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Arbor Groves 41H002 Final Report

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Arbor Groves

41HO2

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July 1, 2020

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31

Arbor Groves (41HO2) Field Excavations 2016

Arbor Groves (41HO2) is located in southeast Texas between Kinnard and Crockett, Texas (Figures 1 and 2). The archaeological and historic parts of the site (537 acres) sit on what is now 1,425 acres of land that is owned by SFA's Real Estate Foundation and managed by SFA's Arthur Temple College of Forestry and Agriculture. "In 2000, STMicroelectronics, a global electronics and semiconductor manufacturer focused on reducing its carbon footprint, purchased 1,425 acres of unforested land in East Texas. In 2005, the company donated this property to the SFA Real Estate Foundation. In 2010, STMicroelectronics donated an additional 2,024 acres" (ATOCFA 2016: 20-21). SFA has managed the property since 2005.

The land ranges from lowlands to upland ridges filled with lush forest and fed by creeks and rivers. The largest nearby river is the Neches River. This area would have been ideal for humans to thrive because the land was fertile and had convenient water access.

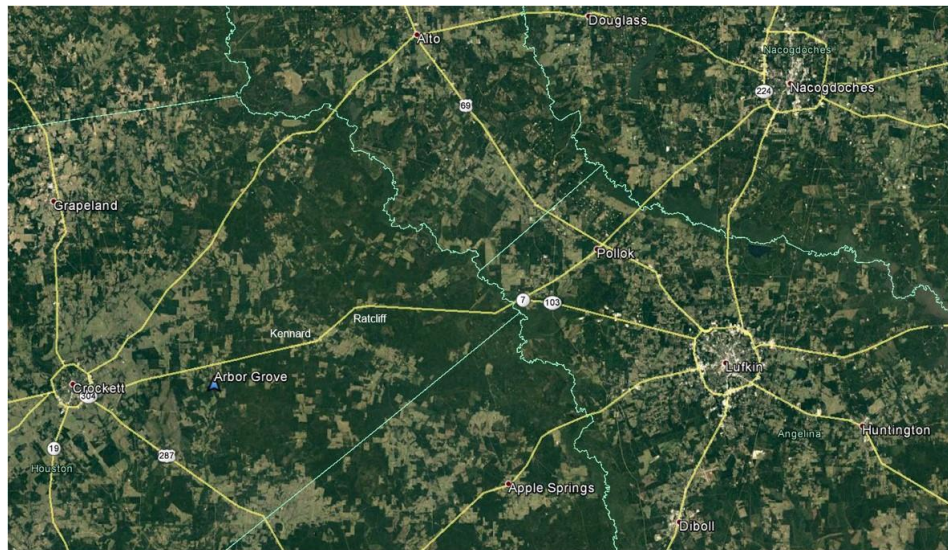


Figure 1: Google Earth map of the location of Arbor Groves.

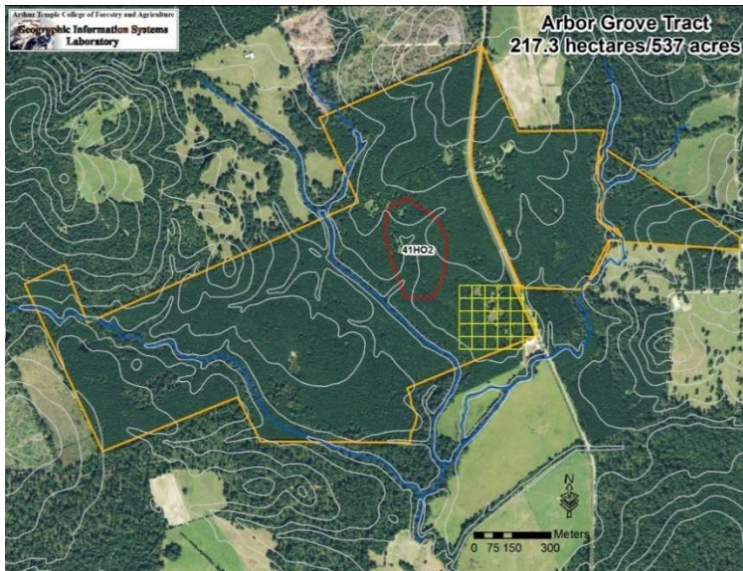


Figure 2: Yellow boundary lines indicate the boundaries of 41HO2.

This archaeological site dates back thousands of years, from as early as the Clovis period (projectile points obtained by Jeff Williams during shovel testing and from the private landowners on the other side of the fence) to the Historic period. The site excavated for this report dates from the late Archaic period (2000 BC-200 BC) to the Early Woodlands period (500 BC-AD 800).

Arbor Grove was brought to the attention of Jason Grogan, the SFA Arthur Temple College of Forestry and Agriculture property manager, who then told Jeff Williams about it. Looters and pothunters started to dig up the edges of the fence line (on their property) that safeguarded the property. Because of erosion, further action was needed on the SFA side to stop the erosion and conserve the site from complete destruction (Figure 3). Looters are usually after the more valuable artifacts, often leaving behind the broken artifacts and large holes (Figure 4).

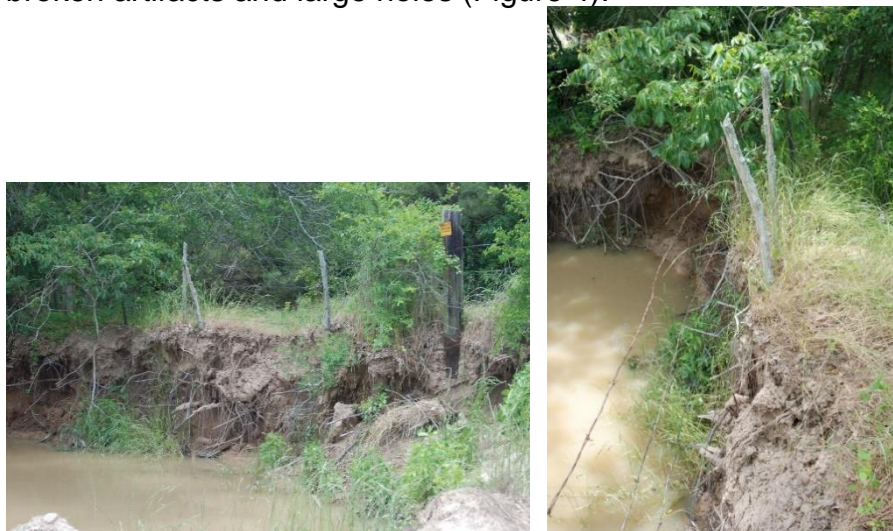


Figure 3: Erosion and looting activity area. The barbed wire indicates the property line between public property (to the left) and SFA property (to the right).



Figure 4: Points and pottery from looting activity Upper left point is a Clovis point.

Williams conducted six scientific, shovel tests along the utility pole line (Figure 5). He encountered sand while conducting his search that was as deep as 140 cm. He also found flakes that were just below a meter. In 2015, Williams told Cecil about the site and it was determined that this would make an excellent location for SFA's Archaeological Field School. Excavations were undertaken in 2016 along the fence line between SFA property and the private property.

