Phase I Archaeological Survey for HISP US 9 and SR 5 Intersection Improvements Harbeson

Sussex County, Delaware

July 2014

Phase I Archaeological Survey for HISP US 9 and SR 5 Intersection Improvements, Harbeson, Sussex County, Delaware

Agreement 1651, Task Order 2

Prepared For:

Delaware Department of Transportation

P.O. Box 778

Dover, Delaware 19901

Prepared by:

James G. Parker, MA, RPA

Gideon Singer

With Contributions from:

Tiffany Raszick, MPhil, RPA

HDR

2600 Park Tower Drive, Suite 100

Vienna, VA 22180

July 2014

Abstract

Under contract to the Delaware Department of Transportation (DelDOT), HDR Environmental, Operations and Construction, Inc. (HDR) conducted a Phase I archaeological investigation for the proposed US 9/Lewes Georgetown Highway and State Route (SR) 5/Harbeson Road Intersection Improvements Project in Harbeson, Sussex County, Delaware. DelDOT plans to undertake improvements at the intersection of US 9 and SR 5. The purpose of the investigation was to identify archaeological resources within the 7.65-acre limit of construction (LOC). The investigation was completed to assist DelDOT in meeting anticipated regulatory obligations under Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. HDR performed the work in accordance with the *Secretary of the Interior's Standards and Guidelines* for Archaeology and Historic Preservation and the Delaware State Historic Preservation Office's *Guidelines for Conducting Architectural and Archaeological Surveys in Delaware* (1993, as amended).

HDR conducted the background research in February and March 2014, and the fieldwork was undertaken in April 2014. The field survey included a controlled surface inspection of the entire LOC, followed by subsurface testing of an approximately 0.08-acre parcel, designated the Phase I Survey Area, situated on the northwest side of the US 9/SR5 intersection.

HDR excavated 20 shovel tests, a 0.5-m by 0.5-m test unit, and a 1-m by 1-m test unit during the archaeological survey. One site was identified, designated 7S-F-158 (CRS S03573) by the SHPO. Subsurface testing revealed an inconsistent stratigraphy within the site. A total of 154 historic artifacts and 25 modern items were recovered from five shovel tests and the test units that were excavated within the site. One feature, an intact brick drain, was encountered behind (approximately 5 m west of) the existing structure, which has been designated the Warrington Dwelling. The majority of the historic assemblage dates from the early to mid twentieth century, with the exception of several domestic and architectural items that date from the eighteenth to nineteenth centuries. Except for a mold-made brick fragment, all of these older artifacts were recovered from the natural strata intermittently encountered across the site beneath layers of fill; however, in all instances, they were also mixed with modern items. The remainder of the assemblage—composed primarily of architectural debris and domestic refuse—was recovered from fill layers.

The majority of the historic assemblage can be linked to the early to mid twentieth-century occupation of the parcel by the Warrington family. The presence of the older domestic artifacts indicates an earlier occupation in the area, possibly related, in part, to a school house noted in the vicinity on an 1868 map of the area. However, interpretation beyond determining an approximate temporal range for these artifacts is difficult considering the disturbed context from which they were recovered. The older architectural items, mold-made brick and square cut nails, are likely related to the current structure on the property. During the survey, investigation of the structure revealed cut nails were used in its original construction, and mold-made brick was used for at least one of its chimneys. It appears that at some point within the last 30 years, major renovations were undertaken on the house, including the installation of new windows. At some point, the chimneys were dismantled as well. These renovations, at least in part, explain the presence of older architectural items being recovered from subsurface testing. Based on the mixed historic/modern assemblage recovered and lack of intact archaeological deposits, HDR recommends this site as not eligible for listing in the NRHP. No further work is recommended.

Table of Contents

Abstract i
1 Introduction 1
2 Environmental Setting 11
2.1 Physiography 12
2.2 Geology 12
2.3 Hydrology 13
2.4 Flora and Fauna 13
3 Background Research 15
3.1 Prehistoric Context 15
3.2 Historic Context 19
3.2.1 Harbeson LOC Historic Context 20
3.3 Known Sites and Previous Investigations 34
4 Research Design and Methodology 37
4.1 Research Design 37
4.2 Field Methods 37
4.3 Laboratory Methods 37
5 Field Investigation Results 39
6 Laboratory Results and Discussion 59
7 Summary and Recommendations 63
8 References Cited 65

List of Appendices

Appendix A: Stratigraphic Profiles and Log A-1
Appendix B: Artifact Catalog B-1
Appendix C: Site Form C-1
Appendix D: Resumes of Key Personnel D-1

List of Figures

Figure 1-1. US 9 and SR 5 Intersection Improvements Project LOC and survey area. 2
Figure 1-2. LOC and survey areas on 1992 USGS Harbeson topographic map. 3
Figure 1-3. US 9 and SR 5 Intersection Improvements Project LOC. 4
Figure 1-4. US 9 and SR 5 Intersection Improvements Project Construction Plans (Sheet 9) with LOC outlined. 5
Figure 1-5. US 9 and SR 5 Intersection Improvements Project Construction Plans (Sheet 10) with LOC outlined. 6
Figure 1-6. US 9 and SR 5 Intersection Improvements Project Construction Plans (Sheet 11) with LOC outlined. 7
Figure 1-7. US 9 and SR 5 Intersection Improvements Project Construction Plans (Sheet 12) with LOC outlined. 8
Figure 1-8. US 9 and SR 5 Intersection Improvements Project Construction Plans (Sheet 13) with LOC outlined. 9
Figure 2-1. General view of western LOC along US 9, facing east. 11
Figure 2-2. General view of northern LOC along SR 5, facing south. 11
Figure 2-3. General view of eastern LOC, facing west. 12
Figure 2-4. General view of southern LOC, facing north. 12
Figure 3-1. 1868 Beers Atlas Map. 22
Figure 3-2. 1937 aerial photograph of the LOC and survey areas. 23
Figure 3-3. 1938 USGS Harbeson, DE Map. 24
Figure 3-4. 1944 USGS Harbeson, DE Map. 25
Figure 3-5. 1954 aerial photograph of the LOC and survey areas. 26
Figure 3-6. 1955 USGS Harbeson, DE Map. 27
Figure 3-7. 1961 aerial photograph of the LOC and survey areas. 28
Figure 3-8. 1992 USGS Harbeson Map. 29
Figure 3-9. 1992 aerial photograph of the LOC and survey area. 30
Figure 3-10. 1997 aerial photograph of the LOC and survey areas. 31
Figure 3-11. 2002 aerial photograph of the LOC and survey areas. 32
Figure 3-12. 2007 aerial photograph of the LOC and survey areas. 33
Figure 5-1. Results of the archaeological investigation of the Phase I Survey Area. 39
Figure 5-2. General view of the Phase I Survey Area, along US 9, from the southwest corner, facing east. 42
Figure 5-3. General view of the Phase I Survey Area 1 from the southwest corner, facing north. 42
Figure 5-4. General view of the Phase I Survey Area, along US 9, from the southeast corner, facing west. 43
Figure 5-5. General view of the Phase I Survey Area, along SR 5, from the southeast corner, facing north. 43
Figure 5-6. General view of the Phase I Survey Area, along SR 5, from the northeast corner, facing south. 44
Figure 5-7. General view of the area behind (west) the structure, facing southwest. 44
Figure 5-8. General view of early modern surface debris located behind (west) the structure, facing east/southeast. 45
Figure 5-9. General view of early modern surface debris located behind (west) the structure, facing north/northeast. 45

