groundstone artifacts observed in 2006 are summarized in Table 9.

Table 9: Groundstone Tools at 42Cb2186

Tool No.	*Tool Description*	*Tool Dimensions*	*Tool Material*	*MOAC Tool No.*
2	Metate fragment	16.7 x 13 x 3.7 cm	Pinkish sandstone	T-7
6	Metate fragment	40 x 32 x 12 cm	Pinkish sandstone	
8	Two-hand mano	19 x 8 x 6 cm	Tan sandstone	T-11
9	Metate	49 x 22 x 6 cm	Tan/gray sandstone	T-10
14	Metate fragment	19 x 15 x 4 cm	Pinkish sandstone	
27	Metate fragment	18 x 8 x 4 cm	Tan sandstone	
31	One-hand mano	Not indicated	Tan sandstone	T-5
33	Mano fragment	Not indicated	Tan sandstone	

Note: All groundstone tools located on site surface. Tool 33 exhibited evidence of fire-scarring.

Collectively, this assemblage is reflective of longer-term encampments where plant resources were exploited, probably by female members of the band. Buckskin Ridge currently offers few economic plant species, and none in any abundance. If environmental conditions were similar in prehistory, it is possible that floral resources were procured elsewhere and brought to the site for processing. The absence of deeply worn groundstone and the abundance of chipped-stone tools conducive to hunting and

meat processing suggest that plant processing was a minor part of prehistoric activities here and may have been incidental to hunting activities.

