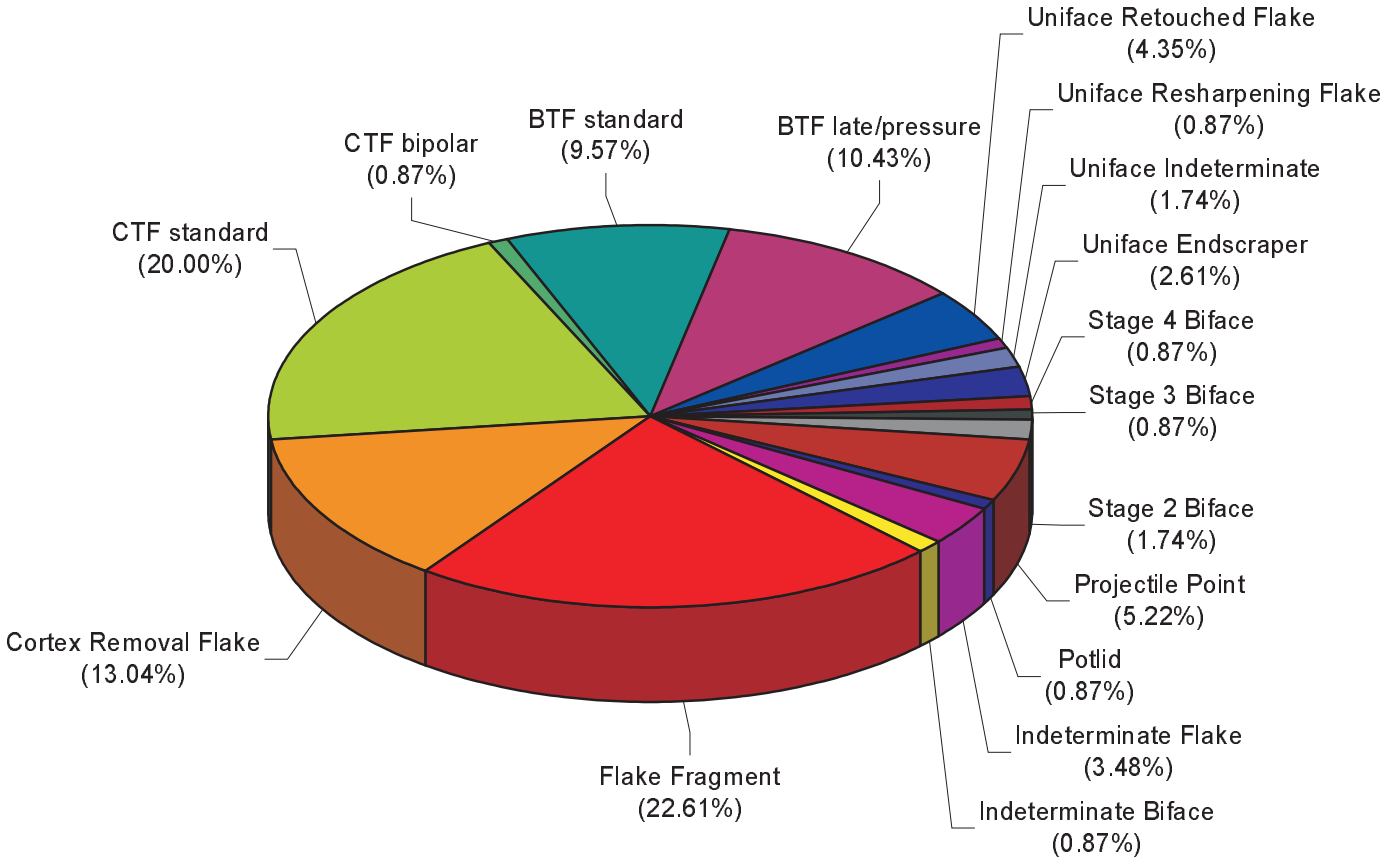
6.0 CLUSTER 1 ACTIVITY AREA

6.1 Spatial Parameters

The Cluster 1 Activity Area was identified in the Block 1 excavations during the Phase III data recovery at Site 7NC-B-54 (Ronald McDonald House) (Figure 30). It is the largest artifact cluster identified and excavated at the site, measuring a maximum of 6.0 m (19.7 ft) east to west and 4.0 m (13.1 ft) north to south. The artifact cluster is well defined by artifact density drop-offs in test units surrounding the test units which contain more numerous artifacts. Overall, the Cluster 1 Activity Area artifact counts per excavated test unit ranged from 1 to 21, with 40 percent of the artifacts recovered from the cluster being recovered from three contiguous test units. The average quantity of artifacts per square meter in the Cluster 1 Activity Area is 6.8. Horizontally, the artifact cluster encompasses 17 test units, including N516 E491, N516 E493, N516 E494, N517 E490, N517 E491, N517 E492, N517 E493, N517 E494, N517 E495, N518 E490, N518 E491, N518 E492, N518 E493, N518 E494, N518 E495, N519 E493, and N519 E494. Vertically, artifacts associated with the Cluster 1 Activity Area were found in Stratum 1 (OA horizon) and Stratum 2 (E horizon) at depths between the modern ground surface and 30.0 cm (11.8 in) below the modern ground surface. Twenty-three, or 20.00 percent, of the artifacts recovered from the Cluster 1 Activity Area were recovered from Stratum 1 (OA horizon), while 92, or 80.00 percent, were recovered from Stratum 2 (E horizon). Despite the minor differences in morphological characteristics of Stratum 1 (OA horizon) and Stratum 2 (E horizon), they are depositionally the same, having formed in place.