Figure 5-10. General view of early modern surface debris located behind (west) the structure, facing southwest. 46
Figure 5-11. General view of structural debris located behind (west) the structure, facing northeast. 46
Figure 5-12. General view of surface debris located behind (west) the structure, facing southeast. 47
Figure 5-13. General view of work in progress, facing southwest. 47
Figure 5-14. STP J1 profile. 48
Figure 5-15. STP J1 profile. 48
Figure 5-16. General view of Feature 1 within J1 and 0.5-m by 0.5-m TU. 49
Figure 5-17. STP 1.5 profile. 50
Figure 5-18. STP 1.5 profile. 50
Figure 5-19. STP 1.8 profile. 51
Figure 5-20. STP 1.8 profile. 51
Figure 5-21. STP 2.9 profile. 52
Figure 5-22. STP 2.9 profile. 52
Figure 5-23. STP 3.8 profile. 53
Figure 5-24. STP 3.8 profile. 53
Figure 5-25. STP 3.11 profile. 54
Figure 5-26. STP 3.11 profile. 54
Figure 5-27. General view of TU 1 pre-excavation. 55
Figure 5-28. General view of TU 1 post excavation. 55
Figure 5-29. TU 1 North profile. 56
Figure 5-30. TU 1 South profile. 56
Figure 5-31. TU 1 East profile. 57
Figure 5-32. TU 1 West profile. 57
Figure 6-1. General view of the structure showing the missing chimneys and several new windows, facing southeast. 60
Figure 6-2. General view of the structure showing the missing chimneys and new windows, facing south/southwest. 61
Figure 7-1. Site identified during the archaeological investigation of the Phase I Survey Area. 64

List of Tables

Table 2-1. Soils within the Phase I Survey Area. 13
Table 3-1. Delaware and corresponding Middle Atlantic Prehistoric Periods. 15
Table 3-2. Previously recorded historic architectural sites within a 0.5-mile radius of the LOC. 34
Table 3-3. Previous cultural resource investigations within a 0.5-mile radius of the LOC. 36
Table 5-1. Phase I Survey Area STPs and artifact totals. 40
Table 5-2. Fill strata encountered intermittently in STPs and TUs during the Phase I archaeological survey. 40
Table 5-3. Natural strata encountered beneath fill, in most cases, during subsurface testing. 41
Table 5-4. Survey Area 1 TU 1 artifacts and totals. 41

1 Introduction

Under contract to the Delaware Department of Transportation (DelDOT), HDR Environmental, Operations and Construction, Inc. (HDR) conducted a Phase I archaeological investigation for the proposed US 9 and State Route (SR) 5 Intersection Improvements Project in Harbeson, Sussex County, Delaware (Figure 1-1 to Figure 1-3). DelDOT plans to undertake improvements at the intersection of US 9 and SR 5 (Figure 1-4 to Figure 1-8). The purpose of the investigation was to identify archaeological resources within the 7.65-acre limit of construction (LOC). The investigation was completed to assist DelDOT in meeting anticipated regulatory obligations under Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. HDR performed the work in accordance with the *Secretary of the Interior's Standards and Guidelines* for Archaeology and Historic Preservation and the Delaware State Historic Preservation Office's *Guidelines for Conducting Architectural and Archaeological Surveys in Delaware* (1993, as amended).

The field survey included a controlled surface inspection of the entire LOC, followed by subsurface testing of an approximately 0.08-acre parcel, designated the Phase I Survey Area, situated on the northwest side of the US 9/SR5 intersection (see Figure 1-3). HDR archaeologists Jim Parker and Gideon Singer conducted the background investigation in February and March 2014. Fieldwork occurred from 1 to 4 April 2014, directed by Parker, and assisted by Singer. Parker and Singer processed and analyzed the artifact assemblage at HDR's archaeology laboratory in Vienna, Virginia.

Source: ESRI Streetmap 2010

Figure 1-1. US 9 and SR 5 Intersection Improvements Project LOC and survey area.