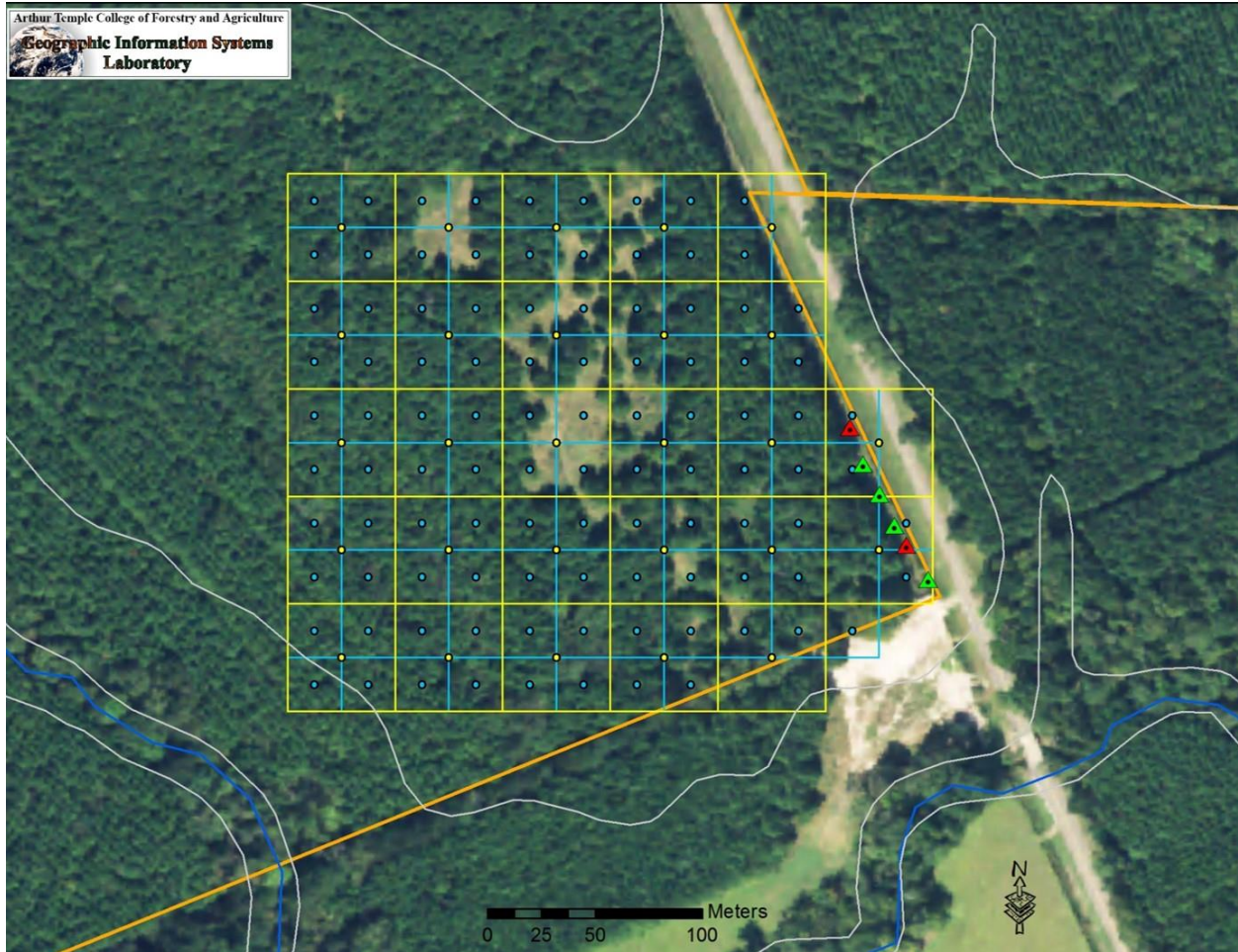


Figure 5: Shovel test locations indicated by the red and green triangles.

Lithic Manufacturing Site

A lithic manufacturing site is a designated location where humans once created tools and weapons out of stones (lithics). This type of site usually has a very specific location near or around a hunting site and/or raw material source, which allows the people working there to make and modify their tools.

The spatial distribution and quality of artifacts found at the site may suggest that manufacturing activity took place there as well as indicating which specific materials were used for specific purposes (Kuhn 2007). In general, a lithic manufacturing site has cores, bifaces, crude and discarded blanks that are most likely broken, as well as an abundance of primary, secondary, and tertiary flakes. Additionally, site furniture such as anvil and nutting stones may be present (Crook 2017).

Projectile points and their associated flakes are made using a technique called flint knapping (Figure 6), where a core (the parent material) is struck using a hammerstone

(smaller rock) and/or bone tools until the desired shape of the tool is achieved (Lohse 2011). Projectile points are made by repetitive movements between the core and the hammerstone, which in turn, creates various sized flakes that are struck off from the core. Some of these flakes can be used as projectile points, knives, scrapers, and drill points, but the predominantly smaller flakes (secondary and tertiary) were left behind as a waste product, or debitage (Lohse 2011). These manufacturing sites often have hundreds, if not thousands of flakes.



Figure 6: Lithic scatter from Squires Ridge, a lithic manufacturing site (Daniel et al. 2020)

Soil Levels

The East Texas Piney Woods is characterized by slow rolling uplands and lowlands with various intersecting streams making the soil prone to erosion (Texas Almanac 2018). “The upland soils are mostly deep, light-colored, slightly acid sandy loams and loamy sands with reddish loamy or clayey subsoils. Bottomland soils are reddish-brown to dark gray, slightly acid to alkaline loams or gray clays (Texas Almanac 2018).

Soil horizons can be defined as the layers of the soil in a soil profile (Figure 7). Soil profiles vary depending on color, texture, structure, thickness, and parent material. Layers can be separated by their different physical and chemical composition. The USDA lists six major horizons that can form: O, A, E, B, C and R.

The O horizon (organic surface layer) is on the surface, composed of whole or partially decomposing organic material, such as leaves or moss (Soil Survey Staff 2006). The A (surface soil) horizon is below the O horizon and contains substantial organic material (humus), can “show modification as a result of actions of cultivation, pasturing or other disturbances,” and is usually the result of bioturbation and surface processes that are moving the materials from the O horizon downward (Soil Survey Staff 2006). The E (eluviated) horizon is a subsurface layer that is usually lighter in color, characterized by more silt and sand than other layers, is usually lighter in color because of leaching of

mineral and biological content, and is composed largely of silica or silicates (IUSS 1998). Below O, A and E horizons are B (subsoil) horizons. In East Texas, the B layer consists of red clay. B layers are altered by pedogenesis and/or formed by illuviation, materials such as silicate clay, aluminum, and carbonates being moved and deposited by rainwater into a new layer (Soil Survey Staff 2006). These layers can be

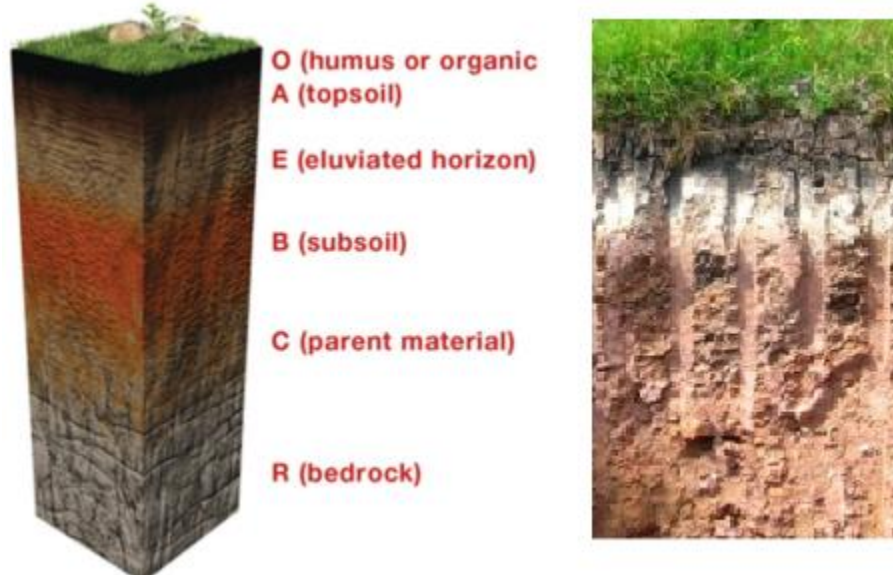


Figure 7: General Soil Horizons (Fact Factor 2019)

bulky and brittle, with little of the original rock left. The parent material from which subsoils are created is Level C (parent material). This level is composed of “geological materials that are moderately cemented” (Soil Survey Staff 2006) and can be made of the same materials as the upper horizons but not as developed or weathered. Last is the R horizon, which is solid (or strongly cemented) bedrock rather than being made of any soil. In East Texas, ultisols predominate (Sánchez and Salinas 1981).

Methodology

After discussing potential excavation locations with Williams in 2015 and 2016, it was decided that the SFA Field School would excavate along the fence line between the private property and land owned by SFA because of the erosion being caused by the private property owner and the artifacts recovered by Williams’ shovel testing.

A 2 m x 17 m grid was established along the fence line resulting in 34 1 m x 1 m units (Figure 8). All but two units were excavated (Table 1). We conducted surface clearing excavations. Each student excavated six levels (some students excavated more levels and that is seen in Table 1). In areas where we were finding projectile points, we conducted 50 cm x 50 cm test pits (Figure 9). We used 10 cm arbitrary levels and each unit at each level was given a distinct lot number (Table 1 and Appendix). All excavated material was dry sifted using ¼” mesh screen.

The datum point was established at E 281216.242 and N 3466076.5874 with an elevation of 67.7491 meters above sea level (submeter accuracy). It is set with a piece of metal rebar encased in cement and can be easily located with a metal detector.