6.2 Lithic Raw Materials and Technology

The Cluster 1 Activity Area represents a concentration of 115 lithic artifacts, including 26 (22.60%) flake fragments; 23 (20.00%) cortex trimming flakes; 15 (13.04%) cortex removal flakes; 12 (10.43%) biface thinning flakes, late/pressure; 11 (9.56%) biface thinning flakes, standard; six (5.21%) projectile points; five (4.34%) uniface retouched flakes; four (3.47%) indeterminate flakes; three (2.60%) uniface endscrapers; two (1.73%) Stage 2 bifaces; two (1.73%) unifaces, indeterminate; one (0.86%) cortex trimming flake, bipolar; one (0.86%) indeterminate biface; one (0.86%) potlid; one (0.86%) Stage 3 biface; one (0.86%) Stage 4 biface; and one (0.86%) uniface resharpening flake (Figure 31; Appendix C). In addition to several non-diagnostic projectile point fragments, analysis identified one Lackawaxen-like



115 Total Artifacts

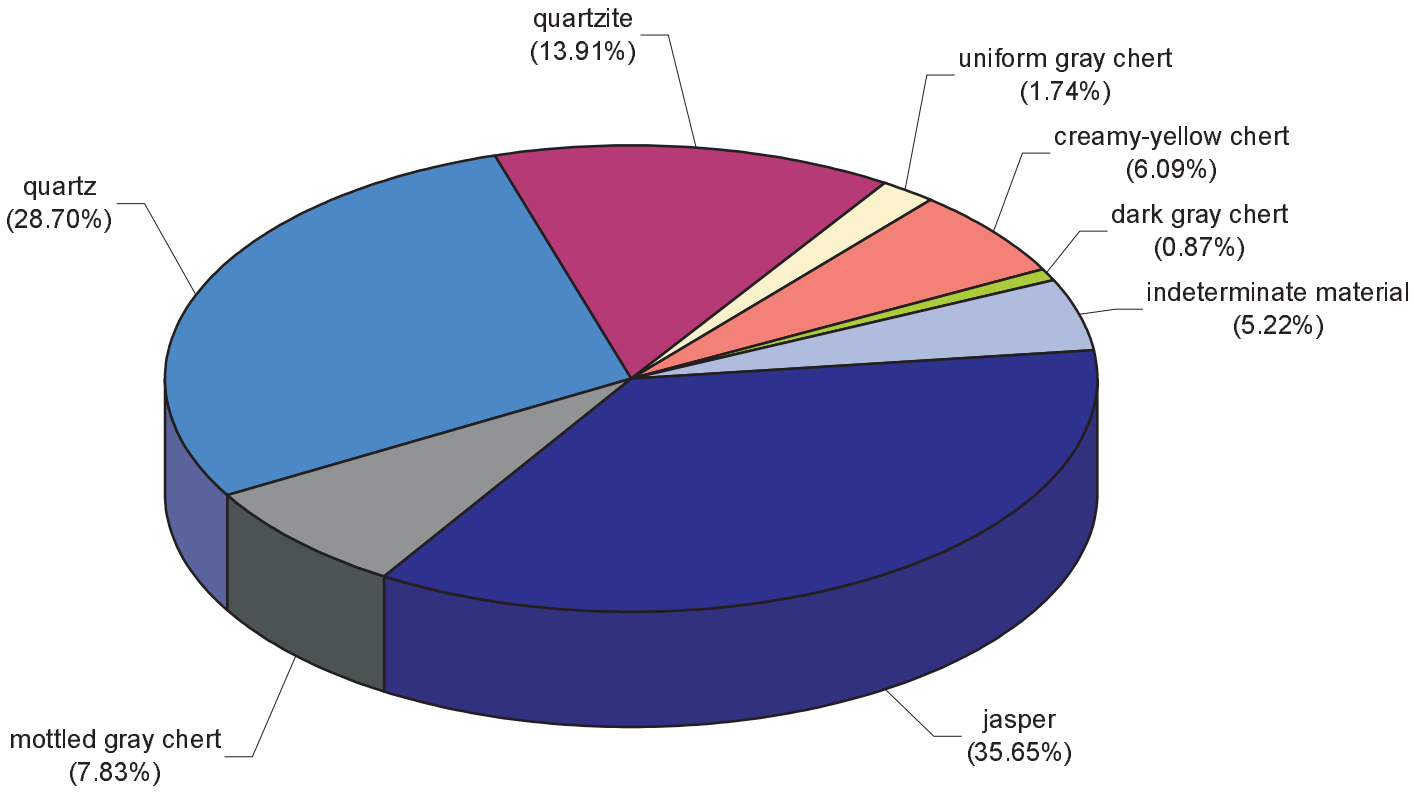
DELAWARE DEPARTMENT OF TRANSPORTATION	
BLUE BALL AREA TRANSPORTATION IMPROVEMENTS PHASE III SITE 7NC-B-54 (RONALD MCDONALD HOUSE) BRANDYWINE HUNDRED NEW CASTLE COUNTY	
CLUSTER 1, TECHNOTYPES	
FIGURE - 31	SKELLY and LOY Inc. CONSULTANTS IN ENVIRONMENT - ENERGY ENGINEERING - PLANNING

projectile point and one Lackawaxen/Bare Island projectile point, suggesting a Late/Terminal Archaic or Woodland I affiliation for this cluster.

