Courson Archaeological Research

GUIDE TO THE IDENTIFICATION OF PREHISTORIC ARTIFACT CLASSES OF THE SOUTHERN HIGH PLAINS

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GUIDE TO THE IDENTIFICATION OF PREHISTORIC ARTIFACT CLASSES OF THE SOUTHERN HIGH PLAINS

UNBURNED BONE

Color: Tan, yellow to brown

Shape: Bone may come in a wide variety of shapes and sizes depending on completeness, species, and element. Small fragments are often similar to slivers of wood, but can also be flat and rectangular to flat and irregular in shape (Figure 1). Cortical bone is sponge-like in appearance being very porous and having abundant honeycomb-like holes. Tooth enamel can be light yellow, ivory or white in color and almost shell-like in appearance. Enamel is not porous and will not stick to your tongue.

Figure 1. Unburned Bone from Chill Hill, an Antelope Creek Phase Site

Key to I.D.: All bone, except tooth enamel, is very porous and will stick to your tongue. If you are in doubt, use the tongue test.

Look-a-likes: Often, pieces of modern wood can look like unburned bone. Wood is also very porous, but is much lighter in weight and softer than bone. In contrast, some types of stone may also look like bone, but they are much heavier and harder than bone and will not stick to your tongue. Tooth enamel can look like chipped stone debitage, but it lacks a crystalline structure and when viewed under a hand lens or microscope one can often observe a distinct parallel grain.

BURNED BONE

Color: With burning length and heat intensity, bone gradually changes from dark brown to black to blue to gray, and eventually white. Thus, burned bone can be any of these colors

Shape: Same as unburned bone; see above (Figure 2).

Figure 2. Burned Bone from Chill Hill, an Antelope Creek Phase Site

Key to I.D.: Same as unburned bone; see above.

Look-a-likes: Most often, burned bone, especially small fragments, will look like pieces of wood charcoal or small ceramic sherds. Charcoal is much softer and lighter in weight than comparably sized pieces of bone. Small sherds usually have different core and exterior colors, such as black or dark gray cores and brown or light gray exteriors. Also, sherds should be harder, weigh more, and often are thicker than bone. If in doubt, use the tongue test.

MUSSEL SHELL

Color: White or ivory, and gray when burned. Often iridescent and shiny.

Shape: Rarely are complete mussel shells, which are easy to identify, recovered from archaeological sites of the region. Instead, small, brittle fragments are most frequently recovered (Figure 3). As they deteriorate they often break into small, thin layers similar to mica. Larger fragments recovered are often rectangular, slightly curved, and retain the ivory colored smooth interior and the dull white or gray exterior which is marked by thin, arching parallel lines.

Figure 3. Unburned Mussel Shell Fragments from Barnard, an Early Ceramic Period Site

Key to I.D.: Color, iridescence, and its tendency to break apart in sheets.

Look-a-likes: Mussel shell can be somewhat similar to tooth enamel, but the latter is usually tan or cream colored and is not iridescent.

DESCRIPTION OF CHIPPED STONE RAW MATERIALS OF THE REGION

Alibates Silicified Dolomite: This raw material can vary considerably in color, but the most common varieties have a mottled combination of two or more of the following colors: maroon, red, pink, tan, white, gray, and brown (Figure 4). In some instances, however, small, thin flakes may be almost entirely white, cream, or gray brown with little or no mottling. The gray brown varieties are frequently translucent; otherwise, most varieties of Alibates are opaque. When Alibates is subjected to burning the original colors usually become duller or slightly grayer (e.g., almost dirty looking). With more intense heating this material can turn black, gray or chalk white and are often marked by potlids, crazing, and at times, white or gray banding (Figure 5).

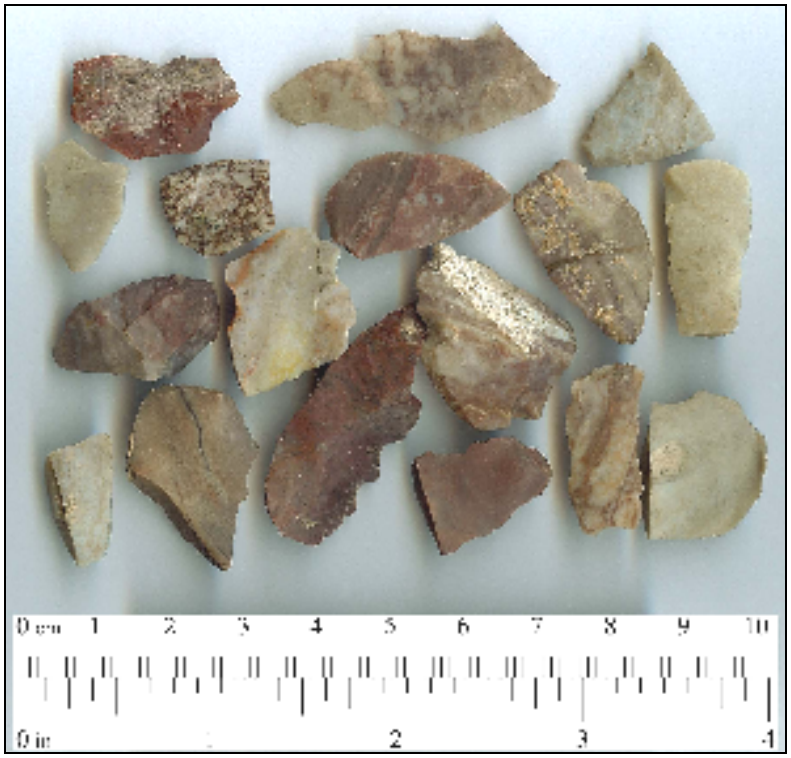

Figure 4. Examples of Unburned Alibates Silicified Dolomite

Alibates is the most commonly recovered chipped stone raw material recovered in the Texas and Oklahoma panhandles. This material typically comprises 50% to 60% or more of all chipped stone at most prehistoric sites in the region. Notably, the use of Alibates increases dramatically to 90% to 95% at Antelope Creek phase sites of the Canadian and Beaver River valleys during the Middle Ceramic period (A.D. 1250-1500).