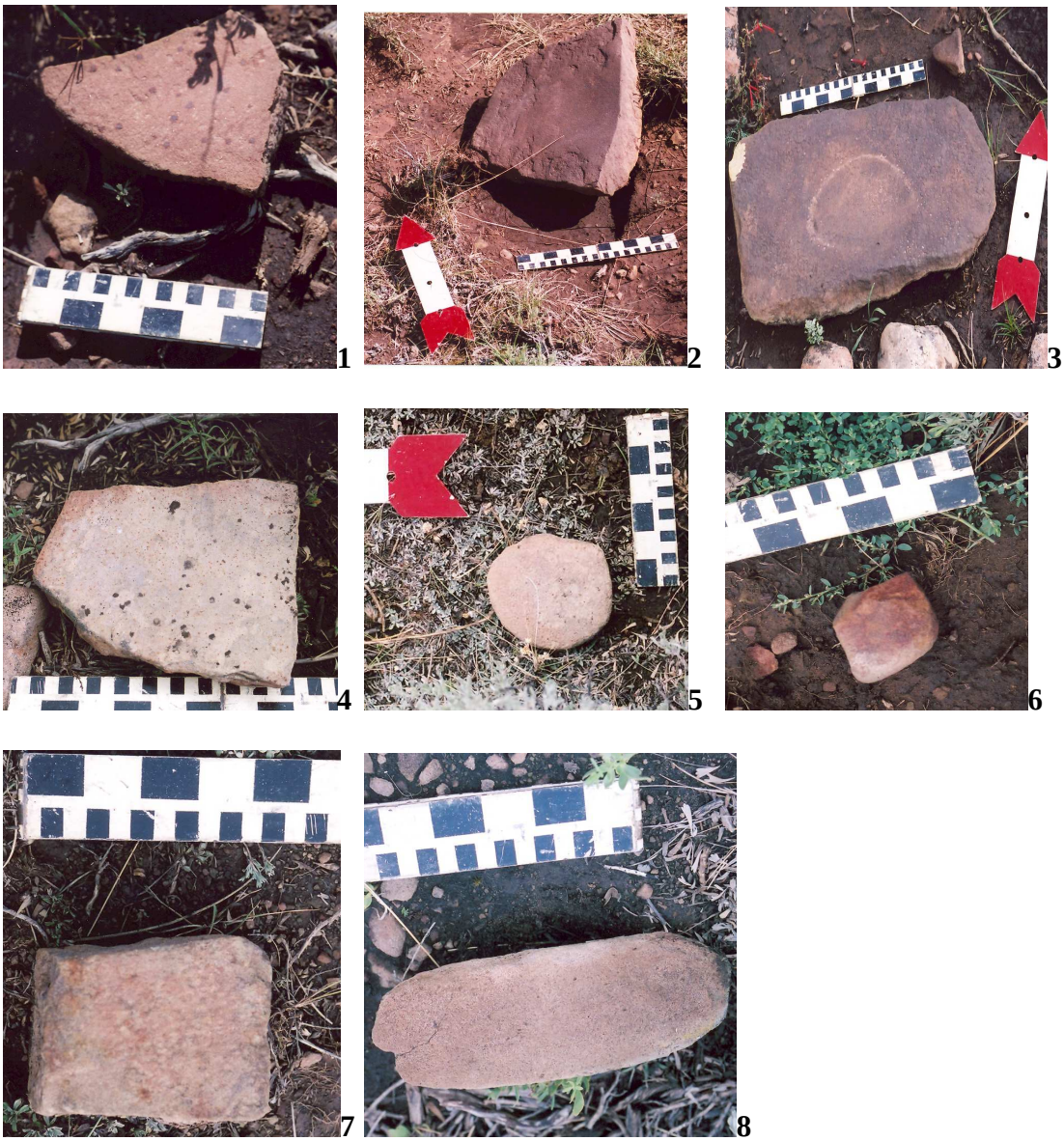


Figure 18: Groundstone tools observed at 42Cb2186. (1) Tool 2, (2) Tool 6, (3) Tool 9, (4) Tool 14, (5) Tool 31, (6) Tool 33, (7) Tool 27, (8) Tool 8

Discussion

The abundance of chipped-stone tools at 42Cb2186 suggests that maintenance of tools for game procurement and animal processing was the predominant activity. The 32 chipped-stone tools recovered in 2006 were all constructed of non-locally available chert and chalcedony. Based on dominance of Middle Stage tertiary flakes (biface thinning) and the large number of later-stage bifaces, it can be assumed that tool stone was being transported to the site from its source in the form of rough bifaces for later reduction

activities. Based on the amount and types of projectile points, these activities may have been focused on the production of atlatl or dart points. At least 13 chipped-stone implements are projectile points or point fragments, although most of them were too small or fragmentary to permit classification. At least five points are consistent with Elko Series points, and one was identified as a Gatecliff split-stem point. The Summit stemmed point identified by MOAC in 2004 was not relocated during the 2006 reexamination of the site. All samples recovered appear consistent with atlatl dart points that suggest an Archaic occupancy of the site.

Elko Series points are notoriously poor temporal indicators, appearing early in the Archaic record and persisting well into Formative times (Holmer 1986:101). Various researchers have attempted to define temporal ranges for various Elko Series points. For example, Geib, Huffman and Spurr (1999) have argued that Elko eared points are indicative of Late Archaic occupations in the Glen Canyon region. Geib also argued that Elko corner-notched points are a defining material culture trait of the Initial Archaic period from 8030 to 6840 B.C. (calibrated ranges), also in the Glen Canyon region, and that they were used concurrently with Pinto Series and Sand Dune side-notched points (1996:38). However, evidence from stratified cave sites on the northern Colorado Plateau and Great Basin have repeatedly demonstrated the difficulty in assigning definitive temporal ranges for any of the Elko Series points, which are found in contexts dating from about 6000 B.C. to A.D. 1000.

Based on Holmer's discriminant analysis of Elko Series points, there is little morphological difference between Elko corner-notched and Elko side-notched types, but they do constitute a continuum between two extremes, with side-notching becoming more common later in the temporal sequence (1986:102). A histogram of Elko Series points recovered from dated contexts in the eastern Great Basin and northern Colorado Plateau reveals three periods of florescence, one from about 6000 to 3500 B.C., a second from 3000 to 1000 B.C. and a third from A.D. 1 to A.D. 1000 (1986:102). Elko corner-notched points are most common in earlier Archaic temporal contexts and throughout the later Formative, usually in Fremont contexts. Elko eared points (or bifurcated-stemmed points) also occur in early deposits but diminish through time (1986:103). Elko side-notched points typically occur between 5500 B.C. and 1500 B.C. (1986:104).