6.2.1 Raw Materials

Lithic raw materials represented in the Cluster 1 Activity Area artifact assemblage include 35.65 percent jasper; 28.70 percent quartz; 16.53 percent chert (6.09 percent creamy yellow chert, 0.87 percent dark gray chert, 1.74 percent uniform gray chert, 7.83 percent mottled gray chert); 13.91 percent quartzite; and 5.22 percent indeterminate raw materials (Figure 32). Most lithic materials identified in Cluster 1 that were used for tool manufacture were likely acquired from secondary deposits near the site. An examination of cortex identified on the dorsal surfaces of lithic artifacts supports this assertion. Fully 27 percent of the Cluster 1 lithic materials exhibit cortex, most (22.6 percent) derived from secondary sources (i.e., cobble cortex). On a small percentage of artifacts (4.4%, or five artifacts total) the cortex type is indeterminate; the cortical surfaces on these artifacts are somewhat intermediate between “classic” cobble cortex (derived from secondary deposits) and block cortex (cortex found on materials from bedrock sources). Given the general abundance of lithic materials from secondary deposits, however, secondary sources may be the more likely origin of these materials.

Several raw materials comprise the bulk of the Cluster 1 assemblage. Jasper artifacts are most abundant, accounting for 35.65 percent of all artifacts, followed by quartz (28.70%). Chert is also a significant minority raw material, accounting for 16.53 percent of all lithic artifacts. Most chert identified at the site likely originated in nearby cobble deposits; the specific chert types (all defined on color, texture, or other visible characteristics) do little to inform on the ultimate point of origin for the chert raw material. The final identified stone type in the Cluster 1 assemblage is quartzite, comprising 13.9 percent of the assemblage. The remaining six pieces of stone, “indeterminate raw material,” are classified as such because all exhibit the effects of moderate to severe thermal alteration, which masks the original characteristics of the stone, thus prohibiting the identification of the specific raw material. When all of the represented lithic raw materials are considered, the data strongly suggest that most, if not all, of the lithic raw materials present in the Cluster 1 Activity Area originated from redeposited cobble deposits located near the site.



115 Total Artifacts

DELAWARE DEPARTMENT OF TRANSPORTATION	
BLUE BALL AREA TRANSPORTATION IMPROVEMENTS PHASE III SITE 7NC-B-54 (RONALD MCDONALD HOUSE) BRANDYWINE HUNDRED NEW CASTLE COUNTY	
CLUSTER 1, RAW MATERIALS	
FIGURE - 32	SKELLY and LOY Inc. CONSULTANTS IN ENVIRONMENT - ENERGY ENGINEERING - PLANNING

6.2.2 Tools and Tool Fragments

Lithic analysis of the Cluster 1 assemblage identified 11 bifaces in various stages of reduction and 11 unifaces of several different types. Of the identified bifaces, six are classified as projectile points, four as bifacial implements in various stages of reduction, and one as indeterminate biface tool fragments.

6.2.2.1 Projectile Points

Of the six projectile points identified, two are associated with specific "types." Specimen 2000/21-170/A is a quartz tool classified as Lackawaxen/Bare Island (Hranicky 1994; Ritchie 1961) (Plate 5). While "complete," this tool exhibits a small break at the distal (tip) end, a partially truncated shoulder, and overall use wear (e.g., resharpening on several occasions). Perhaps this projectile point was discarded at the site because it had been resharpened several times and was near the end of its use life, and lithic raw material was readily available near the site for knapping a replacement.

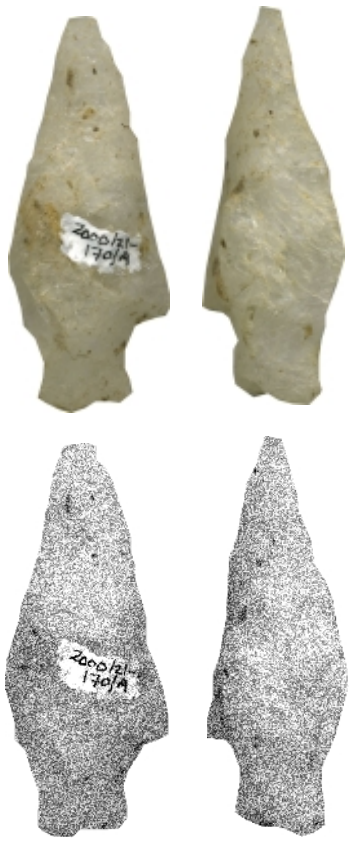
Analysis classified specimen 2000/21-186/A as a Lackawaxen-like projectile point manufactured from quartzite (Hranicky 1994; Ritchie 1961) (Plate 6). Portions of both the extreme distal tip and the base are truncated. The projectile point was likely discarded because the nature of the damage probably rendered the projectile point unusable without extensive modification. The Lackawaxen or Lackawaxen/Bare Island projectile point type is widely recognized in the Middle Atlantic region, where these projectile points likely date to the Woodland I period (Late/Terminal Archaic period) (Hranicky 1994; Kraft 1990:75-78; Ritchie 1961). For an excellent and extended treatment and comparative study of this projectile point type, the reader is referred to *Hickory Bluffs: Changing Perceptions of Delmarva Archaeology* (Petraglia *et al.* 2002:12-19).