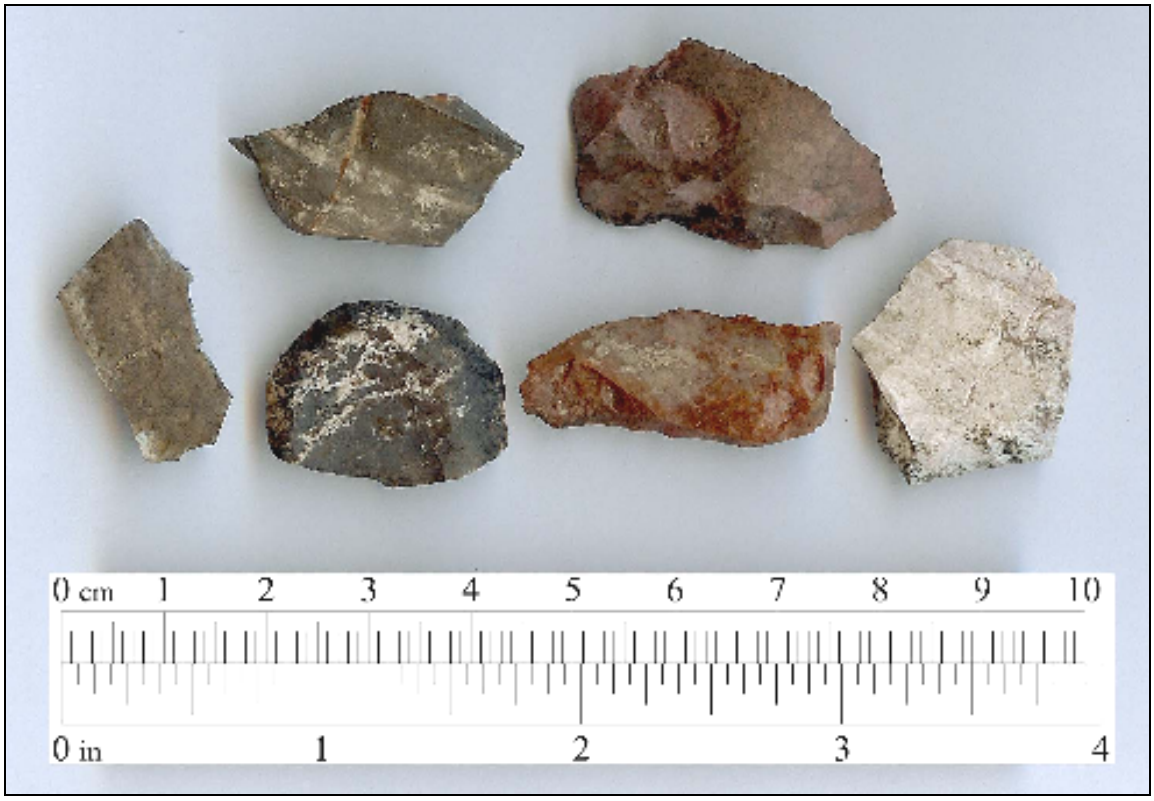

Figure 5. Examples of Burned Alibates Silicified Dolomite

Silicified Caliche (aka Opalite): This raw material is usually a very distinctive bright white color with a surface that is shiny and greasy in appearance (Figure 6). Depending on the quality of individual pieces, there may or may not be small quartz inclusions or voids present. With time silicified caliche becomes dehydrated making it lighter in weight, brittle, and chalk-like in color. For reasons that remain unclear, while this material commonly occurs on sites in the form of flakes, shatter, and small, core-like nodules, it is rarely found as finished tools, such as projectile points, scrapers, bifaces or drills.

Figure 6. Examples of Silicified Caliche

Ogallala and Dakota Quartzites: Colors of locally available examples of knappable quality metaquartzites and orthoquartzites vary considerably. The most common colors include light to dark gray, tan, white, pink, maroon, and golden (Figure 7). Fine-grained quartz inclusions visible on interior surfaces create a sparkly appearance. Local collectors often refer to this material as "Sugar Rock". The cortex on these materials can include stream rolled and bedrock varieties. Behind Alibates, local quartzites are often the second most common type of chipped stone raw material at Archaic and Early Ceramic period sites. After A.D. 1250 the use of quartzite decreases dramatically.

Figure 7. Examples of Ogallala and Dakota Quartzites

Smoky Hill Jasper (a.k.a. Niobrara): In the region this nonlocal material is most commonly a dull mustard yellow, caramel brown or a chalky or creamy white color. Frequently, Smoky Hill jasper is banded with a combination of white and mustard yellow or mustard yellow and caramel brown (Figure 8). Bedrock cortex is at times retained on specimens and is chalky and white in color. This raw material is relatively rare prior to A.D. 1250, but increases after this date at Odessa phase sites in the northeastern Texas panhandle, across the eastern third of the Oklahoma panhandle, and into Kansas.

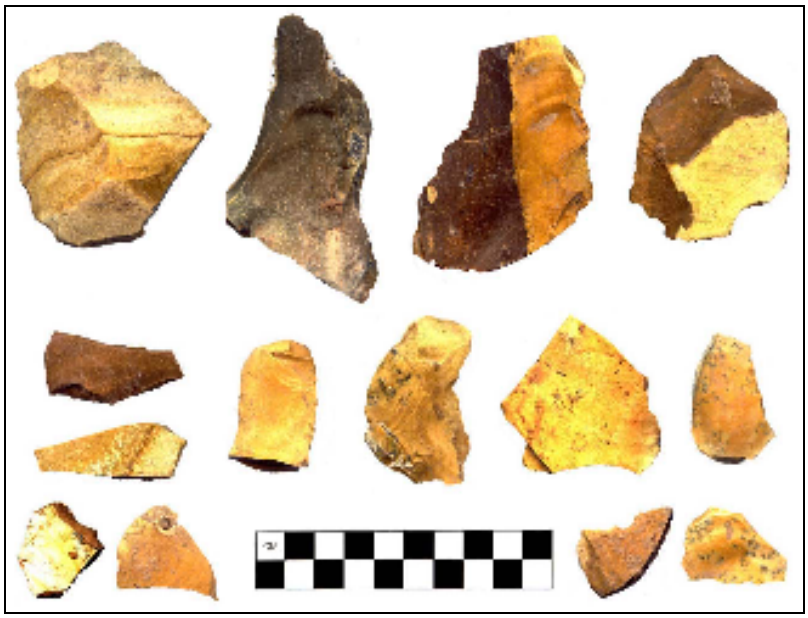

Figure 8. Examples of Smoky Hill Jasper

Gray Permian Cherts: This nonlocal material is usually identified by its distinctively mottled light gray to dark gray appearance. Macroscopically, small white inclusions are visible; these are actually small fossils. Gray Permian cherts are fine-grained and look and feel glossy or greasy. At first glance this material may appear similar to a burned variety of a blue-gray Alibates. This material occurs rarely at most sites of the region, although it is frequently recovered at Odessa phase sites in Lipscomb County, Texas and southeastern Beaver County, Oklahoma.

Obsidian: Perhaps the easiest raw material to identify in the area, obsidian is a black, glassy raw material (Figure 9). Obsidian commonly traded into the area may be either translucent or opaque, but is always very glassy in appearance. Cortex, when present, is

usually chalky (i.e., characteristic of bedrock sources), but some examples with stream rolled cortex (i.e., characteristic of secondary sources) are also known to occur. While inclusions are not particularly common, when present can be almost chalk-like or have the appearance of small, white snowflakes. In some cases, white to gray banding is present. Sourcing studies indicate that most of the obsidian present in the area was obtained from two sources in the Jemez Mountains of New Mexico (i.e., Cerro Toledo and Valle Grande), however, other examples obtained from Wyoming and Idaho have also been documented (i.e., Obsidian Cliff and Fish Creek, Wy. and Malad, Id.). Obsidian is most commonly recovered at sites post-dating A.D. 1250, but smaller quantities have been documented from Late Archaic and Early Ceramic period contexts.

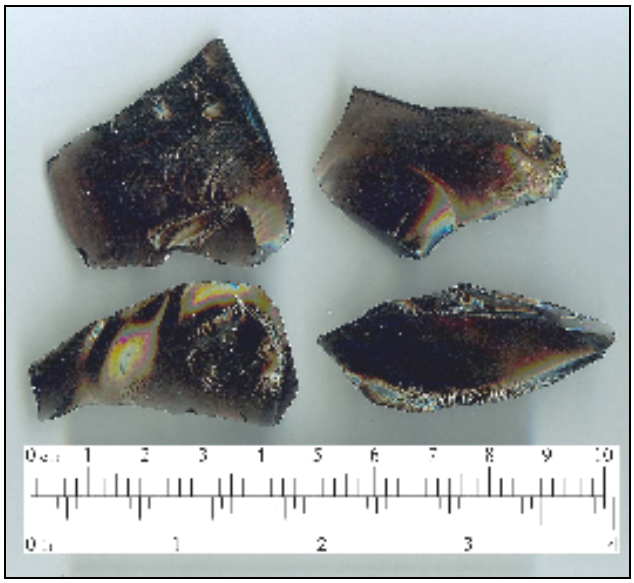

Figure 9. Examples of Obsidian Flakes

DEBITAGE

Color: See above for raw materials commonly recovered in the region.

Shape: Debitage, also known as flakes, may be of any size or shape depending on the method used for removal from the core (i.e., hard or soft hammer percussion or pressure flaking). Nonetheless, flakes are most often much thinner than they are wide or long. Unmodified flakes are characterized by ventral surfaces (i.e., the interior surfaces) that are smooth and exhibit no flake scars. Dorsal surfaces (i.e., the exterior surfaces) are

marked by two or more flake scars. Flake edges are often feathered to form sharp margins capable of cutting flesh. Complete flakes are characterized by the presence of a platform on the proximal end. A platform is the surface area that received the force used to detach the flake from the core (i.e., hard or soft hammer percussion or pressure flaking). Depending on the raw material, ventral surfaces may be marked by semicircular rings of percussion that emanate from the platform (see Figure 10).