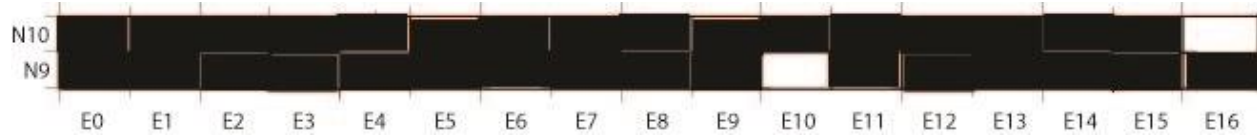


Figure 8: Excavation Grid (darkened units were excavated). E16 is closest to the road and N10 was closest to the fence line.

Table 1: Data for Clearing Excavations

Northing	Easting	Levels Excavated	Lot Numbers*
N9	E16	5	2, 35, 36, 69, 71a, 102
N9	E15	10	10, 38, 71, 72, 105, 106, 140, 143, 150, 157
N10	E15	6	3, 37, 70, 104, 177, 178
N9	E14	6	6, 40, 74, 107, 108, 151, 155, 161
N10	E14	5	5, 39, 55, 63, 82
N9	E13	1	8
N10	E13	4	7, 41, 42, 75, 109
N9	E12	8	10, 43, 44, 78, 111, 112, 139, 141
N10	E12	6	9, 144, 145, 146, 166, 181
N9	E11	5	12, 46, 79, 80, 113, 114
N10	E11	1	11
N10	E10	4	13, 47, 48, 171
N9	E9	1	16
N10	E9	7	15, 49, 50, 83, 84, 117, 118, 148, 159, 160, 164, 169, 180
N9	E8	5	18, 152, 153, 163, 167, 176
N10	E8	6	17, 51, 52, 85, 86
N9	E7	1	20

N10	E7	5	19, 53, 54, 87, 88, 121,122, 170
N9	E6	7	22, 56, 89, 90, 123, 124, 154, 172, 179
N10	E6	1	21
N9	E5	8	24, 58, 91, 92, 125, 126,137, 138
N10	E5	2	23, 57
N9	E4	1	26
N10	E4	7	25, 59, 60, 93, 94, 127, 128
N9	E3	4	28, 130, 168, 175
N10	E3	6	27, 61, 62, 95, 96, 129
N9	E2	8	30, 64, 97, 98, 131, 132, 142, 149,156, 162, 165, 174
N10	E2	1	29
N9	E1	7	32, 65, 66, 99, 100, 133, 134
N10	E1	2	31, 173
N9	E0	4	34, 67, 68, 101
N10	E0	1	33

*There may be more lot numbers than levels indicated. This is a result of the smaller test pits sunk into the larger units.



Figure 9: N10 E4 test pit excavated to level 7.

The soil horizons were as expected. The O and A horizons comprised the first 20 cm and the E horizon (alluvial sands) went to at least level 10. We never did hit the B horizon (red clay).

The 2016 SFA field school had 12 students, two volunteers (Shylo Brandenburg and Joshua O'Banion), and two directors (Cecil and Dr. Staci Willis, Visiting Assistant Professor at the time of excavations) (Figure 10).



Figure 10: Field School Students (left to right): Gabrielle Sigler, Haleigh Spain, Zach Mitcham, Shylo Brandenburg, Emily Davis, and Ciara Bamsch.



Left to right: Morgan Tate, Brant Tucker, Brianna Reeley, Rebekka Girard, Caitlin Lee, and Joel Hinojosa.

Results

As a result of excavations, we determined that there were two main areas of activity: E3-8 and E14-15. Below are a series of Surfer 8 plots of the artifacts. The percentages of material types for the flakes were based on a 30% random sampling count and analysis of the flakes. The high frequency of petrified wood and quartzite flakes suggests that people are coming to the site, obtaining local material (petrified wood) and bringing their own (non-local quartzite), manufacturing points, flakes, and other tools, and then leaving. Arbor Groves may have been a rest stop, rather than a destination (Victor Galan, personal communication 2020).

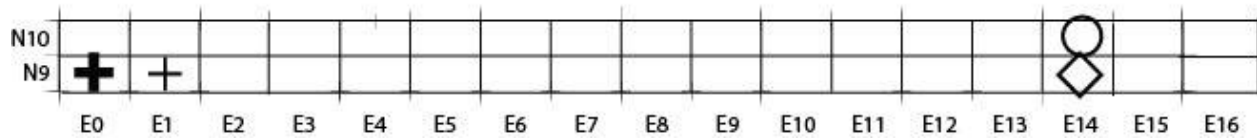
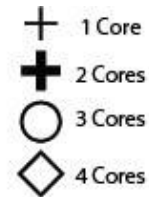


Figure 11: Piece plot of the cores.

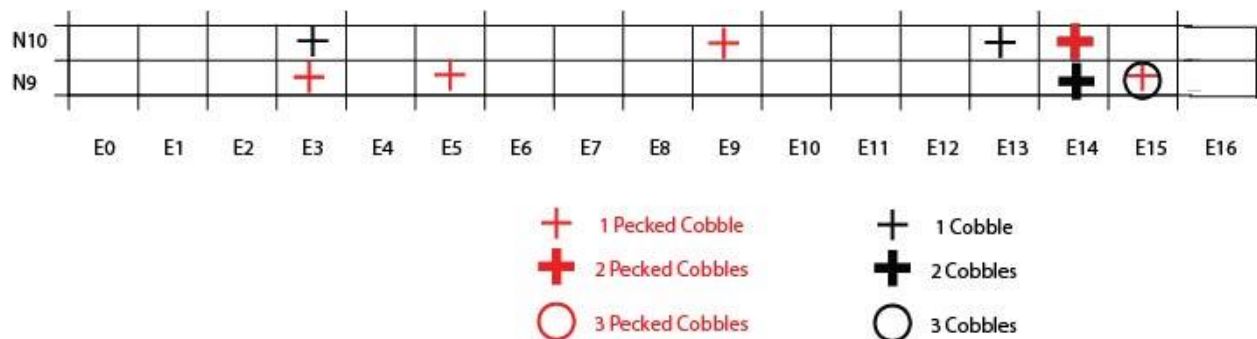


Figure 12: Piece plot of cobbles and pecked cobbles.

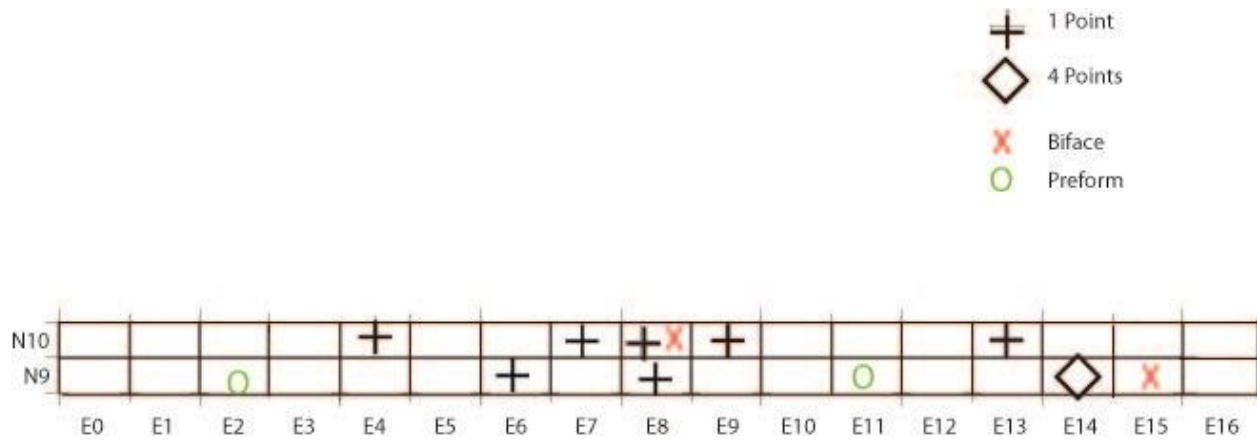
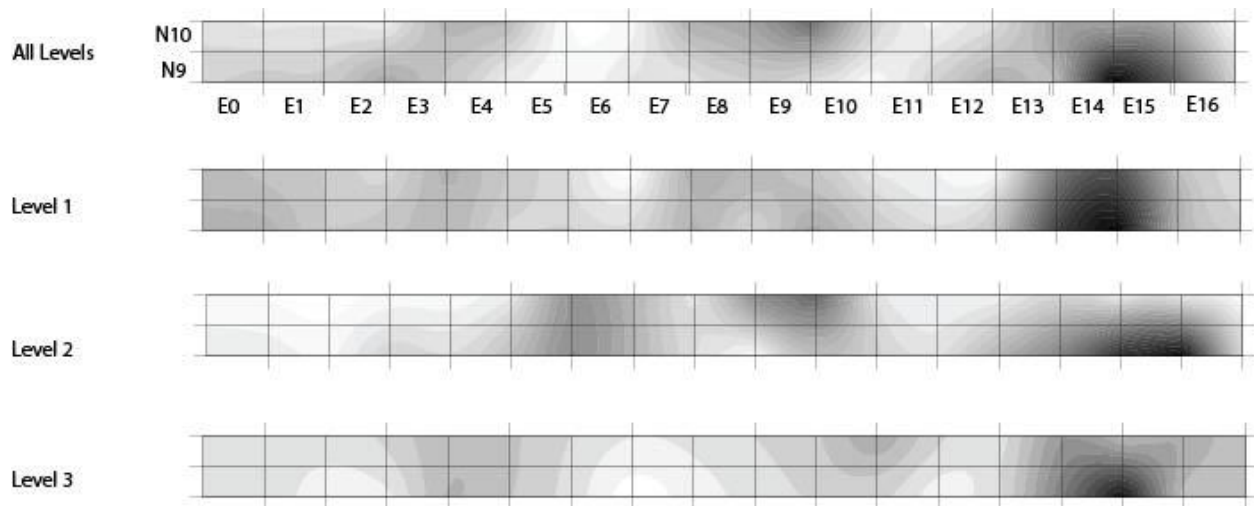