Projectile point fragments manufactured from quartz comprise the remaining four specimens in the Cluster 1 assemblage (Plates 5 and 6). All are highly fragmented. Three are notched projectile point bases, while one is a distal tip. All three notched projectile points exhibit flexion or bending breaks, which may occur through manufacture, use, or by accident. One of these specimens (2000/21-136/A) also exhibits a radial fracture, which frequently results from a misapplication of force during

2000/21-136/A

2000/21-136/B

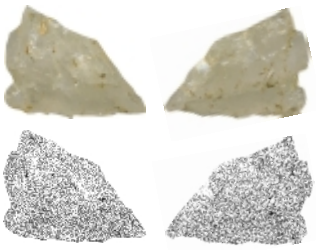
2000/21-167/A



2000/21-170/A

Plate 5. Site 7NC-B-54 (Ronald McDonald House) Cluster 1 Projectile Points.

2000/21-186/A



2000/21-199/A

Plate 6. Site 7NC-B-54 (Ronald McDonald House) Cluster 1 Projectile Points.

knapping; in this scenario, the knapper does not strike close enough to the margin (i.e., strikes nearer the center of the tool), resulting in breakage. The breaks also result occasionally from a knapper intentionally breaking a tool, perhaps in an effort to use the broken pieces for some other task. Specimen 2000/21-167/A, the distal tip, is truncated by a perverse fracture, a type of fracture diagnostic of a manufacturing error.

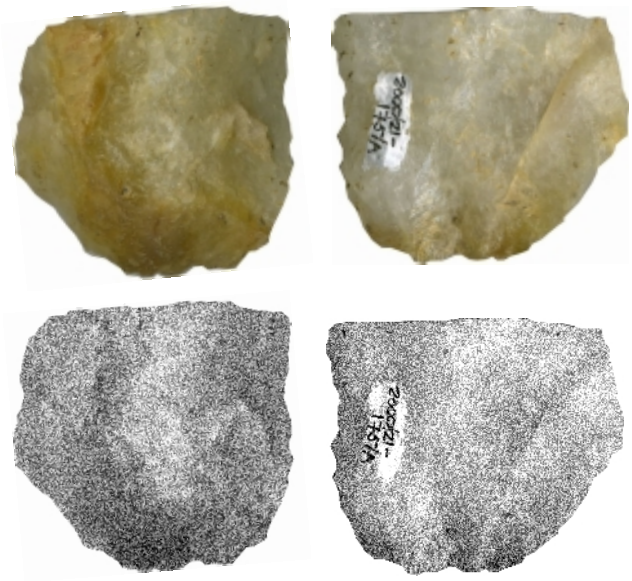
6.2.2.2 Bifaces

Analysis identified five biface fragments associated with Cluster 1. Jasper was employed in the manufacture of three of the biface fragments, while quartz was employed in the manufacture of two. The jasper biface fragments, one Stage 2 (Specimen 2000/21-197/A) (Plate 7), one Stage 4 (Specimen 2000/21-154/A) (Plate 8) and one indeterminate fragment (Specimen 2000/21-166/A) (Plate 9), all exhibit some form of thermal damage. It is unclear whether this damage resulted from intentional heat treatment of the raw material gone awry, or from unintentional exposure to heat (e.g., accidentally deposited in or near a hearth, post-depositional exposure to forest fire). The two Cluster 1 quartz biface fragments are classified as Stage 2 (Specimen 2000/21-175/A) and Stage 4 (Specimen 2000/21-198/A) (Plates 7 and 8).

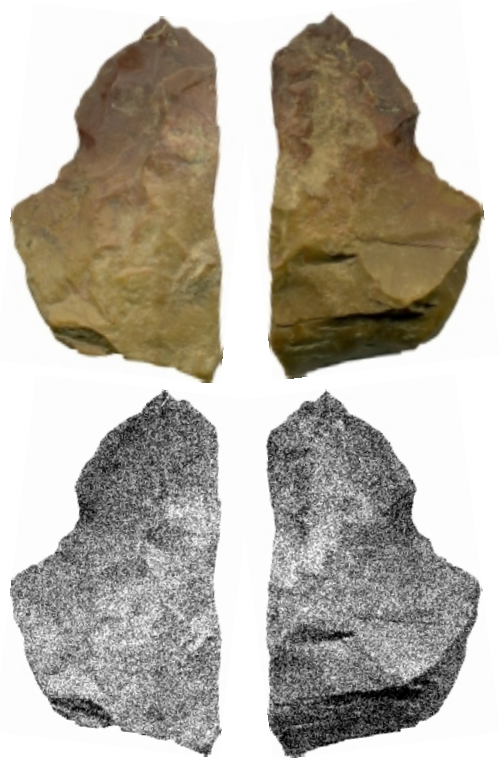
Regarding the biface assemblage as a whole, most identified breaks are classified as flexion, which, as discussed above, may result from several different types of events. Thus, it is unclear whether these breaks are a result of manufacturing errors. However, it is instructive to note that both earlier (Stage 2) and later (Stage 4) biface fragments were identified in both the jasper and quartz assemblages, suggesting that the full range of biface reduction occurred at Cluster 1.