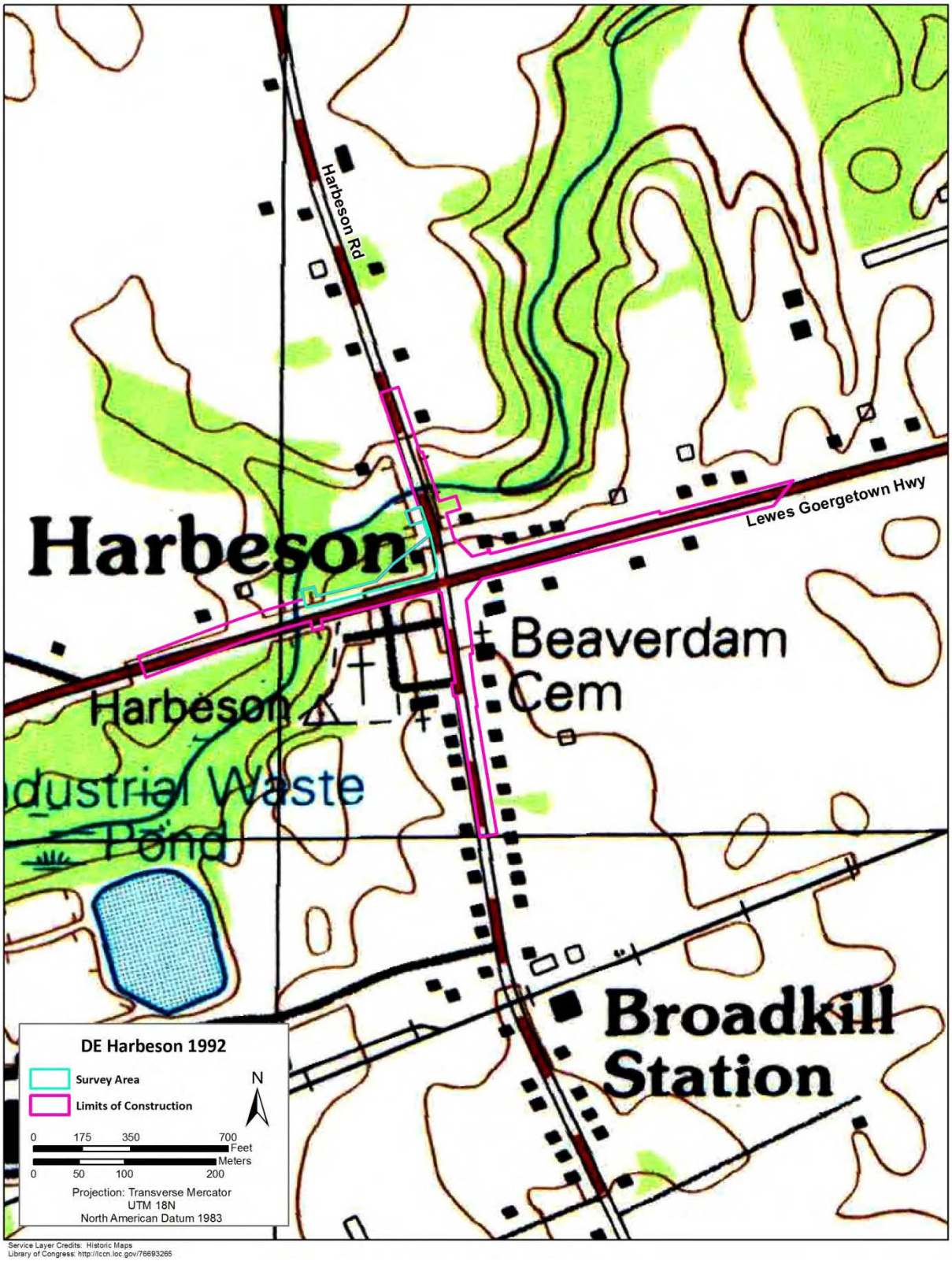
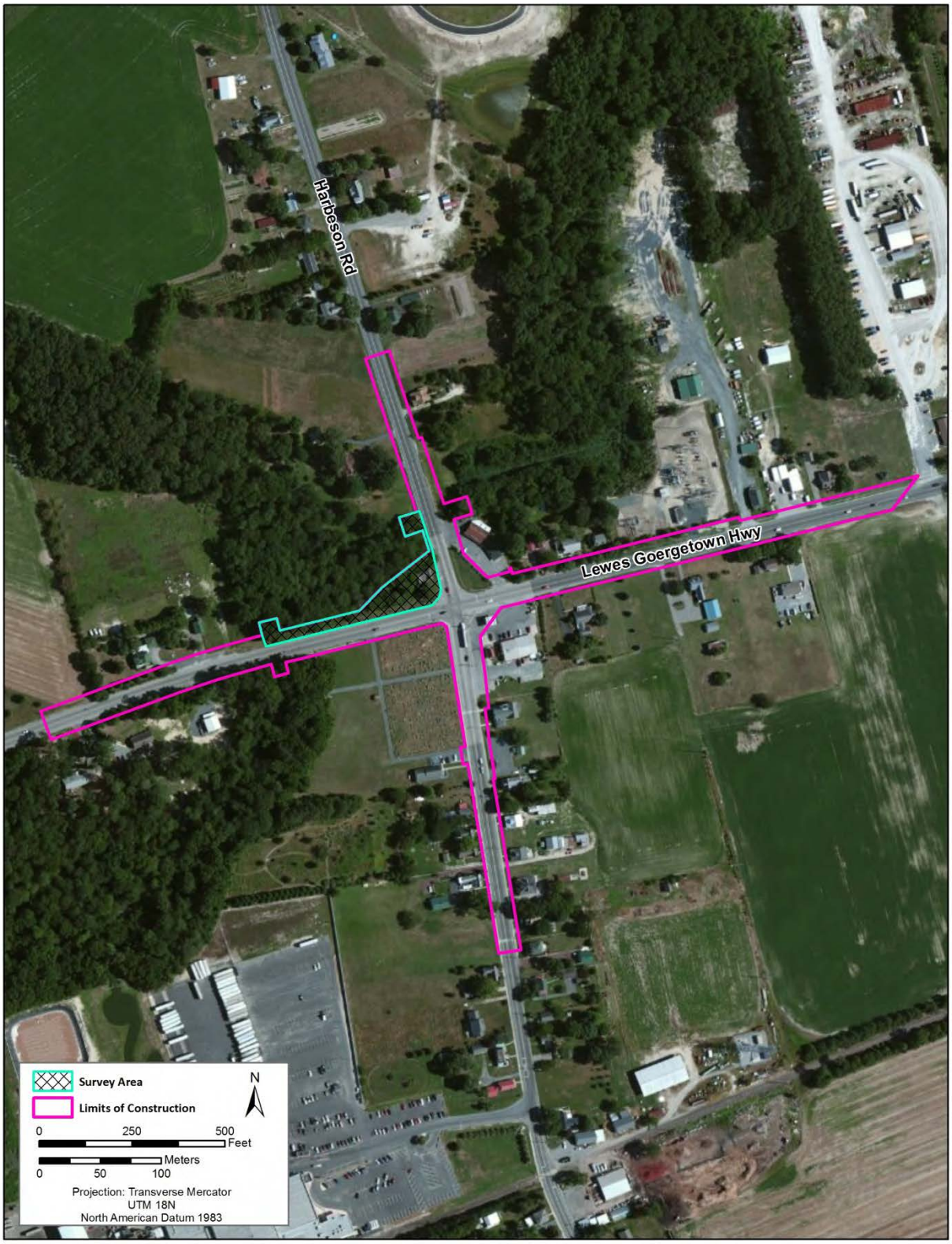
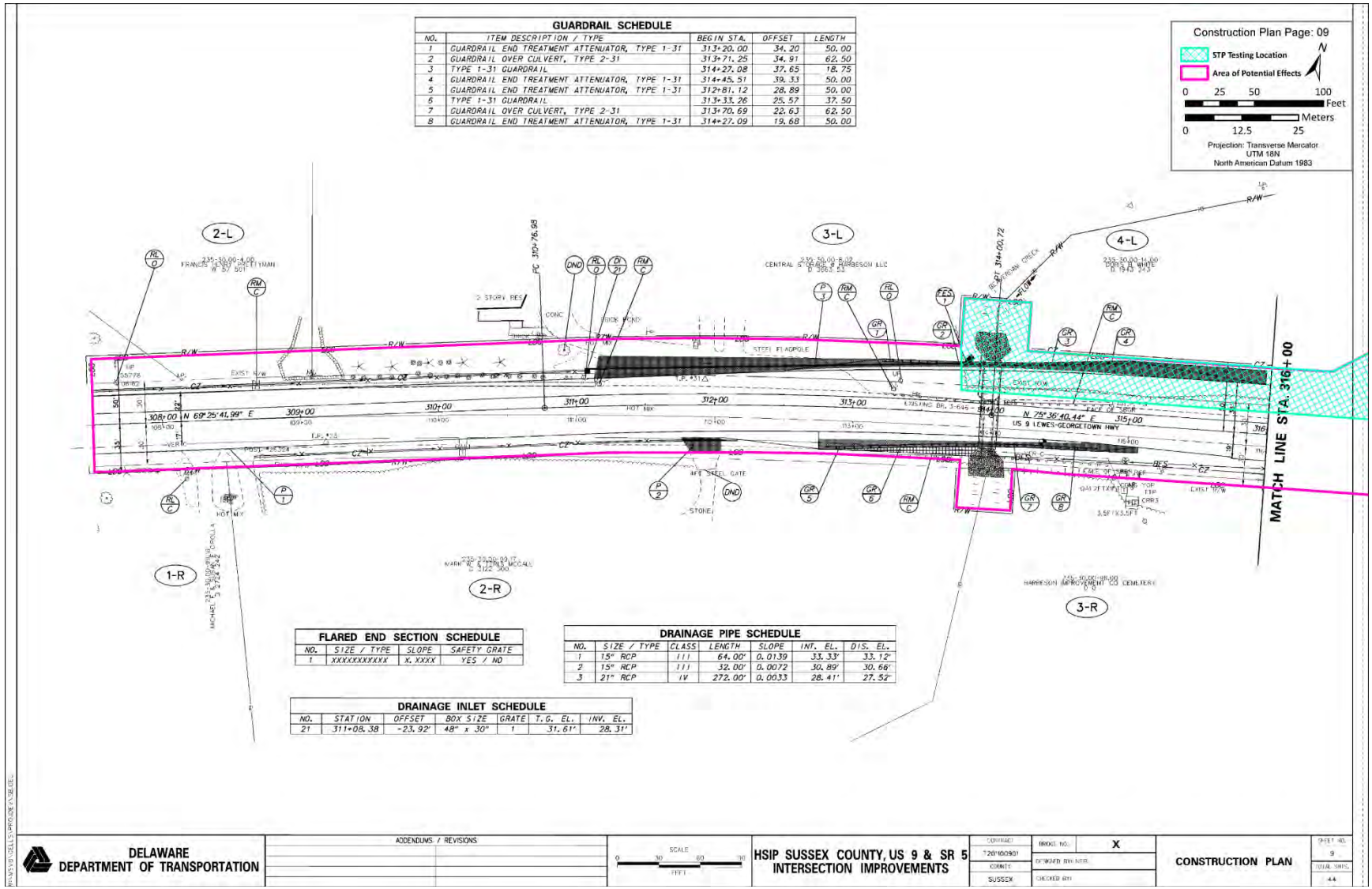


Figure 1-2. LOC and survey areas on 1992 USGS Harbeson topographic map.