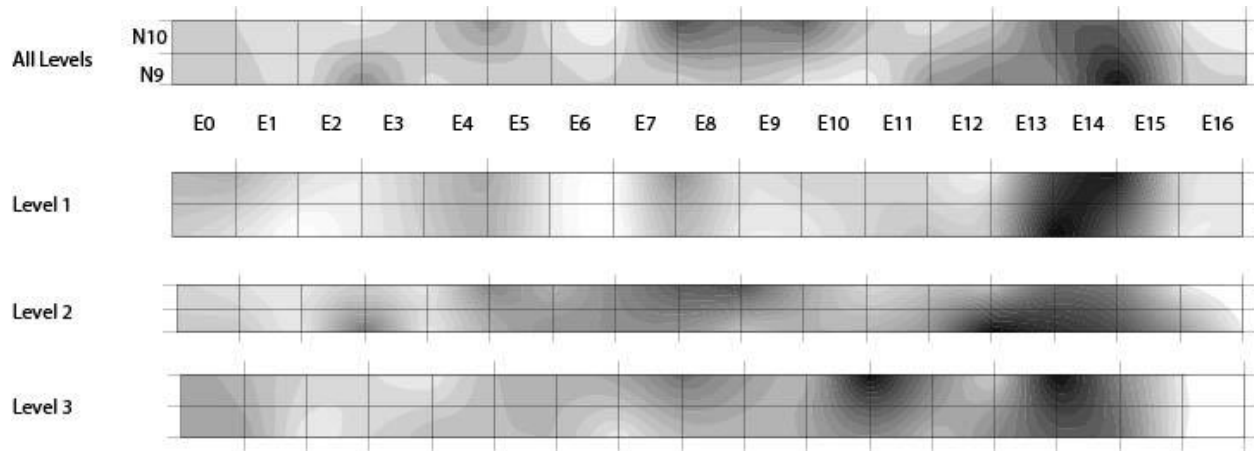
Figure 13: Piece plot of the projectile points, bifaces, and preforms.



105 Lots counted; 1006 total flakes identified

- 464 petrified wood flakes (46%)
- 397 quartzite flakes (40%)
- 101 chert flakes (10%)
- 44 unidentified flakes (4%)

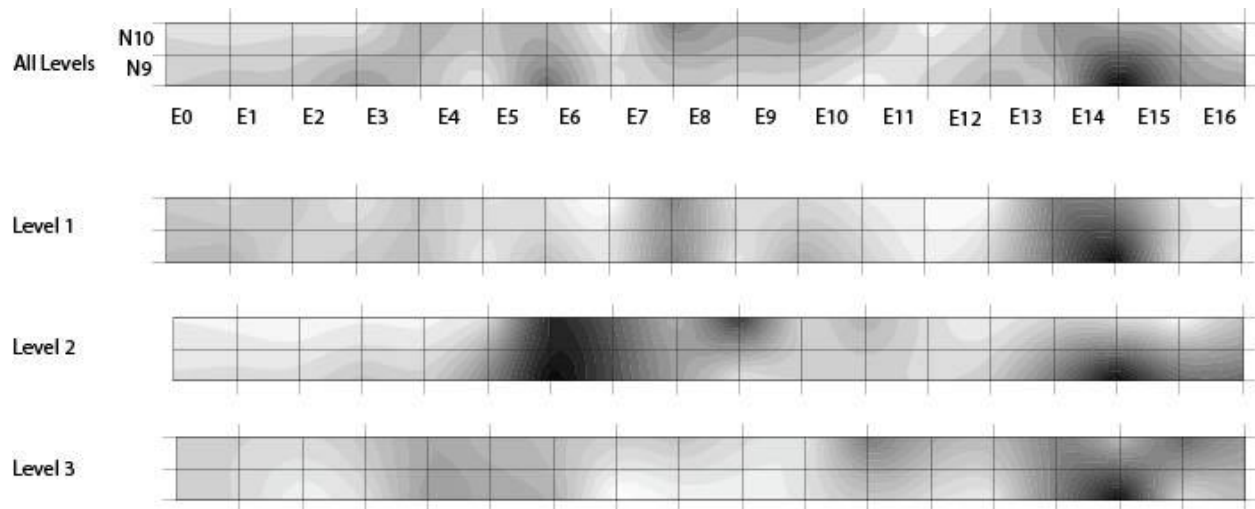
Figure 14: Piece plot of all the flakes (primary, secondary, and tertiary) with the material sampling frequencies. The darker the color, the higher the concentration.



32 Lots counted; 252 total flakes identified

- 102 petrified wood flakes (41%); concentrated around Easting 13/14/15 and Easting 4/3
- 99 quartzite flakes (39%); concentrated around Easting 13/14/15 and Easting 7
- 30 chert flakes (12%); almost entirely from Easting 13/14/15 (67%)
- 21 unidentified flakes (8%)

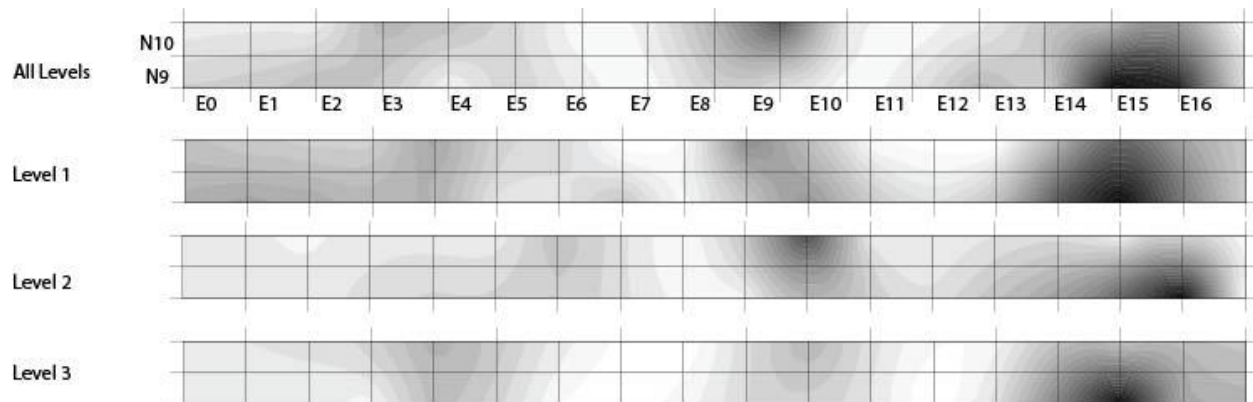
Figure 15: Piece plot of the primary flakes with the material sampling frequencies. The darker the color, the higher the concentration.



29 Lots counted; 305 total flakes identified

- 157 petrified wood flakes (51%); concentrated around Easting 13/14
- 117 quartzite flakes (38%); concentrated around Easting 13/14
- 23 chert flakes (8%); almost entirely Easting 13/14/15 (78%)
- 8 unidentified flakes (3%)

Figure 16: Piece plot of the secondary flakes with the material sampling frequencies. The darker the color, the higher the concentration.