The Gatecliff split-stemmed point is morphologically similar to Pinto points, but different in that they have a deeper and wider basal notch and they occur later in the Middle to Late Archaic temporal sequence. As described by Holmer (1978, 1986), the earliest Archaic point type found on the northern Colorado Plateau is the Pinto Series, which includes Pinto shoulderless, Pinto shouldered and Pinto single-shouldered subtypes. Holmer suggested shoulderless points are in fact shouldered points that had been resharpened to the extent that shoulders no longer remained. A temporal range of about 6300 to 4300 B.C. was established for Pinto points from Hogup Cave, Sudden Shelter and Danger Cave, from 4500 to 1800 B.C. at O'Malley Shelter, and from about 3000 to 1000 B.C. at Swallow Shelter (Holmer 1978:66), all located in the Great Basin. Euler (1983) has described Pinto points in the Grand Canyon area that were associated the Late Archaic split-twig figurine complex. To support this temporal association, he cited evidence from

Cowboy Cave where Pinto-like points were recovered in deposits with split-twig figurines, and at Ventana Cave in southern Arizona where Pinto points were recovered in the same levels with Gypsum points.

Holmer's discriminant analysis of Pinto points demonstrated morphological differences between points dating earlier than 3000 B.C. and those after. Pinto-looking points dating after about 3000 B.C. were subsequently reclassified as Gatecliff split-stem points based on morphological differences in the basal notches (1986:97; see also Thomas 1981). Gatecliff split-stem points are found primarily in the northern and western Great Basin, and only in southeastern Idaho do both point types occur together. Holmer also suggested the name Gatecliff contracting-stem for triangular points with convex edges, wide corner notches forming roughly square shoulders and a contracting, convex-based stem, which are commonly labeled Elko contracting-stem or Gypsum points, which are hallmarks of the Late Archaic (1986:106). Collectively, he assigned all Gatecliff points and co-occurring Elko Series points to the Gatecliff flourit (1986:111).

Although Gatecliff split-stem points are not common in northeastern Utah, the point recovered from 42Cb2186 can be confidently ascribed to the Middle or Late Archaic. Likewise, the Elko eared point is probably associated with earlier Archaic occupations. Given its co-occurrence with four Elko corner-notched points, it is possible the corner-notched points also date to the earlier florescence of this point type (B.C. 6000 to 3500), rather than the later sequence. The Summit stemmed point, if correctly identified by MOAC, would also support a Middle Archaic occupation. Given that the points were recovered from surface or non-stratified contexts, this remains highly speculative. It is also possible that this locale was occupied repeatedly from Early Archaic to Formative times by hunter-gatherers with a preference for large side-notched dart points better suited for the procurement of deer and elk.

At least 12 tools recovered in 2006 were bifaces, most of them fragmentary. Some are large and may have been knives. Other tools recovered were two drills and three utilized flakes with cutting edges. These artifacts appear to be reflective of post-hunting activities, such as butchering and hide processing, and these activities probably occurred at a bi-gender, longer-term encampment. Collectively, these data suggest that 42Cb2186 was a residential base camp utilized primarily for pre- and post-hunting activities. It is likely these encampments occurred during the summer or early fall during forays into higher elevations to procure deer and elk. It could not be determined from the small bone fragments recovered from Feature 3 what faunal resources were being exploited.

Interpretive Discussion (42Cb2178 and 42Cb2186)

As traditionally defined, the presence of groundstone tools suggests a bi-gender base camp with the presence of hunting tools reflective of male activities (cf. Lee and DeVore 1968) and the presence of groundstone tools indicative of female plant gathering activities (cf. Dahlberg 1981). However, Brumbach and Jarvenpa (2006:525) have challenged what they see as inherent and flawed assumptions about division of labor among hunter-gatherers, arguing "there was no rigid or universally applicable man the

hunter/woman the gatherer protocol," and that division of labor "occasionally" was based on age, ability and experience. Furthermore, they argue that traditional models have underemphasized the role of women in the pre-hunting preparations and post-kill butchering, meat processing and storage. While their critique offers intriguing perspectives on the underappreciated role of women in hunting activities, it does not effectively challenge the perspective that plant gathering was a primarily, but not exclusively, a female activity.