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Figure 1-3. US 9 and SR 5 Intersection Improvements Project LOC. Subsurface testing occurred within area outlined in blue.



GUARDRAIL SCHEDULE

NO.	ITEM DESCRIPTION / TYPE	BEGIN STA.	OFFSET	LENGTH
1	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 1-31	313+20.00	34.20	50.00
2	GUARDRAIL OVER CULVERT, TYPE 2-31	313+71.25	34.91	62.50
3	TYPE 1-31 GUARDRAIL	314+27.08	37.65	18.75
4	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 1-31	314+45.51	39.33	50.00
5	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 1-31	312+81.12	28.89	50.00
6	TYPE 1-31 GUARDRAIL	313+33.26	25.57	37.50
7	GUARDRAIL OVER CULVERT, TYPE 2-31	313+70.69	22.63	62.50
8	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 1-31	314+27.09	19.68	50.00

FLARED END SECTION SCHEDULE

NO.	SIZE / TYPE	SLOPE	SAFETY GRATE
1	XXXXXXXXXXX	X.XXXX	YES / NO

DRAINAGE PIPE SCHEDULE

NO.	SIZE / TYPE	CLASS	LENGTH	SLOPE	INT. EL.	DIS. EL.
1	15" RCP	III	64.00'	0.0139	33.33'	33.12'
2	15" RCP	III	32.00'	0.0072	30.89'	30.66'
3	21" RCP	IV	272.00'	0.0033	28.41'	27.52'

DRAINAGE INLET SCHEDULE

NO.	STATION	OFFSET	BOX SIZE	GRATE	T.G. EL.	INV. EL.
21	311+08.38	-23.92'	48" x 30"	1	31.61'	28.31'

Figure 1-4. US 9 and SR 5 Intersection Improvements Project Construction Plans (Sheet 9) with LOC outlined. Subsurface testing occurred within area outlined in blue.

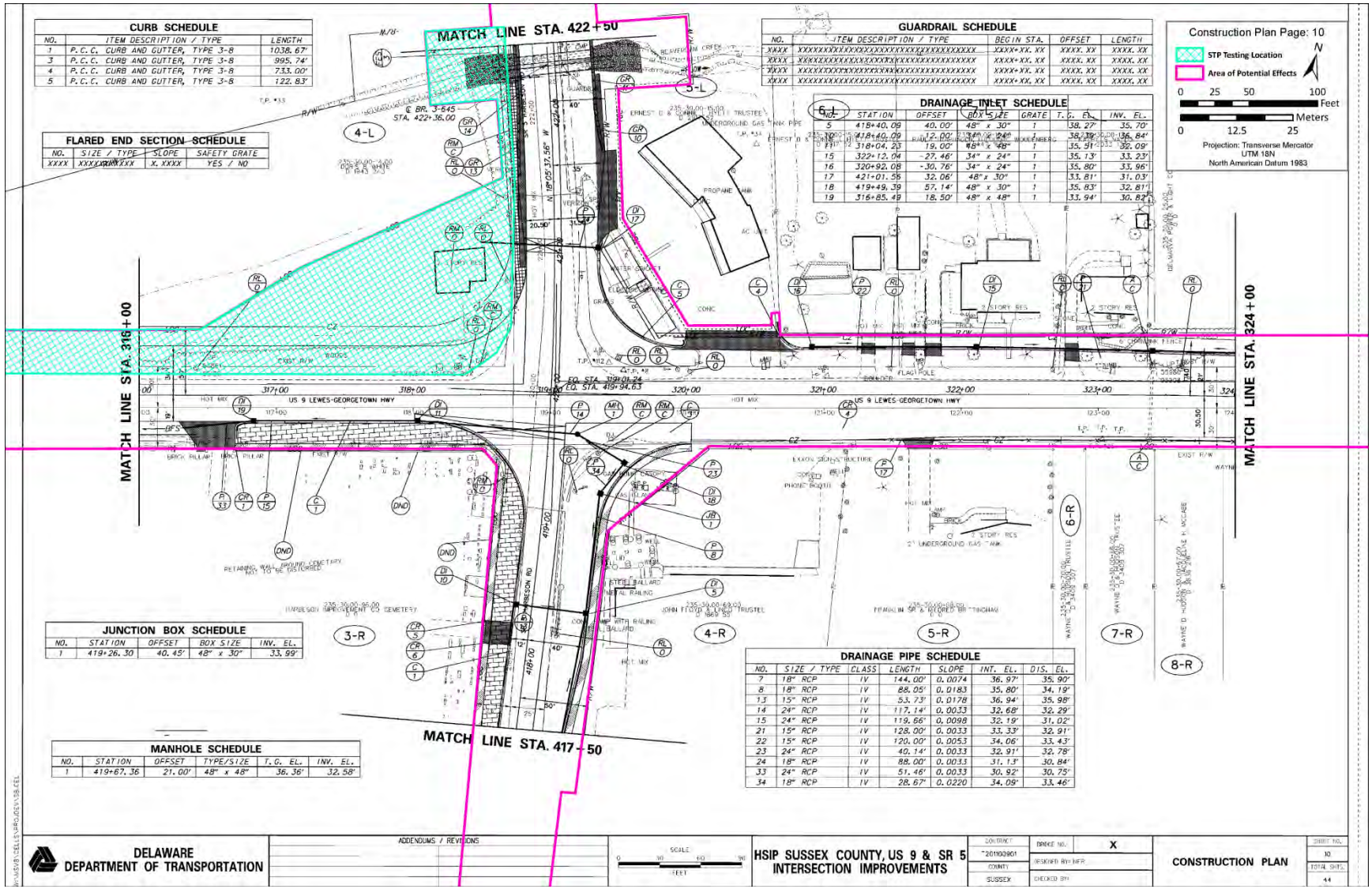


Figure 1-5. US 9 and SR 5 Intersection Improvements Project Construction Plans (Sheet 10) with LOC outlined. Subsurface testing occurred within area outlined in blue.