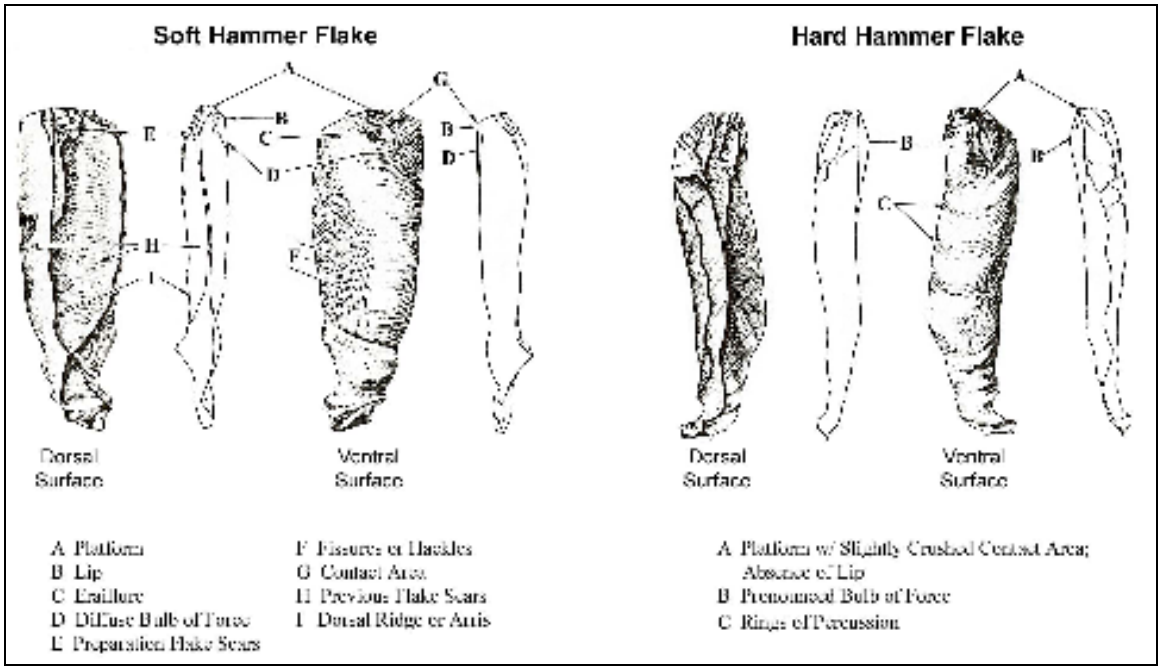

Figure 10. Morphological Attributes of Flakes (adapted from Crabtree 1972:44)

Key to I.D.: Morphologically, flakes do not look like many other artifacts. Look for flat pieces of fine-grained stone with sharp lateral and distal margins. Ventral surfaces will be smooth and dorsal surfaces will be marked by previous flake scars. These flake scars have low to pronounced ridges or arrises along their lateral margins.

Look-a-likes: Unmodified flat rocks will generally have rounded edges and will not have any of the attributes mentioned above (i.e., platforms and flake scars on dorsal surfaces). At times some tooth enamel may look like flakes, but will also lack sharp edges and the morphological attributes mentioned above.

PROJECTILE POINT

Color: See above for raw materials commonly recovered in the region.

Shape: Arrow and dart points of the region usually have triangular blades and may have side, corner, or basal notches (see Figure 11 for guide to projectile point morphology). Fresno arrowpoints, which are typical of the Middle and Late Ceramic Periods (A.D. 1250-1700) are triangular, but lack notches of any kind. See *Projectile Point Identification Guide* for additional help in identifying projectile points of the region.

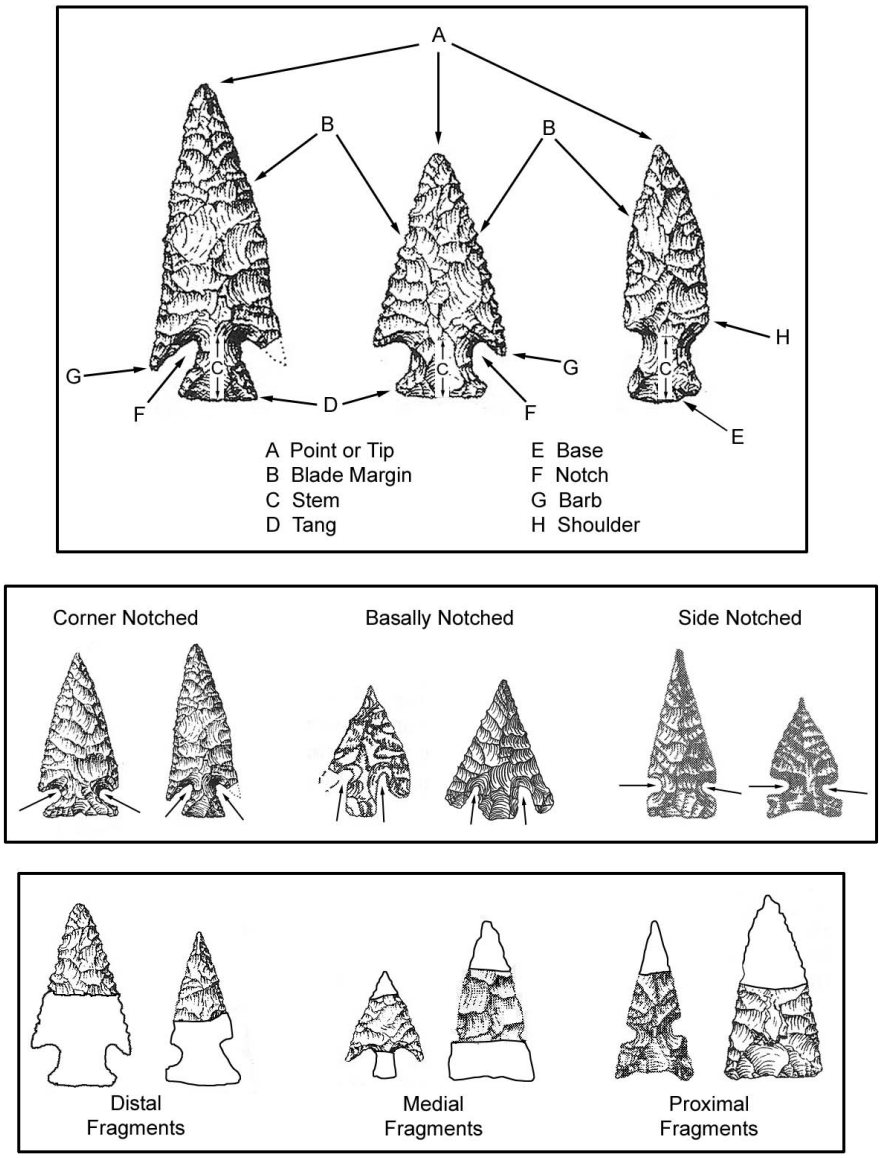

Figure 11. Guide to Projectile Point Morphology (adapted from Oklahoma Anthropological Society 2007)

Key to I.D.: Complete arrow and dart points are generally very easy to identify. They are usually bifacially flaked, have well-defined notches and pointed distal tips, and exhibit fine pressure flaking along all of the margins. Distal, medial, and proximal fragments are often not as easy to identify and may appear similar to flakes. Nonetheless, look for evidence of bifacial flaking, notches, barbs, and fine pressure flaking along the margins.

Look-a-likes: Using the criteria mentioned above, most projectile points should be fairly easy to identify from other chipped stone tools and artifacts. However, arrow or dart point preforms can at times be difficult to differentiate from finished products. As a rule, preforms will be unnotched and usually lack fine pressure flaking along the lateral and basal margins.

CHIPPED STONE TOOL: SCRAPER

Color: See above for raw materials commonly recovered in the region.

Shape: On the Great Plains, scrapers are differentiated from other chipped stone tools by the presence of a distinct distal margin that is convex in shape and has an edge angle that is usually between 65° and 85°. With resharpening the distinctive distal margin becomes less convex (i.e., straighter) and the edge angle becomes more obtuse, often exceeding 90° at the time of discard. Scrapers are usually produced on morphologically distinct flakes that are fairly thick (i.e., 5-10 mm) and have a slight curvature (Figure 12). These flakes require little modification, primarily along the lateral margins to facilitate hafting. Through use and resharpening scrapers become a distinctively shaped unifacial tool.

Key to I.D.: Look for a unifacial tool with a distinctively beveled distal margin that is convex in shape.

Look-a-likes: Because of the distinctive shape and beveled distal margin complete scrapers are difficult to confuse with other chipped stone tools. With this said, fragments, which for unknown reasons are almost always distal portions, can be more difficult to identify. Nonetheless, since distal fragments are most common, look for thick flakes that are worked unifacially and have a convex shaped margin with an edge angle between 65° and 85°.