44 Lots counted; 449 total flakes identified

- 205 petrified wood flakes (46%); concentrated Easting 14 and Easting 9
- 181 quartzite flakes (40%); concentrated Easting 9 and Easting 14; Easting 8 and 12
- 48 chert flakes (11%); scattered Easting 8/9 and Easting 12
- 15 unidentified flakes (3%)

Figure 17: Piece plot of the tertiary flakes with the material sampling frequencies. The darker the color, the higher the concentration.

Artifacts

During field excavations in June 2016, 4491 artifacts were excavated.

Lithics

1) Cores (n=16)

One of the smallest artifact categories, 16 cores were excavated from the Arbor Groves site (Figure 18). Cores are the parent material from which the projectile points and other tools are made. Cores are distinct from other objects because of the material and their potential use for flaking (Kuhn 2007). Found in a few areas of the site, cores were found most frequent in the area around E14, Levels 3 and below. The highest concentration of cores was five found at N9/E14, Level 6.



Figure 18: Example of various cores. The left core may have been a flake core, but was abandoned due to shape. The middle core is a multidirectional core (to make smaller expedient flake tools). The right core (red) is of the same material as the point in Figure 24.

2) Projectile Points (whole and broken) (n=11)



Figure 19: N10 E9 Level 1 Possible Woden point manufactured from petrified wood



Figure 20: Possible Clifton point (N9 E6 Level 3). The base is damaged and the tip shows signs of thermal alteration. The serration on one side and the asymmetry of the left shoulder may suggest that the point was not finished.



Figure 21: Point that was possibly remodeled into a knife (due to the asymmetry). Pressure flaking is evident (N9 E8 Level 5).



Figure 22: Gary point manufactured from quartzite (N9 E14 Level 4). Possible retouched impact damage to modify it to a scraper or other tool.



Figure 23: Possible Gary dart points (Crook 2017: 33). Left may have been retouched in the haft due to tip damage as evident by the wide shoulder to length ratio. (N9 E14 Level 5) Quartzite



Figure 24: Base of the point is cortex. The asymmetry suggests that the blade was much longer and impact damage (lateral shearing) has been retouched along the left edge (N9 E14 Level 5). Quartzite (Uvalde gravel)



Figure 25: N10 E8 Level 3 novaculite from Arkansas (possible reworked Cossatot River point) (Perino 1976: 127).



Figure 26: Possible unfinished point with high frequency of pressure flaking on the lateral shoulder. It may have been a larger knife fragment that someone was trying to rework into a projectile point. (N10 E4 Level 1) Petrified Wood



Figure 27: Exhausted point with retouched/resharpened lateral edges. (N10 E13 Level 3) North Edwards Plateau Chert



Figure 28: Gary point with impact damage (unrepaired) to the dorsal face due to a large fracture. (N10 E7 Level 6) Quartzite

- 3) Bifaces (n=2) Bifaces are flaked on both sides and can be modified to be a tool.



Figure 29: N9 E15 Level 3 Petrified wood



Figure 30: N10 E8 Level 3 Petrified wood

- 4) Preforms (n=2) These lithics are rough outlines of a final tool, but the tool was not completed. In these two cases, it appears that there is a steep ridge running down the center of preform that denied completion of the tool.



Figure 31: N9 E11 Level 2 Palm



Figure 32: N9 E2 Level 8 Petrified wood

- 5) Practice Points/Flakes (n=9) There is one broken point that may represent an attempt at manufacturing (N10 E 4 Level 2, Figure 33 right). The remaining flakes

are large primary and secondary flakes that have notches taken out of the side (Figure 33 left). They are not fully formed tools; thus, they may represent practice attempts.



Figure 33: Practice points and flakes. Left flake N10 E4 Level 1, Right point N10 E4 Level 2.

6) Flakes

a) Primary Flakes (n=644)

“Primary flakes are identified on the amount of cortex, or the amount of outside stone that is left on the flake, from when the stone was broken open” (Mississippi Valley Archaeology Center 2020:1). Cortex is the outer layer of rock formed on the exterior of raw materials due to chemical/mechanical weathering processes. These flakes are associated with the initial phases of projectile point/tool manufacturing.



Figure 34: Sample of primary flakes

b. Secondary Flakes (n=1358)

Secondary Flakes may show some remains of cortex. These flakes represent rough shaping with a tool during flintknapping. These flakes are associated with the initial phases of projectile point/tool manufacturing.



Figure 35: Sample of secondary flakes

c. Tertiary Flakes (n=1620)

Tertiary flakes are portions of rock removed from an objective piece by percussion or pressure, these flakes can be carefully distinguished by identifying their missing cortex (Stull and Dosh 2000). These flakes represent finishing touches to the projectile point/tool or the retouching of such a tool.



Figure 36: Sample of tertiary flakes.

7) Cobbles (n=42) Some cobbles at the site displayed pecking marks, showing that they may have been used as hammerstones to remove flakes. The battered edges are likely to have been used to grind and gently chip (Strudwick 1995) away at the core, used as a precursor for shaping the tools. Smaller stones could be used for more precision and worn hammerstones are likely to be found with other manufacturing waste.



Figure 37: Two examples of cobbles with pecking.

8) Pebbles (n=574) This is very similar to pea size gravel. It is most likely a result from nearby creeks and rivers.

9) Minerals (n=57) This category represent red and yellow ochre found during excavations.

10) Other (n=46) These are pieces of petrified wood and ironstone that were found during excavation.

Charcoal (n=78) An estimated 63% out of the 78 total charcoal artifacts were found in a depth of 50 cmbs-80 cmbs. Given their depth at the site, the charcoal represents either a natural burn or a burn in a heart (although no hearth was detected in the excavations) as opposed to a lignite deposit (Fisher 1963).

Ceramic (n=27) The ceramics from these excavations were extremely eroded and have a sandy paste that is characteristic of Early Woodland pottery. They are very soft and low fired. Most Woodland ceramics are composed using the paddle and anvil method and display extraordinary variability in vessel form, decorative technique and size.

Bone (n=2) One of the bone fragments was too fragmentary to be identified. The other bone found was a lower right mandible of a rodent's jawbone. Likely since only a portion of the skeleton was found, the rodent was probably eaten and the "remains are scattered by animals over a wide area" (Lundy 1998).

Clay/Daub (n= 10) Ten hardened clay fragments, determined to be chinking materials, were excavated at the site. Chinking and daubing were used in the construction of log houses to seal the gaps to protect against the weather and various vermin in the area. Materials used for daubing can vary, but often consist of a mixture of local clay and lime (Bomberger 1991). Materials appearing on site could be evidence of a home once being

in the area as daubing would gradually dissolve due to heavy rainfall (Richards 1993) and would need to be replaced. Most of the daub was found in Level 4.

Glass Bottle (n=1) This is an amber round glass bottle with a rubber stopper allowed for multiple syringes withdraws. It is most likely an animal antibiotic bottle.

Conclusions

Arbor Groves, located in the heart of the Piney Woods and west of multiple large bodies of fresh water, was most likely a sanctuary for woodland animals and early Americans. In fact, artifacts from the Clovis period (ca. 10,000 BP) to the modern era have been excavated from the site. Most of the artifacts excavated during the 2016 field season dated to the late Archaic period (8000-500 BC) to the early Woodlands period (beginning approximately 500 BC). The amount of lithic debris and projectile points found strongly suggest that Arbor Groves was a lithic manufacturing site. The manufacture of projectile points and other tools result in many lithic flakes discarded from the parent material (Morrow 1996). Because manufacturing and disposing of the waste are often in the same area, evidence for these sites also include the presence of broken projectiles, cores, and various pecked cobbles. Rarely does one find complete points or the hammerstone and tools used to produce the objects, as those are carried by the maker.

Based on the artifacts excavated during the 2016 field season (cores, cobbles with pecking, primary, secondary, and tertiary flakes, projectile points, and “practice” points and flakes), we suggest that Arbor Groves represents a lithic manufacturing site. At this point, this is a working hypothesis. People traveling from Central Texas to Arkansas (and vice versa) may have stopped here and made tools from local materials as evidence from the Edwards Plateau chert point and the novaculite from Arkansas. There are two main areas of artifact concentration (N9-10/E14-15 and N9-10/E3-8). Most cores, cobbles and primary flakes were found around the areas of E14-15, suggesting that this location is where the tools were first chipped from the cores. Areas around E3-8 show concentrations of primary, secondary, and tertiary flakes. Points were found scattered across the whole site with the most located at N9/E14. Source materials of the points also have an interesting distribution around the site. Petrified wood points are scattered around the site, from E2-15, while the sandstone and chert are only found on the eastern part of Arbor Groves, particularly around E8 and E14. Charcoal found could point to small fires or hearths burned alongside manufacturers as they worked.