6.2.2.3 Unifacial Tools

This section of the Cluster 1 lithic artifact discussion concerns the analysis of intentionally modified unifaces. Simple edge-damaged artifacts (e.g., utilized flakes) are discussed later. Unifaces identified in the Cluster 1 assemblage include three endscrapers (Plate 10), five retouched flakes (Plates 11 and 12), one resharpening flake (Plate 13), and two indeterminate uniface fragments (Plate 14). The three endscrapers were manufactured from jasper (Specimens 2000/21-149/A and 2000/21-

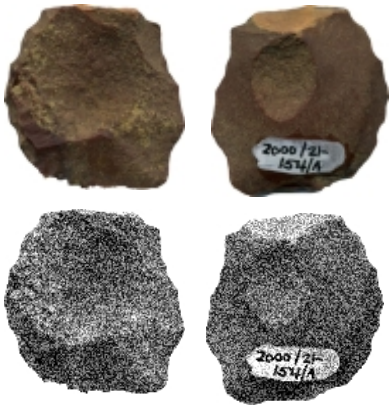


2000/21-175/A

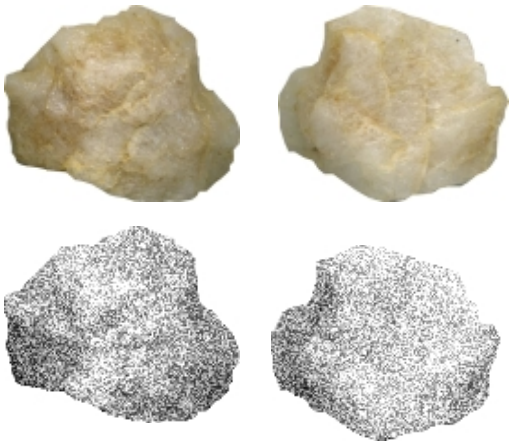


2000/21-197/A

Plate 7. Site 7NC-B-54 (Ronald McDonald House) Cluster 1 Stage 2 Bifaces.

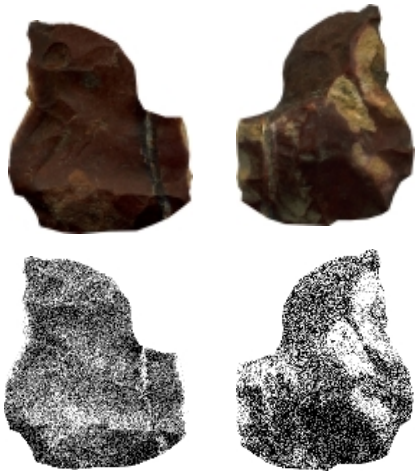


2000/21-154/A



2000/21-198/A

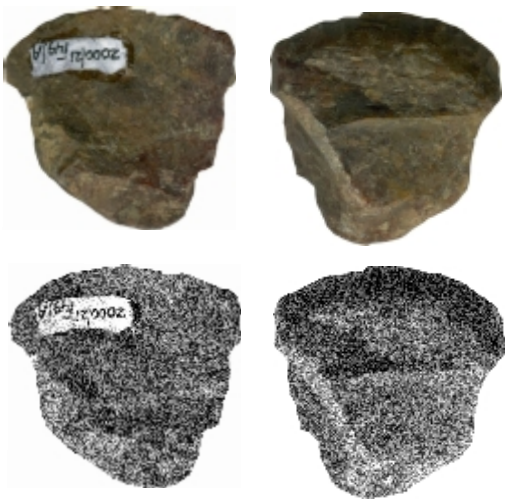
Plate 8. Site 7NC-B-54 (Ronald McDonald House) Cluster 1 Stage 4 Bifaces.



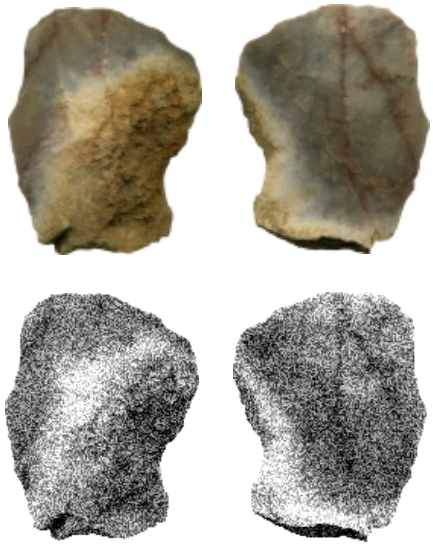
2000/21-166/A

0 5 cm

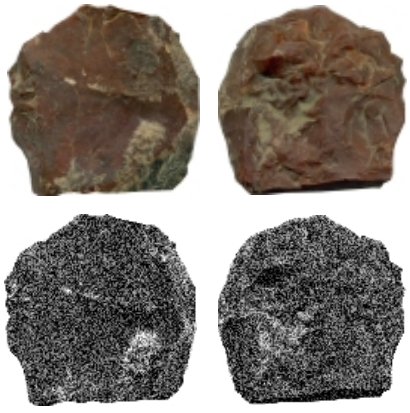
Plate 9. Site 7NC-B-54 (Ronald McDonald House) Cluster 1 Indeterminate Biface.