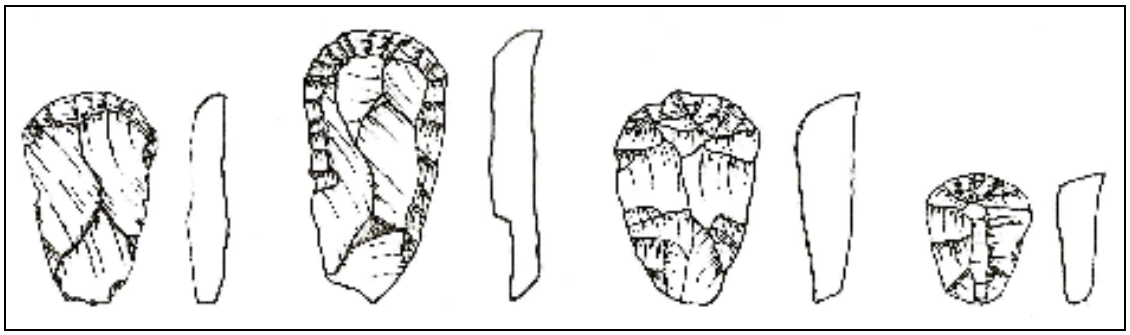

Figure 12. Middle Ceramic Period Distal Endscrapers (Doug McGarraugh Collection)

CHIPPED STONE TOOL: ALTERNATELY BEVELED HARAHEY KNIFE

Color: See above for raw materials commonly recovered in the region.

Shape: These knives begin their use lives as large, ovate shaped thin bifaces that often have width to thickness ratios equal or greater than 10:1 (Figure13). These bifaces are resharpened using a distinctive method called "Alternate Beveling". In this method flakes are removed sequentially by pressure flaking along the upper half of a single lateral margin. Importantly, these flakes are all removed from the same surface. When this edge has been resharpened the biface is flipped horizontally and another series of pressure flakes are removed in the same manner from the opposite upper lateral margin. With successive resharpening episodes the outline of the upper half of the biface gradually became pointed in outline and the lateral margins are characterized by distinctly beveled edges with angles of approximately 50°. Eventually, the lateral margins along the upper half of the biface became too narrow and steeply beveled and could no longer be resharpened to produce a sharp working edge (i.e., it became exhausted).

Some Harahey knives recovered in the region have only been resharpened on the upper half of the biface, while the lower half retains its ovate shape. These examples suggest that the lower half of some bifaces were covered, perhaps with a haft of rawhide strips, and were not readily resharpened unless the haft was removed. Although some knives were discarded at this time, in most cases the hafting material was removed from the lower half of the biface and rewrapped around the upper, exhausted half of the biface. Then, the lower half was used and resharpened in the manner described above. Through further use and resharpening episodes this half of the biface also became exhausted.

When discarded these bifaces typically have a diamond or lanceolate shaped outline (Figure 14).

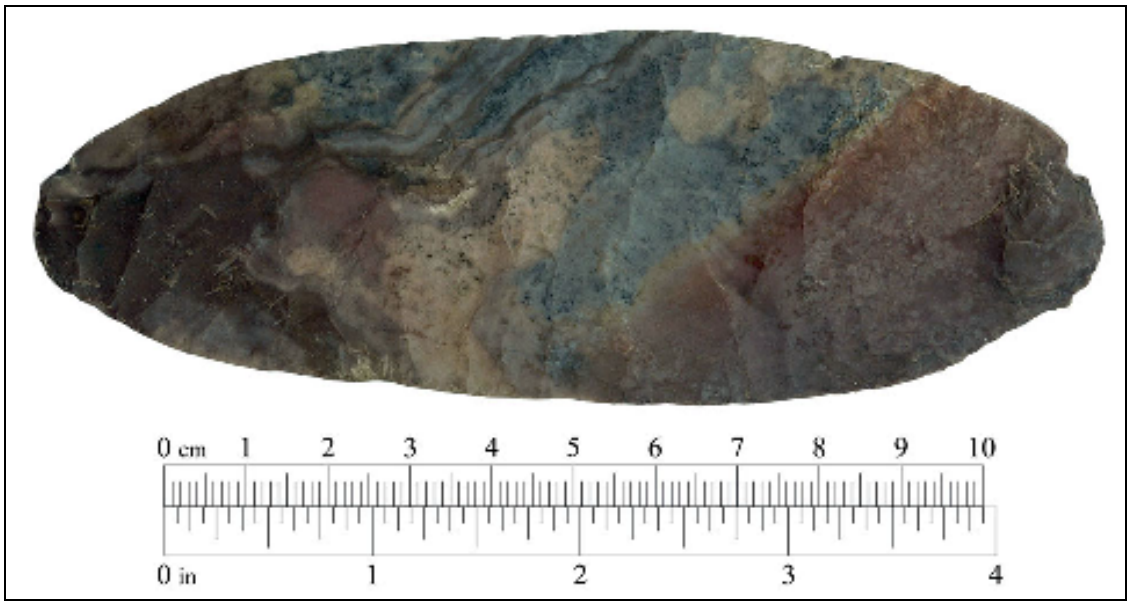

Figure 13. Large Ovate Knife from the Chill Hill Site

Key to I.D.: Through time the use of alternate beveling to resharpen the edges of these specialized bison processing knives creates a distinctive diamond or lanceolate shaped outline. This method of resharpening also creates a biface with a diamond-shaped cross-section. Typically, beveled knives are used as thoroughly as possible. In fact, even when exhausted as a knife they may be reworked to form other tools, most commonly drills. When discarded beveled knives may be quite narrow, almost cigar-shaped, and are readily identified. Fragments, either proximal, distal, or medial portions, can readily be identified in that they are bifacially flaked, have alternately beveled lateral margins, and are usually very uniform in thickness from one lateral margin to the other.

Look-a-likes: At times, other bifaces or biface fragments may at first look like beveled knives. However, by definition a beveled knife must retain alternately beveled blade margins. If these are lacking the artifact must be cataloged as a biface rather than a beveled knife.

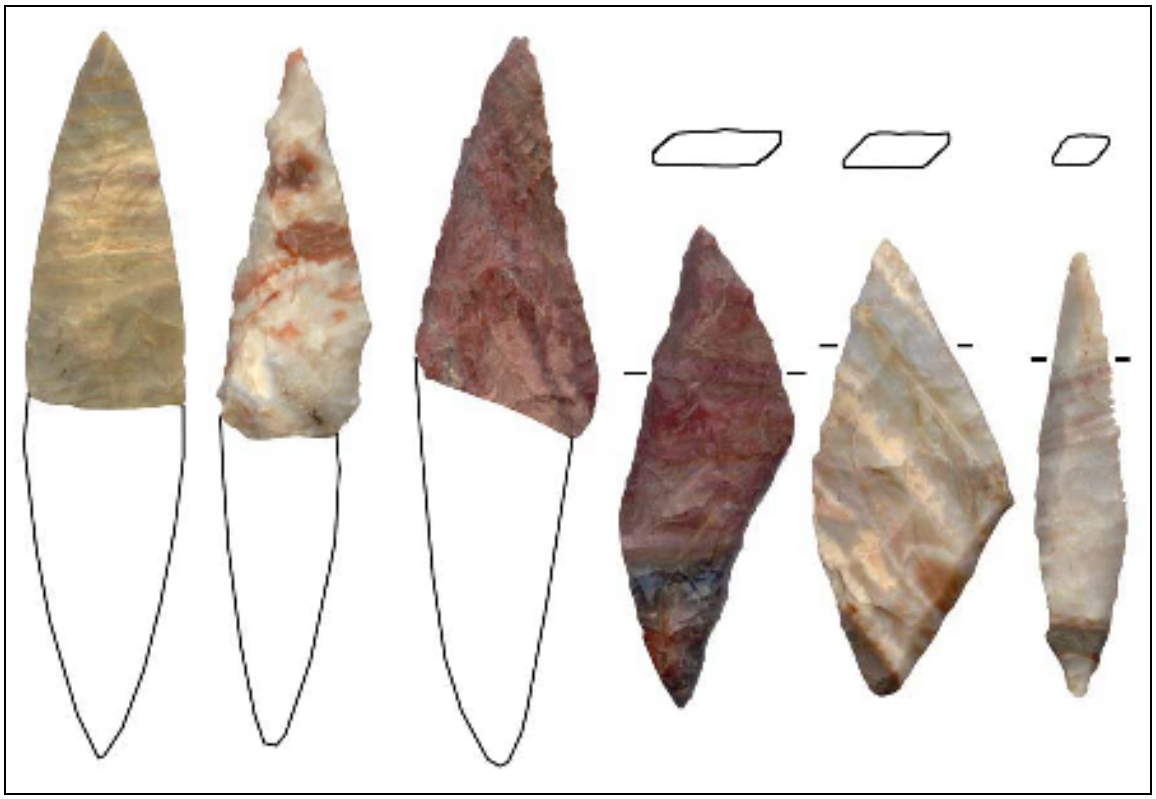

Figure 14. Alternately Beveled Harahey Knives

CHIPPED STONE TOOL: DRILL

Color: See above for raw materials commonly recovered in the region.