While most flakes, points, and cores represent local resources (petrified wood), we do have a point made from Edwards Plateau chert and novaculites that most likely came from Arkansas. Currently, there are not enough artifacts nor extensive enough excavations to suggest trade of raw materials nor is there enough evidence to determine the extent to which this was a manufacturing site. However, the Edwards Plateau point is an anomaly and may suggest that someone (and/or multiple people) from that area came to Arbor Groves or that someone from Arbor Groves went to Central Texas and then returned to East Texas with the point.

The early Woodland period is characterized at the site by the presence of sandy paste pottery (we excavated 27 undecorated sherds).

Excavations also revealed historic artifacts at the site. Clay daubing fragments might indicate a log cabin in the area, as the site was originally defined as a homestead when the land was dug and a round glass medicine bottle with a rubber stopper used for syringe withdraws was found. This was likely used for antibiotics for animals associated with the Historic component of Arbor Groves.

Arbor Groves potentially has tens of thousands of artifacts waiting to be discovered. Further excavations may deepen our understanding of the complexity of this site as well as to test the hypothesis that this was a manufacturing site instead of a pit stop.

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Appendix
Artifact Counts

lot	North	East	Level	Point	Biface	Preform	Primary	Secondary	Tertiary	Tot Flake	Other lithic	Practice
2	9	16	1	0	0	0	4	11	12	27	0	0
3	10	15	1	0	0	0	5	8	21	34	4	0
5	10	14	1	0	0	0	28	28	35	91	0	0
6	9	14	1	0	0	0	18	58	55	131	0	0
7	10	13	1	0	0	0	22	30	17	69	0	0
8	9	13	1	0	0	0	30	32	39	101	0	0
9	10	12	1	0	0	0	2	2	0	4	2	0
10	9	12	1	0	0	0	7	11	15	33	0	0
10	9	15	1	0	0	0	3	7	31	41	0	0
11	10	11	1	0	0	0	5	4	1	10	1	0
12	9	11	1	0	0	0	8	5	8	21	1	0
13	10	10	1	0	0	0	6	6	2	14	0	0
15	10	9	1	1	0	0	6	10	15	31	0	0
16	9	9	1	0	0	0	3	21	24	48	0	0
17	10	8	1	0	0	0	4	8	27	39	0	0
18	9	8	1	0	0	0	3	6	13	22	0	0
19	10	7	1	0	0	0	14	29	2	45	0	0
20	9	7	1	0	0	0	9	30	3	42	0	0
21	10	6	1	0	0	0	0	0	0	0	0	0
22	9	6	1	0	0	0	0	7	14	21	0	0
23	10	5	1	0	0	0	3	8	10	21	0	0
24	9	5	1	0	0	0	3	16	7	26	0	0
25	10	4	1	0	0	0	11	8	11	30	0	0
26	9	4	1	0	0	0	10	6	7	23	0	1
27	10	3	1	0	0	0	7	15	21	43	1	0
28	9	3	1	0	0	0	6	16	18	40	0	0
29	10	2	1	0	0	0	3	7	11	21	0	0
30	9	2	1	0	0	0	3	13	17	33	0	0
31	10	1	1	0	0	0	5	14	11	30	0	0

lot	North	East	Level	Charcoal	Ceramic	Metal	Mineral	Cobbles	Core	Pebbles	Bone	Clay/Daub	Bottle
2	9	16	1	0	0	0	0	0	0	0	0	0	0
3	10	15	1	1	0	0	1	0	0	0	0	0	0
5	10	14	1	0	0	0	0	0	0	0	0	0	0
6	9	14	1	0	0	0	0	0	0	2	0	0	0
7	10	13	1	0	0	0	0	0	0	0	0	0	0
8	9	13	1	0	0	0	0	0	0	0	0	0	0
9	10	12	1	0	0	0	0	0	0	0	0	0	0
10	9	12	1	0	0	0	0	0	0	0	0	0	0
10	9	15	1	0	0	0	0	0	0	20	0	0	0
11	10	11	1	0	0	0	0	0	0	0	0	0	0
12	9	11	1	0	0	0	0	0	0	0	0	0	0
13	10	10	1	0	0	0	0	0	0	0	0	0	0
15	10	9	1	6	0	0	0	0	0	4	0	0	0
16	9	9	1	0	0	0	0	0	0	3	0	0	0
17	10	8	1	0	0	0	0	0	0	0	0	0	0
18	9	8	1	0	0	0	0	0	0	0	0	0	0
19	10	7	1	0	0	0	0	0	0	0	0	0	0
20	9	7	1	0	0	0	0	0	0	0	0	0	0
21	10	6	1	0	0	0	0	0	0	0	0	0	0
22	9	6	1	0	0	0	0	0	0	0	0	0	0
23	10	5	1	0	0	0	0	0	0	0	0	0	0
24	9	5	1	0	0	0	0	0	0	0	0	0	0
25	10	4	1	0	0	0	0	0	0	0	0	0	0
26	9	4	1	0	0	0	0	0	0	0	0	0	0
27	10	3	1	1	0	0	0	0	0	16	0	0	0
28	9	3	1	0	0	0	0	0	0	14	0	0	0
29	10	2	1	0	0	0	0	0	0	0	0	0	0
30	9	2	1	0	0	0	0	0	0	0	0	0	0
31	10	1	1	5	0	0	30	0	0	0	0	0	0

lot	North	East	Level	Point	Biface	Preform	Primary	Secondary	Tertiary	Tot Flake	Other lithic	Practice
32	9	1	1	0	0	0	0	10	20	30	0	0
33	10	0	1	0	0	0	10	11	12	33	0	0
34	9	0	1	0	0	0	4	18	21	43	0	0
35	9	16	2	0	0	0	0	26	0	26	0	0
36	9	16	3	0	0	0	0	16	6	22	0	0
37	10	15	2	0	0	0	0	1	16	17	0	0
38	9	15	2	0	0	0	5	26	104	135	1	0
39	10	14	2	0	0	0	6	6	2	14	0	0
40	9	14	2	0	0	0	9	43	65	117	4	0
41	10	13	2	0	0	0	7	8	13	28	0	0
42	10	13	3	1	0	0	9	14	12	35	0	0
43	9	12	3	0	0	0	4	3	7	14	0	0
44	9	12	2	0	0	0	13	10	24	47	4	0
46	9	11	2		0	1	5	7	11	23	0	0
47	10	10	2	0	0	0	1	14	6	21	0	0
48	10	10	3	0	0	0	9	15	7	31	0	0
49	10	9	2	0	0	0	4	8	76	88	0	0
50	10	9	3	0	0	0	2	3	14	19	0	1
51	10	8	2	0	0	0	9	35	23	67	0	0
52	10	8	3.50	1	1	0	13	6	12	31	1	0
53	10	7	2	0	0	0	8	14	0	22	0	0
54	10	7	3	0	0	0	5	2	0	7	0	0
55	10	14	3	0	0	0	4	7	11	22	0	0
56	9	6		0	0	0	5	6	0	11	0	0
57	10	5	2	0	0	0	3	37	24	64	0	0
58	9	5	2	0	0	0	5	42	20	67	0	0
59	10	4	2	0	0	0	6	6	6	18	0	1
60	10	4	3	0	0	0	2	8	11	21	0	0
61	10	3	2	0	0	0	0	3	8	11	0	0