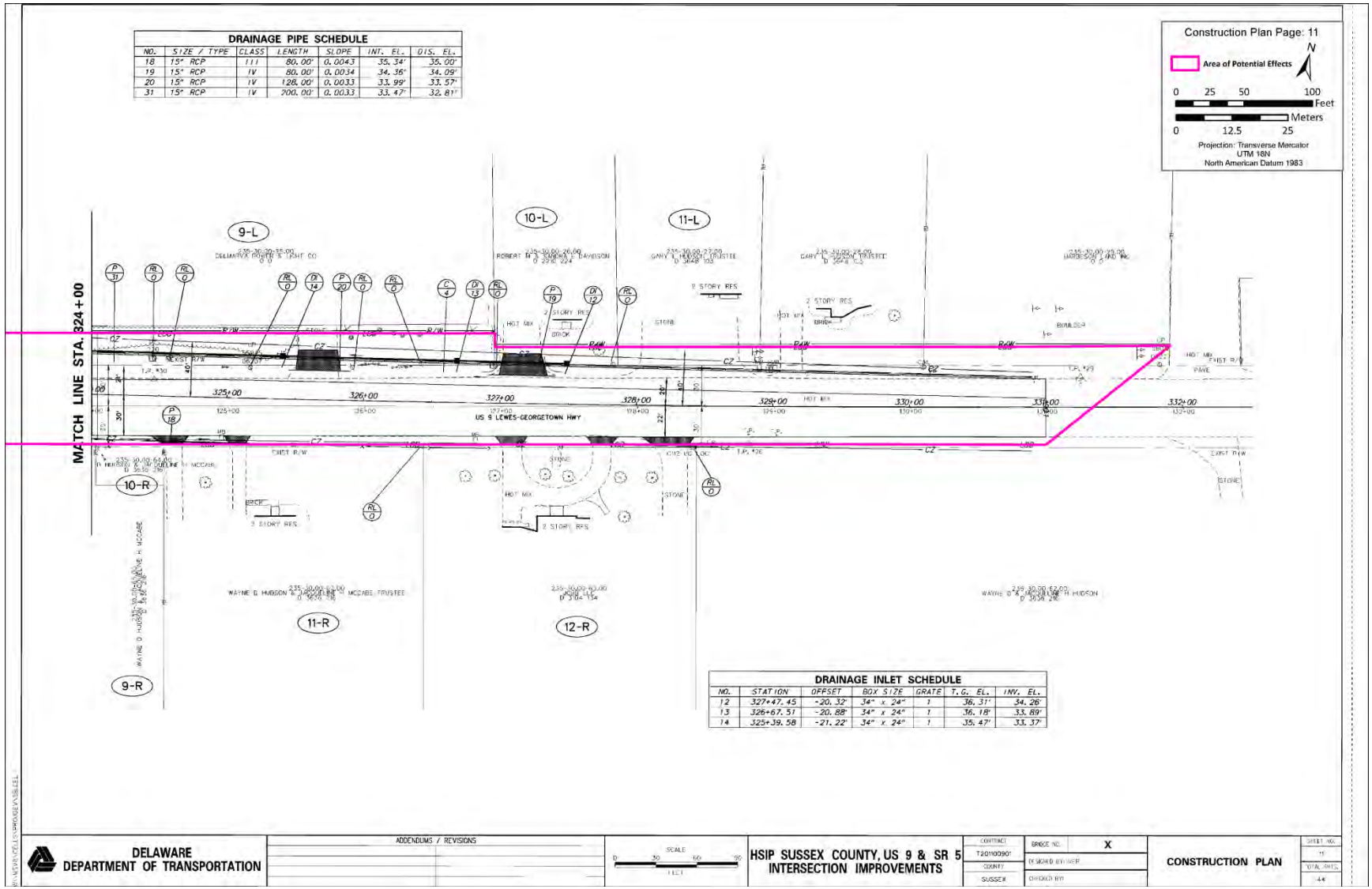


Figure 1-6. US 9 and SR 5 Intersection Improvements Project Construction Plans (Sheet 11) with LOC outlined.

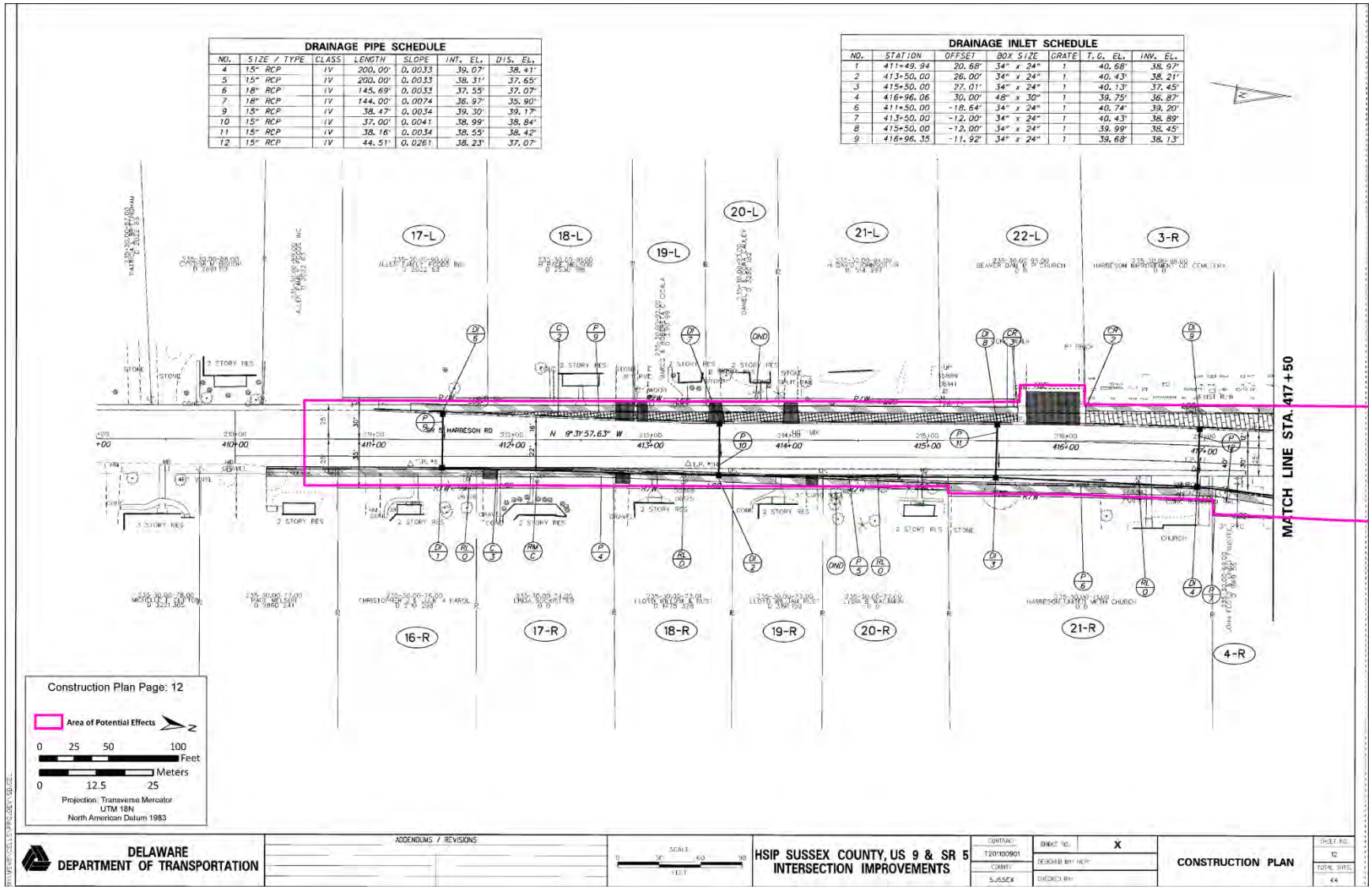


Figure 1-7. US 9 and SR 5 Intersection Improvements Project Construction Plans (Sheet 12) with LOC outlined.