Shape: Typically drills of the region are usually produced on flakes, although dart points were also frequently reworked into these tools during the Archaic period. Overall, the size of prehistoric drills can vary greatly suggesting that, just as today, different sized drill bits were needed for different activities. Obviously, the length and thickness of the desired working bit would have dictated the overall size and thickness of the flakes selected to produce a drill. Generally, the range of drill bit sizes varies between 3 mm wide by 20 mm long to 10 mm wide by 50 mm long. The pointed drill bit portion of the tool was formed by bifacial flaking, although some smaller bits were often produced by unifacial flaking (Figure 15).

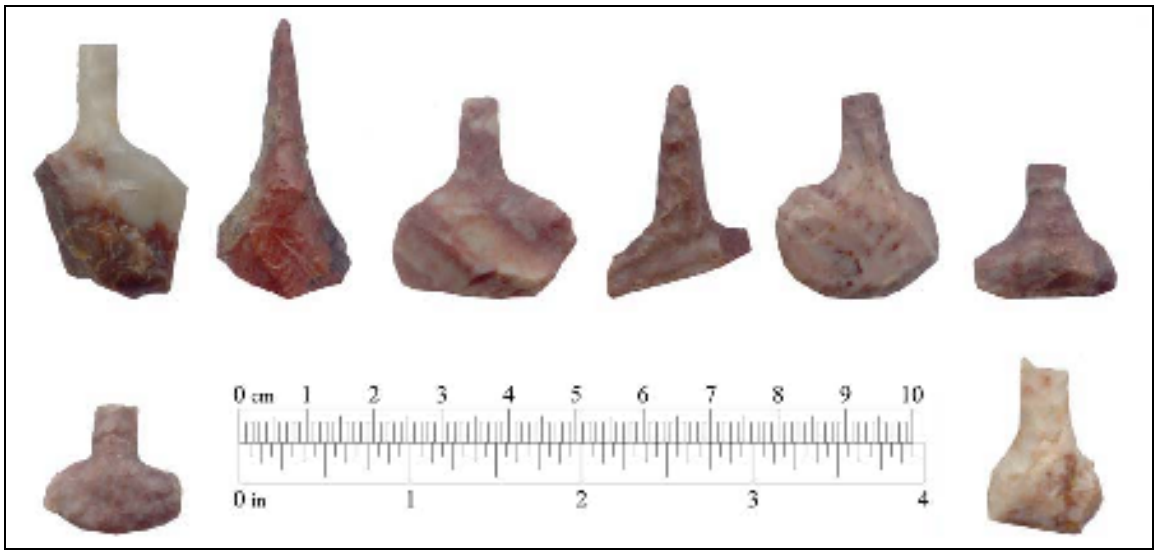

Figure 15. Drills Produced from Alibates Silicified Dolomite

Key to I.D.: Look for flakes or reworked bifaces with long, narrow, parallel sided projections that are worked bifacially. Be aware that these long projections were easily broken and complete drills are rarely recovered. As such, be on the lookout for flakes and bifaces with only small portion of the projection remaining. From an end view the remaining projection should be round, oval, or lenticular in cross-section.

Look-a-likes: Generally, complete or partial drills are very distinctive and easy to identify. Broken drills, with the working portion of the tool missing, can be more difficult to recognize. Use the description provided above to differentiate these items from other chipped stone tools. Drills should not be confused with gravers. The latter are simply flakes with short, 5 mm to 10 mm long pointed or beaked projections. These projections can be natural or produced by limited unifacial flaking. Since gravers appear to be expedient tools produced on flakes, they should be cataloged with debitage, which includes unmodified, modified, and utilized flakes.

CHIPPED STONE TOOL: BIFACE

Color: See above for raw materials commonly recovered in the region.

Shape: This class of artifacts is highly variable and refers to bifacially flaked chipped stone artifacts that cannot be classified as a projectile point, preform, beveled knife, drill,

or core. In other words, bifaces represent a "catch-all" category for items that do not fit into any other class of chipped stone objects as defined in our cataloging system.

Key to I.D.: These are items that are bifacially flaked and do not fit into any of our other formally defined chipped stone tool categories. As a rule of thumb for differentiating from unifaces and modified flakes, be sure that the artifact in question has flake scars on both the ventral and dorsal surfaces.

Look-a-likes: See above.

CORE

Color: See above for raw materials commonly recovered in the region.

Shape: By definition, cores include any mass of isotropic material bearing evidence of flake removal. Cores of the region vary widely from amorphous, blocky forms to thick bifaces with width to thickness ratios of approximately 3/1. In other words, cores of the region generally can take almost any shape, size, or thickness. With this being said, cores produced at Antelope Creek phase sites near the Alibates quarries at Lake Meredith were frequently large bifacial forms. These cores do not appear to have been traded, but were transported back to nearby villages for further reduction. The sizes of these items were often 30 cm to 40 cm in length and 15 cm to 20 cm in width. Downstream from the Alibates quarries small nodules of Alibates can be obtained from gravel beds on high terraces immediately adjacent to the Canadian River floodplain. These nodules are rarely larger than about 8 cm or 10 cm in diameter and are marked by well-rounded, stream rolled cortical surfaces (Figure 16). Nodules from these secondary sources are easily differentiated from materials obtained from bedrock sources that have rough, caliche-like exteriors that are stained reddish orange.

Key to I.D.: Technically, cores are identified as any mass of isotropic material bearing evidence of flake removal. Items that fit this description and that do not fit into any of our other chipped stone categories should be classified as cores. While some cores of the region may represent thick, crude bifaces, most commonly they are blocky and amorphous in form.

Look-a-likes: Often some cores are difficult to differentiate from crude, early stage bifaces. In contrast to the latter items, cores usually are much cruder in appearance and

have much lower width to thickness ratios. Nodules of silicified caliche bearing evidence of flake removal are common at sites of the middle Canadian River valley. However, since few formal tools are produced from this material, it is possible that these objects were formed by natural processes rather than deliberate human activity.

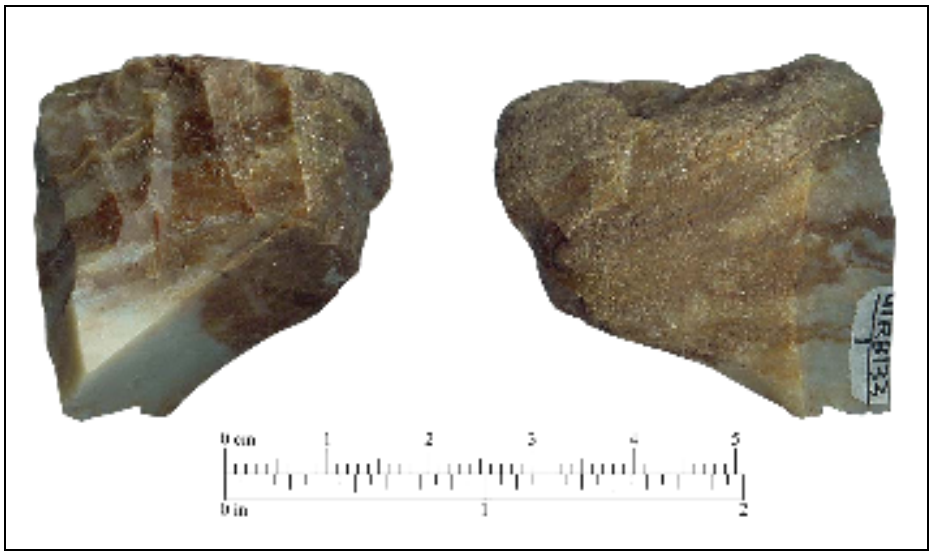

Figure 16. Alibates Core with Stream Rolled Cortex

FIRE CRACKED QUARTZITE (i.e., BOILING STONES)

Color: Exterior colors are variable, but include varieties that are gray, pinkish red, orange, black, and maroon. Interiors are usually gray, white, pink in color with abundant coarse, quartz crystals. These crystals, along with the frequent presence of mica flecks, present interiors with a "sparkly" appearance.