If the lightly worn groundstone tools at 42Cb2178 and 42Cb2186 indeed reflect incidental plant processing by women, the predominance of chipped-stone hunting tools suggests that women accompanied the hunting parties to facilitate the butchering, processing and storage of procured meat resources. Hence, these sites may be reflective of a seasonal base camp from which men logistically hunted, and that the base camp was primarily the focus of male and female activities associated with hunting preparations and post-hunting processing. No subsurface features (e.g., living surfaces, storage cists, hearths) were identified during limited testing, but it is anticipated that such features are indeed located at one or more locations at this site.

Based on the limited number of identifiable projectile points recovered from both sites, these may have been occupied repeatedly from Early Archaic to Late Archaic times, perhaps later. The absence of pottery and arrow points does not preclude the possibility the localities continued to be residential base camps during Formative or Late Prehistoric times, but the evidence for later occupations is currently lacking. The identification of subsurface features could offer corroborating chronometric data as to the temporal ranges represented by the occupations of both sites.

42Cb2185

Site 42Cb2185 is located next to a spring at the bottom of a small drainage just off of Buckskin Ridge (Figure 19). The site was initially recorded in September 2004 by MOAC crews that assigned the construction of the cabin to the late 1920s. The cabin was described as "a historic saddle notch cabin built with complete fir logs and with wedge-shaped slats nailed into horizontal joints and cracks and chinked with clay" (see Figure 20). Features at the site included a corral, a stock pond, a stock tank, a road and a feature of unknown function, all of which were deemed to have been of post-1970 construction. The artifacts observed on and around the site also dated later than the initial construction of the ranch. The entire complex was described as 325 meters by 103 meters in size. Artifacts included a variety of ranching debris, including cans, horseshoes, nails, bolts, an ax head, a shovel blade, an iron stove, a chimney pipe, two shell buttons and leather, aluminum and steel detritus (Mrstik and Patterson 2004).

Crews with the Colorado Plateau Archaeological Alliance and Utah Division of State History conducted data recovery at 42Cb2185 in two phases: an on-site examination and photo-documentation of all features, and an oral history with descendants of the original homesteader. No excavations were conducted. The site was relocated on August, 3, 2006, and the current site condition was compared to that described in 2004. All

previously described features were re-located and thoroughly photo-documented (see Appendix A). Changes were observed to previously recorded Feature C and Feature F, and two additional features were identified, one of recent origin.

Figure 19: Overview of 42Cb2185 looking (ca.) south. Cabin center by stock pond (J.D. Spangler)

Figure 20: View of Feature A homesteader cabin at 42Cb2185 (J.D. Spangler)

Feature C was initially described by MOAC as the access road to the homestead. Upon revisiting the site in 2006, it was observed that this road had been recently graded with a bulldozer to within 25 meters of the cabin (Figure 21). Feature F was initially described as a log and wire structure near the spring. This feature has entirely collapsed since its initial recording in 2004 (Figure 22). Two trees that appear to have been anchors for the structure have fallen, and the remaining logs comprising the unknown structure have collapsed.

Figure 21: Recently graded access road to 42Cb2185, as observed in 2006 (J.D. Spangler)

The site description was augmented to include two additional features. Feature H consists of a recent (post-2004) bulldozer cut that extends about 50 meters to the north of the northwest corner of the stock pond (Feature B). The channel cut is 1.5 meters wide by 0.75 meters deep, and it appears to be an overflow channel for the stock pond (Figure 23). Feature G consists of an older access road into the site that is now overgrown with grass and low shrubs. This feature is 2-3 meters wide. It was not mentioned in the original site description.

The 2006 site documentation also provided additional information regarding two occurrences of “aspen art” mentioned in the earlier site form. Aspen Art 1 consists of a series of initials, including brands and other symbols that are now indistinct. The initials “WW” are clearly visible. Aspen Art 2 consists of the name “Jim Wilcox,” the date 1974” and a brand symbol. Crews also identified a soda bottle on the exterior of the cabin

(Feature A) that was painted with the label “Blue Bird Beverages” and a maker’s mark of “Price Bottling and Ice Cream Co.”