2000/21-149/A



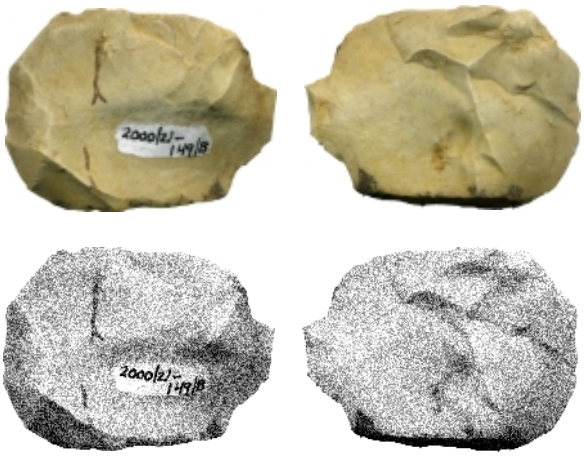
2000/21-168/A



2000/21-179/B

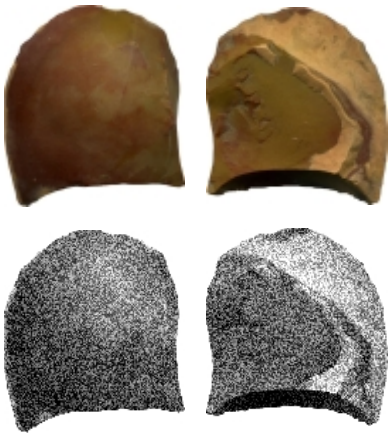
0 5 cm

Plate 10. Site 7NC-B-54 (Ronald McDonald House) Cluster 1 Uniface Endscrapers.



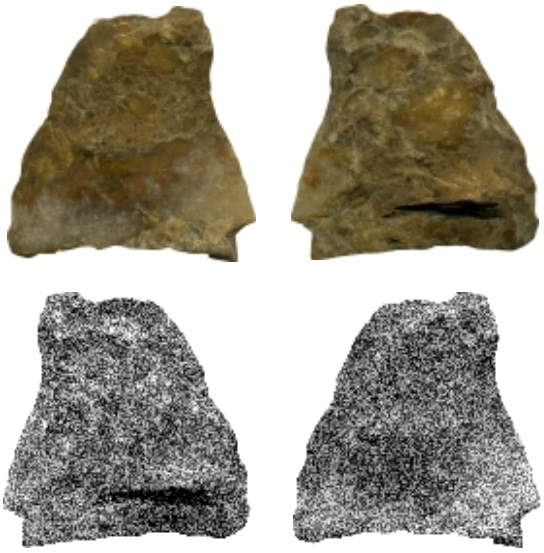
2000/21-149/B

2000/21-154/H

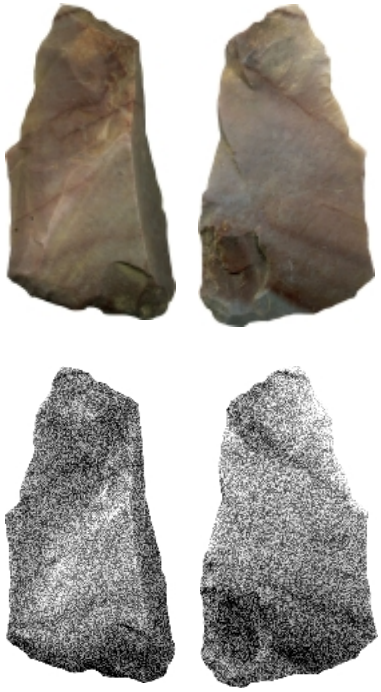


2000/21-179/A

Plate 11. Site 7NC-B-54 (Ronald McDonald House) Cluster 1 Uniface Retouched Flakes.



2000/21-180/B

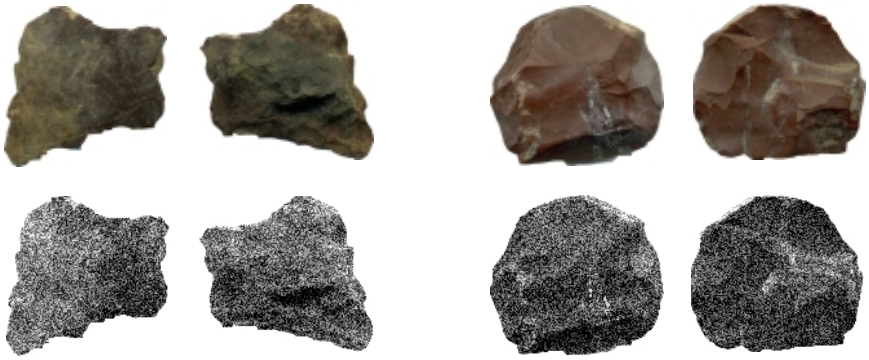


2000/21-204/A

Plate 12. Site 7NC-B-54 (Ronald McDonald House) Cluster 1 Uniface Retouched Flakes.