Shape: Originally these items were ovate to irregularly shaped pebbles with water worn exterior surfaces. With repeated heating and cooling events these pebbles fractured forming angular pieces of rock (Figure 17). Generally, one or more surfaces retain the water worn exterior. Also included in this category are small, dome-shaped pieces of quartzite that spalled off during the heating and cooling process.

Key to I.D.: Look for pieces of angular pieces of quartzite with smooth, water worn exteriors and coarse crystalline interiors that sparkle.

Look-a-likes: Flakes of knappable varieties of quartzite are present in prehistoric sites of the region, particularly sites predating A.D. 1250. Differentiating quartzite flakes from

fire cracked specimens is fairly straightforward. As noted earlier, debitage will have distinct morphological characteristics not present on fire cracked rock (i.e., platforms, bulbs of percussion, and sharp lateral margins). Also, in terms of raw material, fire cracked quartzite is usually too coarse grained for knapping, while debitage is produced from fine grained varieties. Some finer grained varieties of quartzite may be similar in appearance to sandstone. The latter is easy to differentiate from quartzite in that it is usually quite friable and lacks quartz crystals that are visible to the naked eye. In general, burned limestone, siltstone, and sandstone are much softer and less angular in appearance than quartzite and often do not have durable, water worn exterior surfaces.

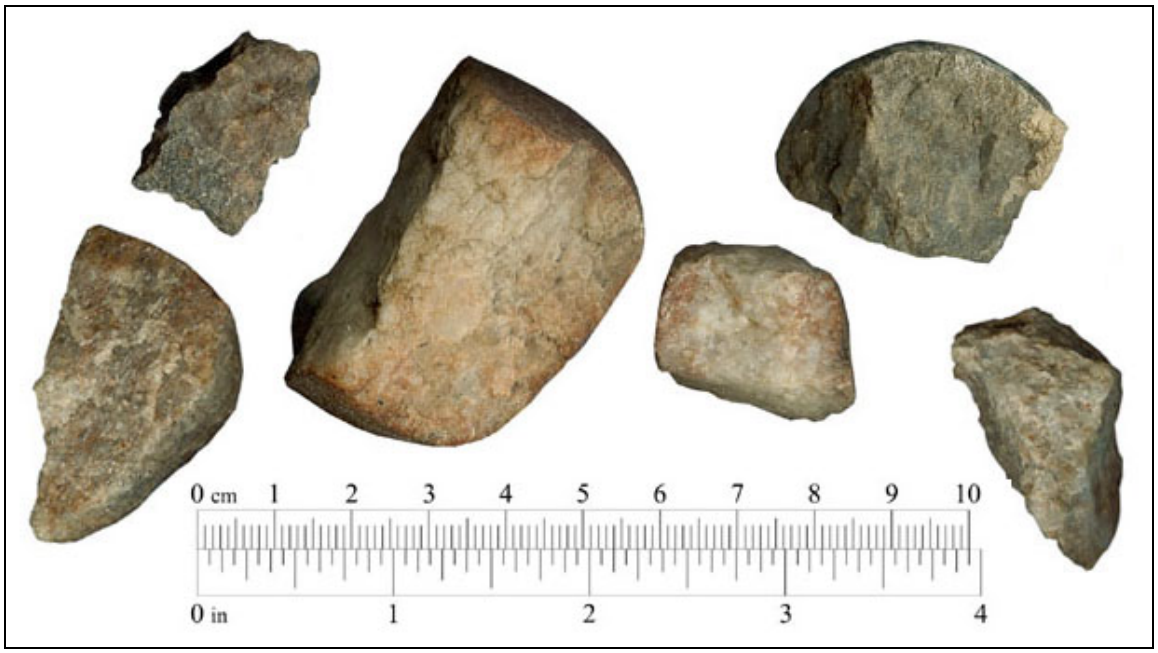

Figure 17. Examples of Fire Cracked Quartzite

BURNED ROCK

Color: This category includes all Burned Rock other than Fire Cracked Quartzite. In this portion of the Southern Plains burned caliche nodules are most common, but sandstone, siltstone, and limestone may also be encountered (Figure 18). Unburned caliche is usually a bright white to tan colored material. With burning this material becomes a very uniform gray color (e.g., Munsell: 10YR6/1). In some cases, small white to tan inclusions may be present.

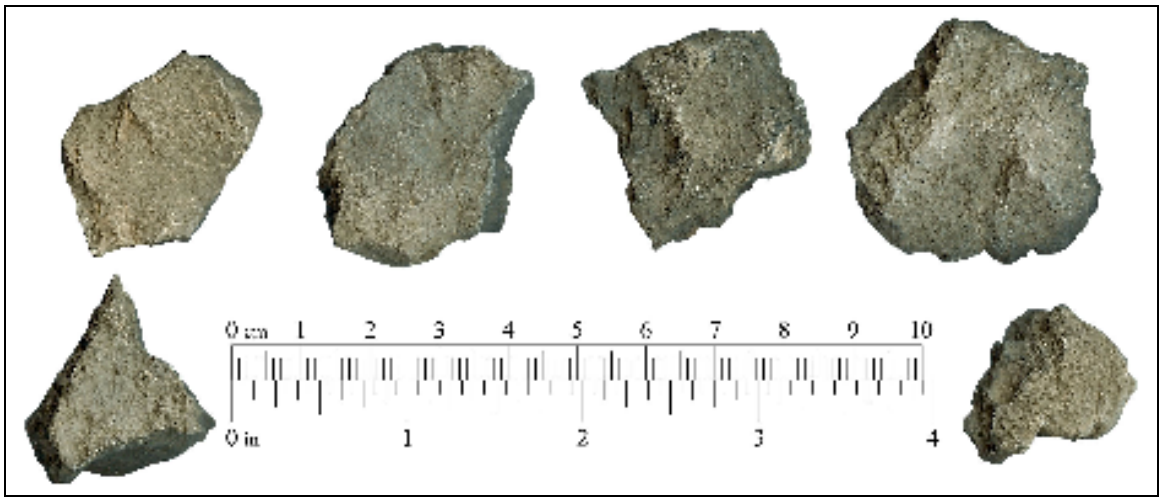

Figure 18. Examples of Burned Caliche

Shape: Highly variable, although most pieces are roughly angular with partially rounded edges and surfaces.

Key to I.D.: Look for rocks with a uniform gray color that are roughly angular with partially rounded edges and surfaces.

Look-a-likes: Caliche is much finer grained than sandstone and quartzite and unlike the latter does not have a "sparkly" crystalline interior. Also, burned caliche will not exhibit water worn exterior surfaces.

OTHER ROCK

Color: Highly variable.

Shape: Highly variable.

Key to I.D.: This class of artifacts refers to a number of different types of rocks and minerals that do not naturally occur on the site, but have not been modified by shaping, burning, battering, or grinding. Generally, these objects represent various types of raw materials that were transported to the site, but for whatever reason were not modified into finished items. Examples include unmodified turquoise, microline, various types of isotropic material, greenstone, and siltstones and argillites commonly used for pipe production. Discard unmodified rocks and pebbles that occur naturally in the immediate site area; they should not be collected. If you are unsure whether you should discard an item, consult your laboratory supervisor.

Look-a-likes: This category applies to nonlocal stones that were clearly transported to the site by people, but yet were not modified. Use this classification only when it is not more appropriate to place the item in another defined artifact category (i.e., pipe, ornament, groundstone, etc.).

CHARCOAL

Color: Black to dark brown, although some items may be somewhat obscured if covered with sediment.

Shape: Generally, charcoal fragments are roughly square to rectangular with slightly rounded edges. Charcoal can vary in size to small flecks to larger pieces of burned wood and twigs (Figure 19). Average size can range from 4 mm to 6 cm in diameter. Other burned plant remains, such as sunflower seeds, plum pits, squash stems, and corn cobs and kernels, should cataloged as **Organics**.