Figure 22: Feature F at 42Cb2185, now collapsed (J.D. Spangler)

Figure 23: Recent bulldozer cut leading east from stock pond (J.D. Spangler)

With the exception of the bulldozer cut, road improvements and collapsed feature noted above, the site was found to be in essentially the same condition as observed in 2004. It was determined that additional site description and mapping of this site would unlikely yield substantial additional data. Rather, data recovery should consist of interviews with those who have knowledge of the historical events surrounding the homestead. On September 8, 2006, an interview was conducted with Butch Jensen, the current owner of the property who is related to the historical owners of the homestead. According to Jensen, the cabin was constructed by Ernest Downard, one of two brothers who were the first homesteaders on the West Tavaputs Plateau. Ernest had a reputation as "a real artist" and is credited with constructing cabins in Florence Creek, "Budge's" cabin at the Wilcox Ranch in Range Creek, and the Nutter Cabin in Range Creek. "He built almost every log cabin the plateau. He built the corrals, everything," Jensen said.

Ernest and John Downard, who were raised in the community of Woodside, have a long history on the West Tavaputs Plateau that began in the early twentieth century. The brothers at one time milked cows for renowned cattle baron Preston Nutter in Range Creek, and they were present when a posse passed through the area, ultimately resulting in the death of notorious outlaw Joe Walker. John Downard later ran the Nutter Ranch operations in Range Creek Canyon, whereas Ernest Downard worked for pioneering rancher Jim McPherson for many years, at least until 1914. At about that time, the brothers began initiating their own ranching operations on the West Tavaputs Plateau (these claims were well established by the 1920s). John claimed the head of Van Dusen Ridge for his summer range, and Rock Creek was his winter range. Ernest lived on Buckskin Ridge during the summer and along the Green River in the Golden Stairs area below Range Creek during the winter. Site 42Cb2185 on Buckskin Ridge was known throughout the first half of the twentieth century as the Ernest Downard Cabin.

It is unclear from the documented record when the brothers actually initiated formal claims on their properties on Buckskin Ridge and Van Dusen Ridge under terms of the 1862 Homestead Act. Butch Jensen indicated it was in about 1914 or shortly thereafter. However, General Land Office records indicate Ernest Downard was awarded title to 440 acres on July 24, 1939. There is no record of a patent awarded to John Downard, but there is to his widow, Gertie Downard, on April 23, 1953, and another to his son, Manuel, on June 15, 1933. The patent granted to Gertie Downard appears to correspond to the historic John Downard homestead on Van Dusen Ridge.

Ernest Downard's personal history is sketchy. He married a woman named Edith, who was brought to the area by Jim McPherson to teach children at the Florence Creek ranch in the early twentieth century. She had a reputation as a cantankerous sort who refused to stay on the plateau. Family members have no recollection of her. She apparently lived in Green River, where Ernest also had the reputation as the only person who knew where all the city water lines were located. After Ernest sold his West Tavaputs Plateau holdings, he worked for his nephew, TN Jensen. He died in 1961 at the TN Jensen home in Price. It should also be noted that Ernest's son also worked for the Wilcox family during this period, but little is known of him other than "the later generations were all builders," according to Butch Jensen.

In 1941, the Budge Wilcox family purchased the Ernest Downard homestead on Buckskin Ridge, and within a year or two had purchased other Ernest's holdings on the West Tavaputs Plateau. In 1947, the Gerber family bought out John Downard's Rock Creek holdings, later selling them in 1955 to TN Jensen, a nephew of the Downard brothers and a prominent attorney in the area. TN Jensen, whose mother was a sister to Ernest and John Downard, began buying many of his uncles' holdings in the early 1950s. The Jensen ranch today is an amalgamation of many different homesteads patented during the first half of the twentieth century. Of note, TN Jensen was the attorney who represented the Wilcox family when it purchased the Nutter Ranch holdings in Range Creek, in about 1950. Butch Jensen took over the Tavaputs Ranch in 1971 from his father, and later married Jeannie Wilcox, a daughter of Don Wilcox and granddaughter of Budge Wilcox. This marriage merged the two most prominent ranch families on the West Tavaputs Plateau that had played such a significant part in the history of the region.