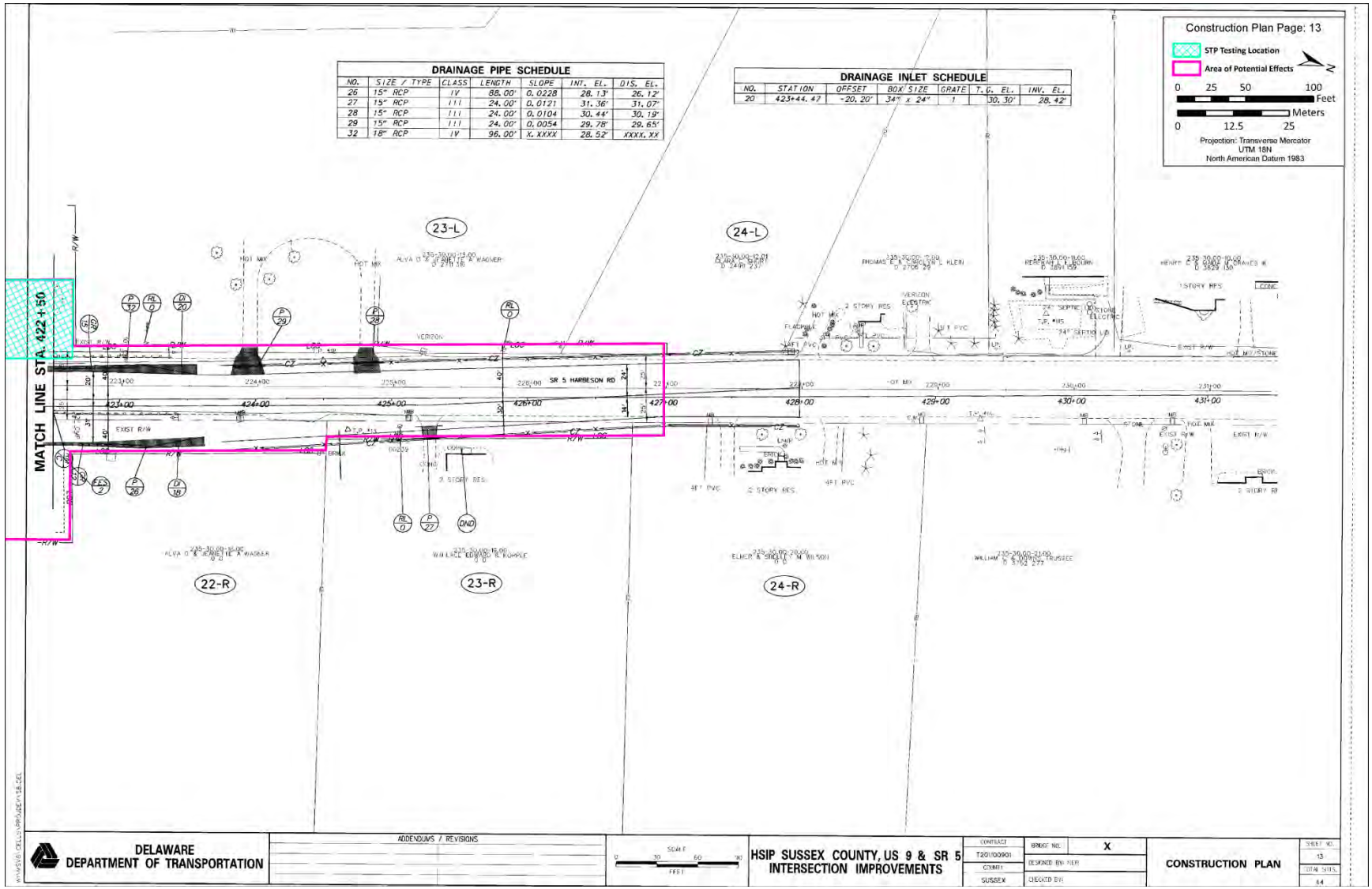


Figure 1-8. US 9 and SR 5 Intersection Improvements Project Construction Plans (Sheet 13) with LOC outlined. Subsurface testing occurred within area outlined in blue.

2 Environmental Setting

The LOC encompasses 7.65 acres along the intersection of US 9 and SR 5 in Harbenson, Broadkiln Hundred, Sussex County, Delaware. The 0.8-acre Phase I Survey Area is situated on the northwest side of the US 9/SR 5 intersection. Figure 2-1 to Figure 2-4 show the general conditions of the LOC. Land use in the area is primarily residential, commercial, or agricultural. This section provides a brief discussion of the environmental setting of the LOC. Specific topics covered include physiography, geology, hydrology, and flora and fauna.

Figure 2-1. General view of western LOC along US 9, facing east.

Figure 2-2. General view of northern LOC along SR 5, facing south.

Figure 2-3. General view of eastern LOC, facing west.

Figure 2-4. General view of southern LOC, facing north.

2.1 Physiography

The LOC lies within the lower Coastal Plain Physiographic Province. This region is characterized by flat to gently rolling topography and valleys. Elevations within the LOC range from approximately 30 to 40 ft. above mean sea level.

2.2 Geology

Soils within the survey area fall within the Pepperbox-Rosedale Complex and Zekiah Sandy Loam. Table 2-1 lists the characteristics of each soil type (USDA 2014).

Table 2-1. Soils within the Phase I Survey Area.

Name	Slope	Drainage	Survey Area(s)
Pepperbox-Rosedale Complex	0 to 2%	Moderately Well Drained	Rarely Floods
Zekiah Sandy Loam	0 to 1%	Poorly Drained	Frequently Floods

2.3 Hydrology

Beaverdam Creek bounds the Phase I Survey Area to the north and west. The creak runs roughly north-south parallel to the eastern shore of Delaware, emptying into the Atlantic Ocean in Lewes. It is approximately 12 miles west of the Atlantic Ocean in the mid-drainage division (Catts et al. 1991:6).

2.4 Flora and Fauna

Modern species of flora in the region include willow oak, white oak, sweet gum, red maple, water oak, cow oak, black gum, sweet oak, holly and dogwood (Catts et al. 1991:8). Current vegetation within the LOC is primarily manicured lawns, hardwoods, and pines. The Phase I Survey Area is comprised of manicured lawn along the roads, hardwoods with moderate undergrowth in the parcel interior, as well as wet land vegetation along Beaverdam Creek.

Modern faunal assemblages in Sussex County include deer and other game animals that frequent the poorly drained areas of the interior region of the county, as well as a variety of migratory birds, duck, muskrat, fish, and shellfish. Horses, cattle, pig and other domestic animals were introduced following European settlement.

3 Background Research

Background research for this investigation was conducted at the Delaware State Historic Preservation Office, the Delaware Public Archives, the Delaware Historical Society, and online through the Delaware Division of Historical and Cultural Affairs Cultural and Historical Resource Information System (CHRIS). Historic maps and United States Geologic Survey (USGS) maps were also used to locate potential historic properties. The goals of the background research were to address the cultural context of archeological resources in the project area and the land-use history of the study area as it relates to the presence and nature of potential archeological resources. This section provides prehistoric and historic contexts for the region, followed by an overview of known archaeological and historic architecture sites located within a 0.5-mile radius of the LOC, and previous cultural resource investigations conducted within the same area.

3.1 Prehistoric Context

The prehistory of Delaware is divided into five major periods: Paleoindian (13,000–6500 BC), Archaic (6500–3000 BC), Woodland I (3000 BC–1000 AD), Woodland II (1000–1650 AD), and Contact (1650–1750 AD). Each period is characterized by changes in material culture, settlement patterns, and subsistence strategies. Delaware's chronology differs from the Middle Atlantic regional chronology (see Table 3-1), which is divided into Paleoindian (12,000–9500 BC), Early Archaic (9500–6000 BC), Middle Archaic (6000–3500 BC), Late Archaic (3500–1000 BC), Early Woodland (1000 BC–AD 200), Middle Woodland (AD 200–900), and Late Woodland (AD 900–1600).