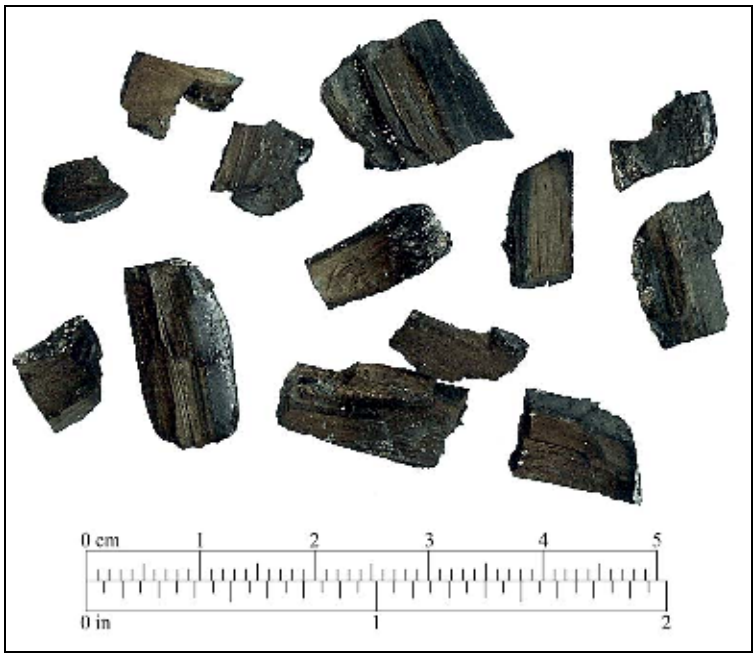

Figure 19. Close-Up View of Charcoal Fragments

Key to I.D.: Charcoal is very light in weight and will smear between fingers. Be sure to verify that the item you have is burned. Some modern seeds and other materials may be

black and appear burned, but are not. Do not collect modern seeds. If you are unsure whether you should discard an item, consult your laboratory supervisor.

Look-a-likes: Sometimes burned bone and small ceramics will at first glance look like charcoal. Generally, however, these items will not be entirely black in color like charcoal, but after closer inspection will be slightly mottled with tan or brown coloring. These and other items, such as small pieces of burned rock, may be similar in appearance to charcoal, but these materials are much heavier and harder than charcoal. Once again, some modern seeds and other materials may be black and appear burned, but really are not. Verify that the item you have is actually burned; charcoal will smear.

GROUNDSTONE: MANO

Color: Highly variable, but generally tan, brown, gray to orange. Raw materials utilized usually consist of quartzite, caliche, and sandstone. Generally speaking, materials used for manos are not too friable that they readily fall apart (e.g., the types of sandstone used for abraders).

Shape: Usually ovate to circular in outline. Manos of the region are almost always fist-sized or larger and will be characterized by one, and possibly, two flat surfaces that have been modified by grinding (Figure 20).

Key to I.D.: Identification of one or more flat or slightly convex surfaces that are clearly much smoother than other unmodified surfaces.

Look-a-likes: Unmodified pebbles and cobbles of quartzite, caliche, and sandstone are often confused with manos. One should look for the presence of surfaces modified by grinding. Some hammerstones can be confused with manos, but damage present on these items occurs on edges rather than flat surfaces and is limited to battering. In some cases manos may also show limited evidence for battering on their edges. These items should be cataloged as Manos and the battered edges noted under comments.

Figure 20. Archaic Period Manos (Doug McGarraugh Collection)

GROUNDSTONE: METATES

Color: Tan, brown, gray to orange. Raw materials used for metates usually consist of hard caliche or sandstone.

Shape: Metates are often oval, circular to rectangular or square with rounded corners. Metates used by foraging societies of the region are usually quite small and portable (i.e., 20 cm wide by 30 cm long to 40 cm wide by 60 cm long) and thin (i.e., 30 cm to 60 cm). The basin shaped depressions of these metates are quite shallow (i.e., 0.5 cm to 3 cm). Metates used by horticulturalists during the Middle Ceramic period are usually twice as large in size and two to three times thicker (Figure 21). The basins on these latter items are often 8 cm to 12 cm deep.

Key to I.D.: Metates used by horticulturalists are very easy to identify. Those used by foragers at first glance may appear to be nothing but flat pieces of caliche or sandstone. To be identified as a metate or metate fragment an item must display a basin-shaped surface that exhibits deliberate smoothing. Metates will be characterized by shallow to deep basins that are oval to circular in shape and cover 80% or more of a surface. The

surfaces of these basins will be much smoother compared to those surfaces that have not been worked.

Figure 21. Metate Fragment from the Buried City Locality

Look-a-likes: About the only items that will be similar to metates or metate fragments are unmodified, flat pieces of caliche or sandstone. The key to differentiating these objects from metates or metate fragments is to look for the presence of smooth, basin-shaped depressions.

GROUNDSTONE: ABRADERS

Color: Yellow, brown, maroon, tan or rust. Abraders of the region are produced from friable, coarse to medium grained sandstone.

Shape: Variable, but usually rectangular to square with rounded edges. Abraders are marked by long, narrow, semicircular grooves (Figure 22). These grooves are usually average about 1 cm in width, although slightly narrower and wider varieties are sometimes encountered. Oftentimes, these items are referred to as "arrow shaft smoothers", however, they were more likely used as implements for manufacturing and resharpening various bone tools, such as awls and needles.

Figure 22. Caliche and Sandstone Abraders from the Buried City Locality

Key to I.D.: These items are made almost exclusively from coarse to medium grained sandstone and are characterized by symmetrical, semicircular grooves.

Look-a-likes: Narrow grooves similar to those described above sometimes naturally occur on pieces of stone. Also, damage caused during excavation can leave shallow scratches to deeper grooves on native stone. To differentiate these items from actual abraders use the attributes noted above.

HAMMERSTONE

Color: Highly variable. These items will generally be produced on quartzite pebbles, although some rare examples may be made of hard caliche nodules (Figure 23).

Shape: Hammerstones are usually ovate to circular in shape and have well-rounded edges. Generally, these items are approximately fist-sized, although some smaller and slightly larger examples at times are recovered. These items are usually thought to be associated with flintknapping activities; however, on the plains they are just as frequently used for breaking open bison bone for marrow and grease extraction.

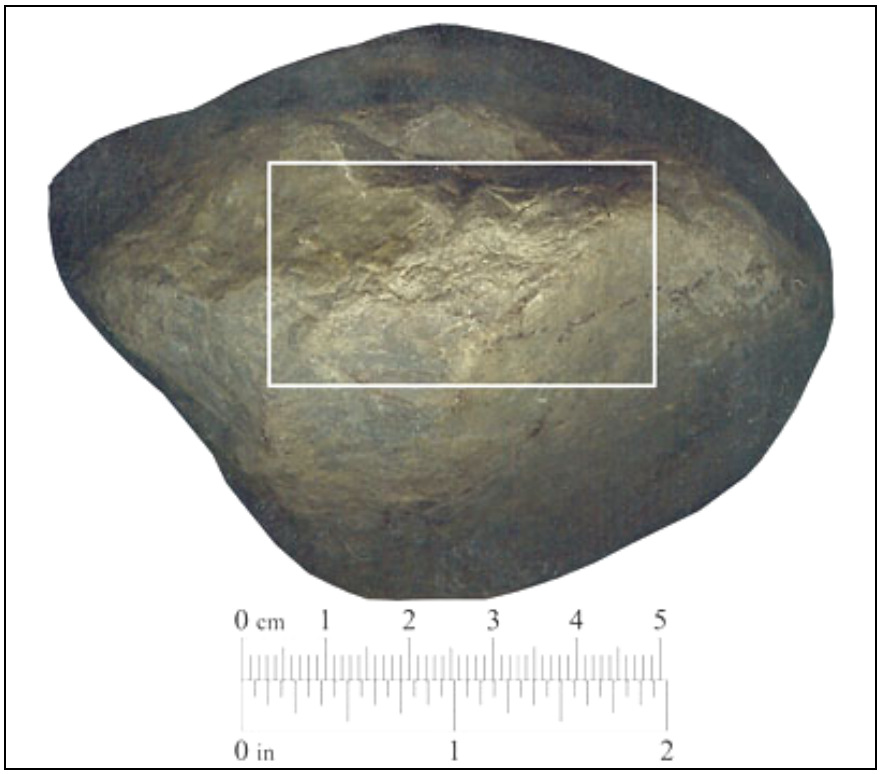

Figure 23. Close-Up View of Battering Damage on Quartzite Hammerstone

Key to I.D.: These fist-sized pebbles, nodules, and cobbles are differentiated from unmodified stone and rock by the presence of battering damage on rounded edges. Stone lacking this type of damage or any other forms of modification, such as burning, flaking or abrasion should be discarded in the field.