lot	North	East	Level	Charcoal	Ceramic	Metal	Mineral	Cobbles	Core	Pebbles	Bone	Clay/Daub	Bottle
31	10	1	1	5	0	0	30	0	0	0	0	0	0
32	9	1	1	3	0	0	0	0	0	0	0	0	0
33	10	0	1	0	0	0	0	0	0	0	0	0	0
34	9	0	1	0	0	0	1	0	0	0	0	0	0
35	9	16	2	0	0	0	0	0	0	0	0	0	0
36	9	16	3	0	0	0	0	0	0	0	0	0	0
37	10	15	2	0	1	0	0	0	0	0	0	0	0
38	9	15	2	0	0	0	0	0	0	0	0	0	0
39	10	14	2	0	0	0	0	0	0	0	0	0	0
40	9	14	2	0	2	0	0	0	0	0	0	0	0
41	10	13	2	0	0	0	0	0	0	0	0	0	0
42	10	13	3	0	0	0	0	0	0	0	0	0	0
43	9	12	3	0	0	0	0	0	0	0	0	0	0
44	9	12	2	0	0	0	0	0	0	0	2	0	0
46	9	11	2	0	0	0	0	0	0	0	0	0	0
47	10	10	2	0	0	0	0	0	0	0	0	0	0
48	10	10	3	0	1	0	0	0	0	0	0	0	0
49	10	9	2	0	0	0	1	0	0	2	0	0	0
50	10	9	3	0	1	0	0	0	0	1	0	0	0
51	10	8	2	0	0	0	0	0	0	0	0	0	0
52	10	8	3.50	0	0	0	0	0	0	0	0	0	0
53	10	7	2	0	0	0	0	0	0	0	0	0	0
54	10	7	3	0	0	0	0	0	0	0	0	0	0
55	10	14	3	0	1	0	0	0	0	0	0	0	0
56	9	6		0	0	0	0	0	0	0	0	0	0
57	10	5	2	0	0	0	0	1	0	0	0	1	0
58	9	5	2	0	0	0	0	0	0	0	0	0	0
59	10	4	2	0	0	0	1	0	0	0	0	0	0
60	10	4	3	0	0	0	0	0	0	0	0	0	0
61	10	3	2	0	0	0	0	0	0	2	0	0	0

lot	North	East	Level	Point	Biface	Preform	Primary	Secondary	Tertiary	Tot Flake	Other lithic	Practice
62	10	3	3	0	0	0	0	10	15	25	0	0
63	10	14	4	0	0	0	1	5	11	17	0	0
64	9	2	2	0	0	0	7	11	13	31	0	0
65	9	1	2	0	0	0	0	7	6	13	0	0
66	9	1	3	0	0	0	0	2	5	7	0	0
67	9	0	2	0	0	0	2	7	10	19	0	0
68	9	0	3	0	0	0	3	5	5	13	0	1
69	9	16	4	0	0	0	7	0	0	7	0	0
70	10	15	3	0	0	0	0	17	13	30	0	0
71	9	15	4	0	0	0	0	8	12	20	0	0
72	9	15	3		1	0	0	4	17	21	0	0
74	9	14	3	0	0	0	5	27	46	78	1	0
74	9	14	4	1	0	0	0	0	0	0	0	0
75	10	13	4	0	0	0	4	11	8	23	3	1
78	9	12	4	0	0	0	5	9	8	22	2	0
79	9	11	3	0	0	0	2	4	0	6	1	0
80	9	11	4	0	0	0	2	2	2	6	0	0
82	10	14	5	0	0	0	4	2	2	8	0	0
83	10	9	4	0	0	0	2	2	4	8	0	0
84	10	9	5	0	0	0	2	6	9	17	0	0
85	10	8	5	0	0	0	7	4	5	16	0	1
86	10	8	6	1	0	0	3	2	3	8	0	1
87	10	7	4	0	0	0	2	6	0	8	0	1
88	10	7	5	0	0	0	0	6	8	14	0	0
89	9	6	3.5	0	0	0	2	3	0	5	0	0
90	9	6	5	0	0	0	0	0	1	1	0	0
91	9	5	3	0	0	0	2	9	2	13	1	0
92	9	5	4	0	0	0	4	0	6	10	0	0
93	10	4	4	0	0	0	3	2	14	19	1	0

lot	North	East	Level	Charcoal	Ceramic	Metal	Mineral	Cobbles	Core	Pebbles	Bone	Clay/Daub	Bottle
62	10	3	3	1	0	0	0	0	0	19	0	0	0
63	10	14	4	0	0	0	0	0	0	1	0	0	0
64	9	2	2	0	0	0	0	0	0	0	0	0	0
65	9	1	2	0	0	0	0	0	0	0	0	0	0
66	9	1	3	0	0	0	0	0	0	0	0	0	0
67	9	0	2	0	0	0	0	0	0	0	0	0	0
68	9	0	3	0	0	0	0	0	1	0	0	0	0
69	9	16	4	0	2	0	0	1	0	0	0	0	0
70	10	15	3	0	0	0	0	0	0	0	0	0	0
71	9	15	4	0	0	0	0	0	0	0	0	0	0
72	9	15	3	0	0	0	0	0	0	0	0	0	0
74	9	14	3	0	0	0	0	0	0	0	0	0	0
74	9	14	4	0	0	0	0	1	0	0	0	0	0
75	10	13	4	0	0	0	0	0	1	0	0	0	0
78	9	12	4	0	0	0	0	0	0	0	0	0	0
79	9	11	3	0	0	0	0	0	0	0	0	0	0
80	9	11	4	1	0	0	0	0	0	0	0	0	0
82	10	14	5	0	0	0	0	0	0	0	0	0	0
83	10	9	4	0	0	0	0	0	0	13	0	0	0
84	10	9	5	12	0	0	0	1	0	13	0	0	0
85	10	8	5	6	2	0	0	4	0	0	0	0	0
86	10	8	6	0	0	0	0	0	0	0	0	0	0
87	10	7	4	0	1	0	0	0	0	0	0	8	0
88	10	7	5	3	0	0	0	0	0	0	0	0	0
89	9	6	3.5	0	0	0	0	0	0	0	0	0	0
90	9	6	5	0	0	0	1	0	0	0	0	0	0
91	9	5	3	0	0	0	0	0	0	4	0	0	0
92	9	5	4	0	0	0	0	0	0	0	0	0	0
93	10	4	4	0	0	0	0	0	0	25	0	0	0

lot	North	East	Level	Point	Biface	Preform	Primary	Secondary	Tertiary	Tot Flake	Other lithic	Practice
94	10	4	5	0	0	0	2	7	7	16	0	0
95	10	3	4	0	0	0	4	12	11	27	0	0
96	10	3	5	0	0	0	2	4	4	10	0	0
97	9	2	3	0	0	0	1	4	3	8	0	0
98	9	2	4	0	0	0	3	6	6	15	0	0
99	9	1	4	0	0	0	0	7	10	17	0	0
100	9	1	5	0	0	0	2	3	1	6	2	0
101	9	0	4	0	0	0	6	7	6	19	0	0
102	9	16	6	0	0	0	0	0	8	8	0	0
104	10	15	4	0	0	0	0	3	22	25	0	0
105	9	15	5	0	0	0	3	8	9	20	0	0
106	9	15	6	0	0	0	0	8	17	25	0	0
107	9	14	5	3	0	0	11	12	2	25	0	0
108	9	14	6	0	0	0	7	15	32	54	1	0
109	10	13	6	0	0	0	1	1	0	2	0	0
111	9	12	5	0	0	0	4	7	7	18	0	0
112	9	12	6	0	0	0	0	5	1	6	0	0
113	9	11	5	0	0	0	5	7	1	13	0	0
114	9	11	6	0	0	0	7	0	0	7	0	0
117	10	9	6	0	0	0	9	6	3	18	1	0
118	10	9	7	0	0	0	1	5	5	11	0	0
121	10	7	6	1	0	0	7	5	1	13	0	0
122	10	7	2	0	0	0	8	10	2	20	0	0
123	9	6	6	0	0	0	2	1	0	3	1	0
124	9	6	7	0	0	0	1	0	0	1	2	0
125	9	5	5	0	0	0	2	7	9	18	0	0
126	9	5	6	0	0	0	0	10	0	10	0	0