Table 3-1. Delaware and corresponding Middle Atlantic Prehistoric Periods.

Delaware Chronology	Corresponding Middle Atlantic Periods
Paleoindian (13,000–6500 BC)	Paleoindian (12,000–9500 BC) and the Early Archaic (9500–6000 BC)
Archaic (6500–3000 BC)	Middle Archaic (6000–3500 BC)
Woodland I (AD 3000 BC–1000)	Late Archaic (3500–1000 BC), Early Woodland (1000 BC–AD 200), and Middle Woodland (AD 200–900)
Woodland II (AD 1000–1650)	Late Woodland (AD 900–1600)

The following sections characterize each of the five main periods of prehistoric occupation in Delaware.

3.1.1 Paleoindian Period (13,000–6500 BC)

There is no conclusive evidence for human occupation in the Middle Atlantic region before 13,000 BC. However, archaeological sites such as Cactus Hill (44SX202) in Virginia, which has an early radiocarbon date of 15,000 years BP (McAvoy and McAvoy 1997), and Meadowcroft Rockshelter (36WH297) in southwestern Pennsylvania, which has produced dates suggesting occupation by 14,000–14,500 years BP (Adovasio et al. 1978, 1990), may indicate there was at least limited occupation in the Middle Atlantic region prior to the Paleoindian Period.

The Paleoindian Period exhibits a pattern of cultural adaptation to environmental conditions that marked the shift from the Late Pleistocene to the Early Holocene. During this time, the average annual temperature was three to eight degrees Fahrenheit colder than at present, and the vegetation consisted of spruce, pine, fir, and alder (Brush 1986:149; Leedecker and Holt 1991:72). Paleoindian settlements in Delaware consisted of small seasonally occupied camps from which forays were made to obtain resources for subsistence and stone tool

manufacture (Custer 1984; Dent 1995; Gardner 1977). The small size of individual Paleoindian sites suggests that the basic unit of kinship, production, processing, and consumption was the nuclear family (Custer 2013:144).

During the Late Glacial environmental episode (ca. 15,000–8080 BC), water volume increased dramatically in rivers and streams and water temperatures decreased. The effects of the glacial melt limited the ability of people to effectively exploit previously utilized estuarine resources, reducing open land areas that were slowly replaced with forest and favoring animal species adapted to forest edge settings (Custer 1984:47). The Late Glacial episode was followed by the Pre-Boreal/ Boreal episode (ca. 8080–6540 BC), which marked an environmental transition between the end of the Pleistocene and the beginning of the Holocene. This transition is linked to a continuing rise in sea level that most likely inundated many Paleoindian sites on the Delmarva Coastal Plain. The majority of the identified Paleoindian Period sites in Delaware (numbering less than 10) are located on upland flats situated near interfluves (Dent 1995).

Subsistence strategies during the Paleoindian Period most likely consisted of a combination of hunting game such as moose, elk, and deer and, perhaps to a lesser extent, fishing and foraging, which appear to have been more limited in Delaware than elsewhere in the Middle Atlantic region (Kavanagh 1982; McNett 1985; Dent 1995). The environmental conditions of this period limited the availability of fish in the Delmarva Peninsula due to the low temperature and high velocity of rivers and other water bodies. Shellfish resources were available in what are now submerged areas east of the present coastline as early as the Late Glacial episode. The limited number of known sites makes it challenging to assess the degree to which these resources were utilized during this period (Thieler et al. 2000).

Custer (1984:51) has argued that Paleoindians utilized cryptocrystalline lithic material acquired from primary quarries in northern Delaware, supplemented by secondary cobble sources found along southern sections of the Chesapeake Bay. Early Paleoindian sites are characterized by the presence of large, fluted, lanceolate-shaped projectile points, such as the Clovis and Dalton/Hardaway types, the majority of which were made on high-quality cryptocrystalline material. There have been 50+ isolated finds of fluted projectile points in Delaware (Stanzeski and Hoffman 2006). After ca. 10,000 BC, fluted points went out of favor and were replaced with varieties such as the Palmer and Kirk notched points. Studies of lithic procurement systems in the Middle Atlantic and in nearby regions have shown that Paleoindian groups probably traveled long distances to obtain the raw materials needed for tool production (Gardner 1977; Custer 1984; Lantz 1985; Gramly 1988, 1999).

3.1.2 Archaic Period (6500–3000 BC)

The transition from the Paleoindian Period to the Archaic Period was associated with a major climatic change that occurred at the end of the last Ice Age. During the Archaic Period, rising sea levels submerged the lower Susquehanna River and began forming the Chesapeake Bay, creating large estuarine marshes that offered an increased quantity and variety of food resources (Kraft 1976). As temperatures increased during this period, hemlock, birch, and oak began to replace spruce (Brush 1986:149; Custer 1990:10; Leedecker and Holt 1991:72). Evidence from late Paleoindian sites suggests that the transition from the Paleoindian lifeway was not a sharp break, but rather a gradual transition (Custer 1990).

The Archaic Period coincides with the onset of the Atlantic Climatic episode (ca. 6540–3110 BC), which was a warm, humid period associated with a rise in sea level that led to the development of inland swamps (Barse and Beauregard 1994:9). It was also marked by an increase in summer drought, grassland expansion into the Eastern Woodlands, and the appearance of new plant species (Carbone 1976:106; Hantman 1990:138). The formerly cooler, wetter climate shifted to an ecologically more productive, warmer, and drier climate similar to

what exists today. Vegetation in the region shifted from mostly coniferous forests to mixed deciduous and coniferous forests. Many of the larger mammals became extinct during this period and more specialized hunting techniques were developed, including the use of atlatls weighted with bannerstones.

Known Archaic sites are much more numerous, larger, and richer in artifacts than the earlier Paleoindian sites. They represent a series of adaptations that were increasingly sedentary and focused on large rivers and major tributaries. Other, often smaller, sites located away from the main streams may represent seasonally reoccupied camps or other specialized activity areas. Both Gardner (1974) and Custer (1980) have hypothesized that people in the early Archaic Period were already banding together in spring and summer macro-base camps located primarily in valley floodplains, and splitting into micro-base camps located in upland regions during the fall and winter months.

During the course of the Archaic Period, people began using more locally available raw materials for stone tool production. Cryptocrystalline parent rock was slowly replaced by alternate sources such as quartz, quartzite, rhyolite, chert, and jasper. The appearance of mortars and pestles at this time also suggests that plant foods played a larger role in subsistence strategies than previously, possibly indicating a shift towards a diet that included a variety of species of animals and plants.

3.1.3 Woodland I Period (3000 BC–AD 1000)

Environmental changes starting at around 3000 BC resulted in warmer/drier and cooler/wetter cycles in the region (Eiswert et al. 2011:13-14; Mancl et al. 2013:6). A decreased rate of sea-level rise made stream valleys and coastal areas in the region more attractive for settlement. Newly developed estuarine and riverine environments were stable and intensive enough to support large base camps at saltwater/freshwater interfaces and along major drainages (Custer 1984:77; 2013:134). Common to coastal sites are large shell middens, which indicate that oysters became a major food source at this time. Other available estuarine resources included anadromous fish, ribbed mussels, and various clam species. Several of the fishing methods employed to take advantage of these resources, such as the use of fish weirs, fish nets, barbed fish spears, net floats, and net sinkers, were still being used when Europeans arrived (Ward et al. 2013:15).