2000/21-185/A

Plate 13. Site 7NC-B-54 (Ronald McDonald House) Cluster 1 Uniface Resharpening Flake.



2000/21-171/B

2000/21-174/A

0 5 cm

Plate 14. Site 7NC-B-54 (Ronald McDonald House) Cluster 1 Indeterminate Unifaces.

179/B) and chert (Specimen 2000/21-168/A). All of these specimens are complete and exhibit some form of thermal alteration or damage. Two of the unifacial tools retain intact platform remnants. The morphology of these two platform remnants is suggestive of flake blanks derived from freehand cores. Since no platform remnant is present on the third unifacial tool, the blank type from which the specimen originated can not be determined. Endscrapers are often, though not exclusively, thought to function as hide preparation tools.

Four of the five retouched flakes are complete. Regarding raw material types, three are jasper (Specimens 2000/21-154H, 2000/21-179A, and 2000/21-180/B), one is chert (Specimen 2000/21-149B), and one is an indeterminate material (Specimen 2000/21-204A). Four of the five retouched flakes were derived from core trimming flake blanks, while the blank type of the fifth, a badly heat damaged flake of indeterminate material, can not be identified. Retouched flakes are often used in a variety of domestic tasks and serve various cutting and scraping functions. The uniface resharping flake (Specimen 200/21-185/A) is made of chert and evidences thermal alteration. Analysis also identified two indeterminate jasper unifaces in the Cluster 1 assemblage (Specimens 2000/21-171/B and 2000/21-174/A). The latter is a badly heat damaged specimen whose general morphology suggests an endscraper, while the former is a minimally modified tool that exhibits a large amount of dorsal surface cortex.

6.2.3 Debitage

The Cluster 1 lithic debitage shows a mix of technologies, including evidence of core, biface, and uniface reduction. Core trimming debitage likely resulted from the reduction of cobble cores, perhaps for the generation of flake blanks for further tool manufacture, or as simple handheld tools. In all, lithic analysis identified 23 “standard” core trimming flakes and one bipolar flake.

All of the Cluster 1 biface reduction debitage resulted from the middle-to-later manufacturing stages or tool resharpening. No obvious initial edging flakes are identified. An examination of flake types across several raw materials is informative. For instance, while jasper is the most abundant raw material in the cluster assemblage, and most of the formal tools are jasper, only three jasper flakes could be confidently classified as resulting from biface reduction. All of the jasper flakes are classified as late stage/pressure flakes, likely derived from late stages in the knapping sequence. This

pattern suggests that jasper bifaces were brought to the site as finished tools, with sharpening or maintenance, not manufacturing of the tools as the primary activity. In contrast, the Cluster 1 quartzite, quartz, and chert debitage are comprised of “standard” biface thinning flakes and late stage/pressure flakes, suggesting a wider range of knapping and maintenance activities associated with these lithic raw materials.

Finally, the presence of a single jasper uniface reduction flake suggests that sharpening of unifaces occurred at Cluster 1. However, since most uniface reduction flakes are small in size and easily pass through the typical mesh size hardware cloth used in archaeological investigations, the absence of uniface reduction flakes at an archaeological site may reflect the recovery methods rather than the actual lack of uniface reduction activities at the site.

6.2.4 Utilization

Examination of the Cluster 1 lithic tools and debitage identified utilization traces on 16 of the 115 artifacts. Of these 16, seven are utilized flakes and the remainder are tools with traces of utilization. Traces of utilization are expected on tools, as the presence of a formed implement suggests that it was manufactured for some specific task. The utilization on the flake debitage is comprised of simple edge damage that likely resulted from use as expedient cutting, or scraping implements. Interestingly, six of the seven utilized flakes are classified as core trimming flakes, while one is a flake fragment. Given that no cores were identified in the Cluster 1 assemblage, it is possible that cores were brought to the cluster location, used as a source of blanks for expedient (or formal) tool manufacture, and then removed from the cluster location when the group moved on. Based on the presence of both utilized tools and debitage at Cluster 1, domestic activities other than lithic manufacture and maintenance (e.g., chopping, cutting, scraping) are strongly suggested.

6.2.5 Thermal Alteration

A relatively high number of artifacts in the Cluster 1 assemblage, 49 of 115, exhibit some form of thermal alteration. Most (n=33) exhibit crazing and/or potlidding, which are generally indicative of uncontrolled exposure to heating, while at least 16 specimens show simple color changes, without any damage, that are generally

indicative of controlled exposure to heating, as in heat treatment of certain types of raw materials to improve the workability of the stone. The majority of both the jasper (34 specimens of the 41 total) and the mottled gray chert (7 specimens of the total 9) exhibit some type of thermal alteration. With the exception of the specimen of indeterminate lithic raw material, the remaining raw material types exhibit little to no thermal alteration. The presence of thermal alteration on two different lithic raw material types suggests that some intentional heat treatment of raw materials was being done at the Cluster 1 location by the occupants of the site.