Lot	North	East	Level	Charcoal	Ceramic	Metal	Mineral	Cobbles	Core	Pebbles	Bone	Clay/Daub	Bottle
94	10	4	5	0	0	0	0	0	0	88	0	0	0
95	10	3	4	4	0	0	0	1	0	59	0	0	0
96	10	3	5	1	1	0	0	0	0	12	0	0	0
97	9	2	3	0	0	0	0	0	0	0	0	0	0
98	9	2	4	2	0	0	0	0	0	0	0	0	0
99	9	1	4	0	0	0	0	0	0	0	0	0	0
100	9	1	5	0	0	0	0	0	0	2	0	0	0
101	9	0	4	0	0	0	0	0	1	2	0	0	0
102	9	16	6	0	0	0	0	0	0	0	0	0	0
104	10	15	4	0	0	0	0	3	0	0	0	0	0
105	9	15	5	0	1	0	0	0	0	0	0	1	0
106	9	15	6	0	4	0	0	3	0	18	0	0	0
107	9	14	5	0	0	0	0	0	1	0	0	0	0
108	9	14	6	0	1	0	0	0	5	0	0	0	0
109	10	13	6	1	0	0	2	0	0	0	0	0	0
111	9	12	5	0	0	0	0	0	0	0	0	0	0
112	9	12	6	0	0	0	0	1	0	0	0	0	0
113	9	11	5	0	0	0	0	0	0	0	0	0	0
114	9	11	6	0	0	0	0	0	0	0	0	0	0
117	10	9	6	7	2	0	0	0	0	0	0	0	0
118	10	9	7	0	0	0	0	0	0	14	0	0	0
121	10	7	6	4	0	0	0	0	0	0	0	0	0
122	10	7	2	0	0	0	0	0	0	0	0	0	0
123	9	6	6	0	0	0	0	0	0	0	0	0	0
124	9	6	7	0	0	0	0	0	0	0	0	0	0
125	9	5	5	0	0	0	0	0	0	0	0	0	0
126	9	5	6	0	0	0	0	0	0	0	0	0	0

lot	North	East	Level	Point	Biface	Preform	Primary	Secondary	Tertiary	Tot Flake	Other lithic	Practice
127	10	4	6	0	0	0	3	3	3	9	0	0
128	10	4	7	0	0	0	3	4	5	12	0	0
129	10	3	6	0	0	0	0	6	9	15	3	0
130	9	3	2	0	0	0	0	9	16	25	0	0
131	9	2	5	0	0	0	1	5	3	9	0	0
132	9	2	6	0	0	0	2	7	0	9	0	0
133	9	1	6	0	0	0	3	3	3	9	0	0
134	9	1	7	0	0	0	0	3	3	6	0	0
137	9	5	7	0	0	0	2	6	4	12	0	0
138	9	5	8	0	0	0	0	2	0	2	0	0
139	9	12	7	0	0	0	0	3	3	6	0	0
140	9	15	7	0	0	0	0	3	16	19	0	0
141	9	12	8	0	0	0	4	1	3	8	0	0
142	9	2	7	0	0	0	3	4	3	10	1	0
143	9	15	8	0	0	0	2	4	5	11	1	0
144	10	12	2	0	0	0	2	4	10	16	0	0
145	10	12	3	0	0	0	1	8	3	12	0	0
146	10	12	4	0	0	0	2	4	0	6	0	0
148	10	9	3	0	0	0	2	6	11	19	0	0
149	9	2	8		0	1	1	2	0	3	0	1
150	9	15	9	0	0	0	3	3	0	6	0	0
151	9	14	2	0	0	0	4	3	20	27	0	0
152	9	8	2	0	0	0	2	4	3	9	0	0
153	9	8	3	0	0	0	2	2	8	12	1	0
154	9	6	3	1	0	0	0	0	1	1	0	0
155	9	14	3	0	0	0	7	4	9	20	1	0
156	9	2	3	0	0	0	6	6	8	20	0	0
157	9	15	10	0	0		0	1	3	4	0	0

Lot	North	East	Level	Charcoal	Ceramic	Metal	Mineral	Cobbles	Core	Pebbles	Bone	Clay/Daub	Bottle
127	10	4	6	0	0	0	0	0	0	41	0	0	0
128	10	4	7	0	0	0	0	1	0	74	0	0	0
129	10	3	6	0	1	0	0	1	1	65	0	0	0
130	9	3	2	0	0	0	0	0	0	4	0	0	0
131	9	2	5	3	0	0	0	0	0	0	0	0	0
132	9	2	6	8	0	0	1	0	0	0	0	0	0
133	9	1	6	0	0	0	0	0	1	0	0	0	0
134	9	1	7	0	0	0	0	0	0	0	0	0	0
137	9	5	7	0	0	0	0	0	0	0	0	0	0
138	9	5	8	0	0	0	0	0	0	0	0	0	0
139	9	12	7	0	0	0	0	0	0	0	0	0	0
140	9	15	7	0	2	0	5	0	0	15	0	0	0
141	9	12	8	0	0	0	0	0	0	0	0	0	0
142	9	2	7	1	0	0	0	0	0	0	0	0	0
143	9	15	8	0	0	0	0	5	0	3	0	0	0
144	10	12	2	0	0	0	0	0	0	0	0	0	0
145	10	12	3	0	0	0	0	0	0	0	0	0	0
146	10	12	4	0	0	0	0	0	0	0	0	0	0
148	10	9	3	0	0	0	0	0	0	0	1	0	0
149	9	2	8	0	0	0	0	0	1	0	0	0	0
150	9	15	9	0	0	0	1	8	1	6	0	0	0
151	9	14	2	0	0	0	0	0	0	0	0	0	0
152	9	8	2	0	0	0	0	0	0	0	0	0	1
153	9	8	3	0	0	0	0	0	0	0	0	0	0
154	9	6	3	0	0	0	0	0	0	0	0	0	0
155	9	14	3	0	2	0	0	0	1	0	0	0	0
156	9	2	3	0	0	0	0	0	0	0	0	0	0
157	9	15	10	0	0	0	4	7	0	0	0	0	0

lot	North	East	Level	Point	Biface	Preform	Primary	Secondary	Tertiary	Tot Flake	Other lithic	Practice
159	10	9	4	0	0	0	2	4	4	10	0	0
160	10	9	5	0	0	0	3	4	3	10	1	0
161	9	14	5	0	0	0	9	5	10	24	1	0
162	9	2	4	0	0	0	3	3	5	11	0	0
163	9	8	4	0	0	0	2	5	2	9	0	0
164	10	9	6	0	0	0	7	5	5	17	0	0
165	9	2	5	0	0	0	0	3	1	4	0	0
166	10	12	5	0	0	0	4	2	2	8	0	0
167	9	8	5	1	0	0	4	3	9	16	0	0
168	9	3	3	0	0	0	2	11	13	26	0	0
169	10	9	7	0	0	0	2	5	7	14	0	0
170	10	7	3	0	0	0	5	7	0	12	0	0
171	10	10	4	0	0	0	1	10	4	15	0	0
172	9	6	4	0	0	0	1	0	0	1	1	0
173	10	1	2	0	0	0	0	2	4	6	0	0
174	9	2	6	0	0	0	3	2	3	8	0	0
175	9	3	4	0	0	0	0	3	0	3	0	0
176	9	8	6	0	0	0	1	1	5	7	0	0
177	10	15	5	0	0	0	0	5	8	13	0	0
178	10	15	6	0	0	0	0	4	12	16	0	0
179	9	6	5	0	0	0	0		0	0	1	0
180	10	9	1, 7	0	0	0	3	3	1	7	0	0
181	10	12	6	0	0	0	3	0	0	3	0	0
71a	9	16	5	0	0	0	1	9	0	10	0	0

Lot	North	East	Level	Charcoal	Ceramic	Metal	Mineral	Cobbles	Core	Pebbles	Bone	Clay/Daub	Bottle
159	10	9	4	0	0	0	0	0	0	2	0	0	0
160	10	9	5	0	1	0	0	0	0	2	0	0	0
161	9	14	5	0	0	0	9	0	1	0	0	0	0
162	9	2	4	2	0	0	0	0	0	0	0	0	0
163	9	8	4	0	0	0	0	0	0	0	0	0	0
164	10	9	6	0	1	0	0	0	0	3	0	0	0
165	9	2	5	4	0	0	0	0	0	0	0	0	0
166	10	12	5	0	0	0	0	0	0	0	0	0	0
167	9	8	5	0	0	0	0	0	0	0	0	0	0
168	9	3	3	0	0	0	0	0	0	10	0	0	0
169	10	9	7	0	0	0	0	1	0	2	0	0	0
170	10	7	3	0	0	0	0	0	0	0	0	0	0
171	10	10	4	0	0	0	0	0	0	0	0	0	0
172	9	6	4	0	0	0	0	0	0	0	0	0	0
173	10	1	2	0	0	0	0	0	0	0	0	0	0
174	9	2	6	2	0	0	0	0	0	0	0	0	0
175	9	3	4	0	0	0	0	0	0	10	0	0	0
176	9	8	6	0	0	0	0	0	0	0	0	0	0
177	10	15	5	0	0	0	0	0	0	0	0	0	0
178	10	15	6	0	0	0	0	3	0	0	0	0	0
179	9	6	5	0	0	0	0	0	0	0	0	0	0
180	10	9	1, 7	0	0	0	0	0	0	3	0	0	0
181	10	12	6	0	0	0	0	0	0	0	0	0	0
71a	9	16	5	0	0	0	0	0	1	0	0	0	0