Site 42Cb2185 remained in the Wilcox family after the death of Budge Wilcox, and ownership was subsequently shared between the two surviving sons, Waldo and Don Wilcox. When the brothers decided to split their holdings in the early 1990s, the Buckskin Ridge parcel went to Waldo Wilcox. Waldo later sold his holdings on the plateau to the Trust for Public Lands, which in turn transferred ownership to the federal government and ultimately to the state of Utah. The parcel subsequently became the subject of a three-way land exchange between Hunt Oil, the Utah Division of Wildlife Resources and the Butch Jensen family, whereby ownership transferred from state ownership to the Jensen family. This data recovery effort is a condition of that transfer.

Future Data Recovery

Data recovery at 42Cb2185 is deemed completed, and no additional data recovery is recommended. Test excavations at 42Cb2178 and 42Cb2586 demonstrate considerable potential for subsurface features that may provide important insights into Archaic occupations on the West Tavaputs Plateau and which warrant additional investigation, contingent upon approval by the current land owners. These investigations will likely contribute to a broader understanding of Archaic hunting and gathering strategies, including the utilization of bi-gender residential base camps for pre-hunting activities and post-hunting faunal processing. Based on diagnostic projectile points observed at these sites, these occupations could date to Early, Middle and/or Late Archaic times.

It is highly likely that areas within the parameters of both sites contain significant subsurface cultural deposits, including Archaic living surfaces, storage cists, special activity areas and food processing locales. In fact, the existence of such features is considered highly probable and of major importance to the prehistory of the Tavaputs Plateau, where such sites have not been excavated and no Archaic radiocarbon dates have yet been reported. However, the recovery of such data is hampered by three factors: (1) The parcel is now in private ownership and there is a possibility that current land owners will not acquiesce to additional investigations, and (2) the tremendous size of the sites covering thousands of square meters makes complete data recovery economically

unfeasible, and (3) the sparse distribution of surface artifacts offers few clues as to the location of subsurface features that may contribute important insights into the prehistory of the Tavaputs Plateau.

Any future data recovery is contingent upon at least one factor beyond the control of the Utah Division of State History and/or the Colorado Plateau Archaeological Alliance. Continued negotiations with the current landowners could create appropriate financial incentives for the land owners that will facilitate a long-term research project at this site that does not conflict with the owners' current livestock operations. Of critical importance, any such negotiations for future research must maintain the ethical integrity and standards defined for the archaeological profession. This can likely be accomplished through the use of volunteers who are willing to pay for their accommodations at the Tavaputs Ranch and also contribute to the financial costs of data recovery.

In the event access to the site is granted in future years, a multi-phased data recovery project should be considered. Because the large size of the sites militates against complete data recovery, Phase 1 should include testing of randomly selected 1-meter blocks across the entire site in the aggregate of 5 percent of the site total. It is also recommended that the sampling universe be stratified with greater weight given to areas of the site with less-portable groundstone tools, areas with higher concentrations of surface artifacts and areas exhibiting slightly higher topography that may have been the source of eroded cultural materials observed on the surface in lower-lying areas nearby.

Phase 2 of data recovery could be conducted concurrently with Phase 1 and it would include an expansion of test excavations that have yielded cultural materials and exhibit a potential for subsurface cultural features. An expansion of test pits to dimensions of 5 meters square has the potential to yield evidence of contiguous subsurface features. These excavations could be expanded beyond the 25 square meters as initially defined if subsequently identified subsurface evidence warrants additional excavations.

It is anticipated that Phase I and Phase II investigations will yield important insights to high elevation Archaic base camps, including seasonality of use, mobility, subsistence, game processing, tool manufacturing, population demographics, gender roles and intra-band relationships throughout time. Such questions have never been addressed for Archaic sites on the Tavaputs Plateau, and resolution of these questions can be achieved only through the careful investigation of intact features. Phase 3 of data recovery includes the complete excavation of features identified during Phase 1 and 2 of the data recovery plan. The area subject to excavation during Phase 3 should be expanded intuitively, according to the nature of the subsurface features identified. Phase 3 investigations would only be conducted if features are identified during earlier phases of investigation.

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