6.2.6 Summary

The delineation of the Cluster 1 Activity Area is confirmed by the strongly similar distributions of jasper, quartz, and cherts, which is unlike the other site clusters whose lithic raw material types are dominated by quartz. The Cluster 1 lithic artifact assemblage shows consistency in raw materials and technotypes. The cluster is unique at the site for its relatively high frequency of jasper, quartz, and cherts.

Based on the identification of two projectile points within the Cluster 1 assemblage, the use of the site at this location dates to the Late/Terminal Archaic portion of the Woodland I period. During the use of this cluster location, pre-contact period peoples employed several different lithic raw materials, including jasper, quartz, chert, quartzite, and unidentified raw materials, to manufacture and maintain their lithic tool kits. The presence of cortical surfaces, on many of the lithic artifacts suggests that most, if not all, of the lithic raw material employed in knapping activities was obtained from secondary cobble sources, attesting to the importance of these deposits in the lives of the pre-contact period peoples that occupied/used this locale.

Based on tool and debitage analysis, cores, bifaces, and unifaces were knapped at the site. While the low overall lithic artifact count (n=115) suggests a lack of extended knapping episodes, the variety of raw materials and artifacts indicative of all stages of the lithic reduction sequence indicates multiple knapping episodes. For instance, the quartz artifact assemblage contains both early and late-stage biface tools and projectile points, as well as earlier and later stage biface thinning debitage. The jasper assemblage includes core reduction flakes, bifaces, and unifacial tools. Thus, what the Cluster 1 lithic assemblage lacks in quantity of artifacts, it makes up for in the variety of lithic reduction trajectories that took place there.

Despite the overall low number of artifacts (n=115) comprising Cluster 1, the diversity of lithic raw materials is noteworthy. One interesting pattern that emerges from the lithic analysis is that it appears that the pre-contact period knappers who used the location were intentionally selecting specific raw materials for use as unifaces. This pattern is supported by the fact that, while jasper and chert comprise 35.7 and 16.5 percent of the Cluster 1 assemblage, these materials account for 70.0 and 30.0 percent of the unifacial tools, respectively. The relatively high number of formal unifaces (n=10) associated with Cluster 1 indicates that the location was not simply a convenient stopping or resting spot for pre-contact period peoples to make or sharpen their lithic tools, but rather the presence of these unifaces indicates that a variety of non-hunting and non-knapping activities took place here. Perhaps these unifaces were employed in tasks such as garment repair, vegetal resource gathering and processing, or trapping, which are not otherwise preserved in or evident from the archaeological record. No matter what tasks were being performed at this cluster location, it is apparent by the numbers of different lithic raw materials present in the assemblage that the abundant local lithic raw material supply was being tapped to provide a source of stone for additional tool manufacture.

6.3 Presumptive Blood Residue Testing

Twenty-one, or 18 percent, of the lithic artifacts recovered from the Cluster 1 Activity Area, including seven projectile points, two Stage 2 bifaces, two Stage 3 bifaces, one Stage 4 biface, one uniface, two uniface endscrapers, two indeterminate unifaces, and four uniface retouched flakes, were subjected to presumptive blood residue testing. All of the tested specimens proved negative for the presence of blood residue. Despite the fact that nine of the artifacts were not washed during their processing prior to the presumptive blood residue testing, no blood residue was identified. Quartz, jasper, and chert comprised the raw materials of the artifacts tested. The lack of blood residue on the tested artifacts may reflect that the artifacts were never used for tasks that would have exposed them to blood, or in some cases may be due to the washing of the artifacts during processing. With regard to the unifaces, although skinning an animal results in exposure of the tool to blood, scraping a dried skin/hide does not. The lack of blood residue on the tested Cluster 1 artifacts supports the idea that the tasks accomplished in this portion of the site did not include hunting or butchering activities, or inadvertent bleeding of the occupants themselves from cuts during knapping.

6.4 Chronology

No materials suitable for radiometric assay were recovered from excavations in the Cluster 1 Activity Area; therefore, no absolute dates are available for the activity area. Two projectile points recovered from the artifact cluster are identified as a Lackawaxen/Bare Island type and a Lackawaxen-like type. The temporal association of these narrow-blade stemmed projectile points in areas of the Lower Potomac and Delaware is 3,000 B.C. to at least 2,000 B.C. (Custer 1984:78; Gardner 1976; Stephenson 1963). The associated age of the Cluster 1 Activity Area is the Woodland I period.

6.5 Interpretations

Based on the morphology and material culture characteristics of the Cluster 1 Activity Area, it appears that the location was used once, for a short time, by multiple individuals for a few activities, including late stage lithic tool manufacture and tool maintenance. The people using the location brought some specialized lithic artifacts with them but also collected the lithic raw materials locally to make new ones. In addition to some small-scale lithic reduction, the presence of uniface tools indicates that the people using the Cluster 1 location were participating in activities that required expedient cutting or scraping tools such as plant gathering and processing. The use of the location occurred during the Woodland I period.