Look-a-likes: The only real items that look like hammerstones are unmodified rocks and pebbles. Use the above characteristics differentiate these items from hammerstones.

CERAMICS

Color: Exteriors and interiors are usually shades of gray, black, brown, and pinkish tan, but orange-brown colored varieties also occur (Figure 24). Cores are typically tan, dark gray to black.

Figure 24. Middle Ceramic Period Cordmarked and Smooth Surfaced Ceramics

Shape: Vessel exterior surfaces vary from unmodified cordmarking to partially smoothed cordmarking to completely smooth surfaces. Interiors are usually well smoothed, but can also be lightly brushed with grass. Vessel body and rim diameters range from 15 cm to 30 cm in diameter and 12 cm to 25 cm in diameter, respectively. Rim and body sherds can also be used to estimate orifice and body diameter using graduated circles. Wall thickness can vary considerably within a single vessel, but generally range between 4 mm and 10 mm. Thinner and thicker examples also occur, but more rarely. Tempering agents are most commonly sand, but can include crushed scoria, quartzite, and bone or a

mixture of these. Rims can be vertical, slightly inverted, to strongly flaring. Decorations, which vary widely depending on location, are usually confined to rims and necks, but some incised crosshatching can occur, albeit rarely, on vessel shoulders.

Key to I.D.: Larger specimens are relatively easy to identify by the use of colors and sherd thicknesses outlined above. Smaller fragments are most difficult to identify, but look for materials that have even thicknesses (i.e., flat interior and exterior surfaces) and interiors and exteriors that differ in color.

Look-a-likes: Some small pieces of charcoal and burned bone can visually resemble small sherds; however, both of these materials are much lighter in weight than sherds. Using a hand lens or microscope, the cross section of sherds will usually contain a mixture of clay and sand particles.

ORNAMENT

Color: Variable depending on ornament type. Some of the more common ornaments recovered in the region include *Olivella* shell beads, small marine shell disk beads, mussel shell "washer" shaped beads and pendants, bird bone beads, chipped stone "tear drop" pendants, conch shell gorgets, and turquoise and microline beads and pendants (Figure 25).

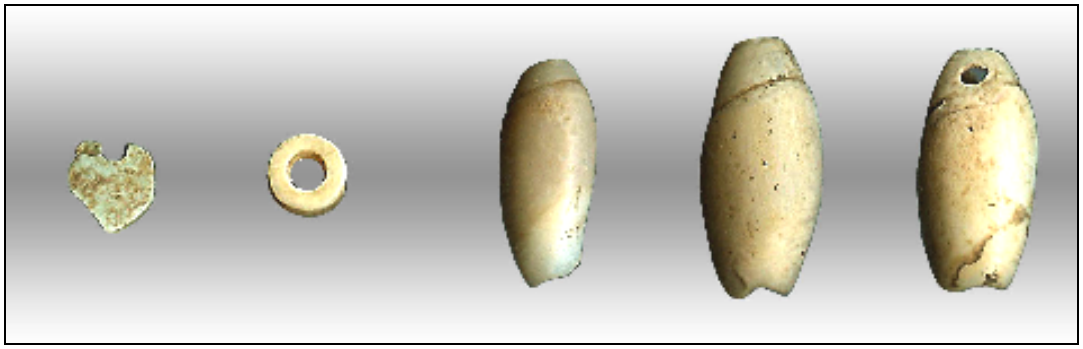

Figure 25. Microline Pendant Fragment, Marine Shell Disc Bead, and *Olivella* Shell Beads

Shape: Variable, see above.

Key to I.D.: Many of the most common ornaments will have holes drilled through them or have hafting elements that allow them to be suspended as an earring or on a necklace. Ornaments will often exhibit polishing from contact with clothing or skin.

Look-a-likes: Complete ornaments are generally quite obvious and easy to identify. Fragmentary examples, however, will often be broken or worn through where the hole has been drilled. Once again, ornaments can often be differentiated from other items by the presence of polish.

ORGANICS

Color: This category includes examples of burned organic materials, such as charred sunflower seeds, plum pits, squash stems, corn cobs and kernels, and *Pinyon* nuts. Although rarely preserved in the archaeological record of the region, other unusual items, such as reed matting or tanned hide should also be included in this category. Preserved organic materials are usually tan, brown, black or dark brown in color.

Shape: See above

Key to I.D.: These items will almost always be burned. If the item is not burned, it is likely a modern example that has entered the record by rodent activity or has fallen into the unit during excavation. If you are unsure whether or not the object is modern and should be discarded, consult your lab supervisor.

Look-a-likes: Oftentimes, small pieces of burned bone, rock, or sherds with dark interiors and brown exteriors can be similar in appearance to burned organics. However, these will be much harder and heavier.

PIPES

Color: Pipes typically recovered in the region are pink, red, orange or brown in color. These items are usually made of argillite or siltstone, although nonlocal examples can be made of clay.

Shape: Most examples are elbow shaped, but rarely, tubular or "Cloud Blower" forms have also been documented (Figure 26).

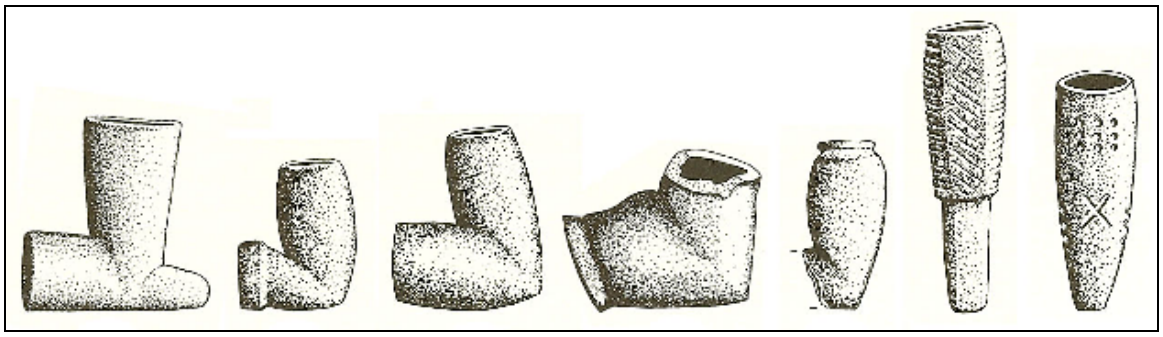

Figure 26. Elbow and "Cloud Blower" Pipes (adapted from Lintz 1991:Figure 6.2)

Key to I.D.: Complete pipes are readily identified, while smaller fragments are more difficult to recognize. These bowl and stem fragments will usually be curvilinear in cross-section and are well smoothed. The types of argillites and siltstones used to manufacture pipes are very distinctively colored and are useful in the identification of these items (Figure 27).

Figure 27. Pipe Fragments: Kansas Pipestone (top) and Various Materials (bottom)

Look-a-likes: Pipes are very distinctive, but when broken are sometimes reworked into small ornaments or gaming pieces.

MODIFIED BONE (i.e., BONE TOOLS)

Color: Tan, yellow to brown

Shape: Variable by tool type; see Figures 28, 29, and 30

Key to I.D.: Once again, complete tools usually easy to recognize. Fragments, depending on how well they are preserved, are characterized by polishing and well-rounded margins.

Figure 28. Bison Tibia Digging Stick

Figure 29. Split Deer Metapodial Awl

Look-a-likes: About the only other artifact that resembles modified bone tools is unmodified bone. The latter is generally not polished and can be distinguished under a microscope or hand lens. In some cases, it is possible for bones to become polished by

natural processes, but are otherwise unmodified. In these instances the item should be included with unmodified bone and the polish noted.

Figure 30. Bison Scapula Hoes (adapted from Lehmer 1971:Figure 99)

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