New cooking technologies were used during the Woodland I period, possibly in response to the quantity and diversity of available resources and a more sedentary lifestyle (Custer 1984; Sassaman 1999; Ward et al. 2013). Steatite (soapstone) vessels were produced during the early part of the period. Around 1000 BC, steatite vessels were replaced with ceramic vessels when pottery technologies were introduced. Marcey Creek Ware and Bushnell Ware, early ceramic forms, were made using steatite temper. Throughout the period, ceramics became increasingly refined and decorated.

Substantial prehistoric dwellings were constructed at riverine base camps during the Woodland I Period. The form of these circular structures, many with semi-subterranean living surfaces and interior fireplaces, changed little during the course of the ca. 4000 year period. Large macroband camps were occupied year-round, and small procurement camps have been found along streams and next to bay features (Custer 1989, 2013; Ward et al. 2013). On the Coastal Plain, subsistence strategies continued to focus on shellfish and fish resources, while in the Piedmont the focus was on harvesting nuts and hunting deer and turkey. Annual fish runs were exploited in the river valleys (Ward et al. 2013:15).

During the Woodland I Period, locally available lithic sources continued to be increasingly exploited and a wide variety of raw materials were utilized. Additionally, long-distance exchange networks are implied by the

distribution of non-local source material and may reflect increased interaction between groups who had access to the resource (Lenert et al. 2014:13).

The development of incipient stratified societies occurs during the Woodland I Period. Status hierarchies are identifiable by the presence of exotic raw materials in grave good contexts and caches (Custer 1989, 2013). Several sites belonging to the Delmarva Adena Complex have produced goods that suggest social stratification, including copper beads, tubular pipes, and caches of blades produced on Flint Ridge chalcedony from Ohio. The Delmarva Adena was present primarily in central Delaware. The Black Rock Complex (formerly known as Wolfe Neck), with its characteristic stemmed points and Susquehanna Series ceramics, is found in northern Delaware and in parts of Pennsylvania and Maryland. Both complexes were replaced by the Carey Complex, which conspicuously lacked the mortuary/exchange centers common to the Delmarva Adena Complex (Custer 1989; Ward et al. 2013:18). Shell-tempered Mockley Ware and Rossville-like and Fox Creek points are diagnostic of the Carey Complex.

3.1.4 Woodland II Period (AD 1000-1650)

The environment during the Woodland II Period was essentially modern in character and marine and estuarine resources continued to be exploited. “The basic changes noted in Delaware [at this time] include the breakdown of trade and exchange networks, alterations of settlement patterns, the development of sedentary lifestyles [in the southern section of Delaware], and the appearance of agricultural food production to varying degrees in different areas” (Custer 1984:146). Although horticulture became important throughout the Middle Atlantic region during the Woodland II Period, there is little evidence for it in Delaware. Subsistence strategies remained relatively unchanged from the previous period with the exception of very limited horticultural activity and the addition of cultigens to the diet in some areas, particularly in northern Delaware. Shellfish, especially oysters and clams, remained an important resource in the Woodland II diet. A wide variety of species have been recovered from sites across the state.

The Minguannan Complex is the main cultural complex found in northern Delaware (the lower Delaware Valley), northwestern Maryland, and parts of Chester County, Pennsylvania during the Woodland II Period. Minguannan settlements, primarily represented by macro-band base camps, were situated in locations previously occupied in the Woodland I Period. These were often in the most productive areas, such as brackish marshes and floodplains. Unlike the preceding culture, the Minguannan Complex is characterized by a less sedentary and more nomadic lifestyle, with identified sites lacking pit features, house patterns, burials, and sheet middens (Stewart et al. 1986; Custer 1987; Custer 1989; Stewart 1993:173). This differs significantly from the contemporaneous Shanks Ferry Complex identified in the northern Delaware Valley.

Analysis of ceramic decorative motifs suggests that the Minguannan shared design elements, and hence had a more evolved exchange network, with other Algonquian-speaking groups to the south than with their neighbors to the north (Custer 1987). Minguannan ceramics are characterized by incised geometric designs and are usually sand and/or grit tempered with smooth surfaces (Stewart et al. 1986:59). This design pattern shares more characteristic attributes with Townsend ceramics of the Slaughter Creek Complex of southern Delaware and the Moyaone ceramics found throughout the Western Shore Coastal Plain of Maryland than with Shenks Ferry ceramics. Stewart (1993) postulated that the Minguannan acted as middlemen between the Shanks Ferry group to the north and groups to the south. However, settlement patterns and artifact types suggest that the Minguannan did not actively engage in an exchange of ideas with the Shenks Ferry people in the northern Delaware Valley (for further discussion see Griffith and Custer 1985; Potter 1993; Dent 1995; Custer 1996).

The Slaughter Creek Complex is the dominant culture in the southern two-thirds of Delaware during the Woodland II Period. Slaughter Creek Complex sites are often extensive, with several subsurface features, many containing shellfish remains (Gerhardt and Mancl 2011:31). Large base camps (permanent or semi-permanent) with storage features and refuse pits, Townsend ceramics, and triangular-shaped points are the defining characteristics of this complex (Custer and Griffith 1986:29). An intensified use of storage for food surplus, a significant change in behavior from the Woodland I Period, indicates that: (1) there were now intensified food procurement strategies in marginal areas; and/or (2) more productive ecological zones had already reached their carrying capacity (Custer 1989:329-330). Unlike their northern neighbors, the Slaughter Creek people were more sedentary. However, evidence from both Minguannan and Slaughter Creek sites indicates that they were not stratified or ranked societies (Custer 1989; Stewart 1993, 2014).

During the Woodland II Period, the majority of stone tools were made from locally available cobbles. There is a notable lack of lithic artifacts made of exotic, non-local materials in Woodland II assemblages throughout the region, suggesting that the broad-based exchange networks of earlier periods were disrupted or severely diminished (Lowery 2009; Stewart 2014). By the beginning of the Woodland II Period, small triangular points were already being made, primarily on local chert and jasper. These small points, which likely functioned as tips for arrows, are the dominant tool type in Woodland II lithic assemblages. Other additions to the Woodland II tool kit include stone celts and hoes, as well as bone and antler tools. Other artifacts that appear in Woodland II assemblages include angular elbow pipes and, in rare instances, native copper beads and pendants.

3.1.5 Contact Period (AD 1650–1750)

By the later part of the Woodland II Period, local Native American groups and arriving Europeans were already interacting and trading. The burgeoning fur trade was predominantly controlled by the Susquehannock group, whose main villages were located in Pennsylvania but who maintained control over the fur trade in the Piedmont area of Maryland and Delaware. During the Contact Period, encounters between European and indigenous groups increased and there was a gradual decline in traditional lifeways. The period is characterized by access to trade goods, the displacement of native groups, the establishment of the reservation system, and warfare and conflict (Lowery 2009:38).

Contact Period Native American sites appear very similar to sites of the Woodland II Period in the region, with the persistence of triangular points, Townsend-style ceramics, and other Woodland II artifacts. If not for the presence of European goods, limited finds as they are, Contact Period sites could be confused with earlier period sites (Stewart 2014). In Delaware, the Contact Period is not well-represented, with only two possible sites having been identified to date. In the south, the Townsend Site (7S-G-2) contained both European and Native American artifacts, but the specific temporal association between the two groups of artifacts remains unclear (Custer 1984:177). In the northern part of the state, Site 7NC-E-42 has revealed some stratigraphic evidence for a possible association between European and indigenous artifacts (Custer 1984; Custer and Watson 1985). Although no unambiguous Contact Period sites have yet been identified, historical accounts from the seventeenth century indicate that Unami-speaking Lenape were living in Delaware until ca. AD 1729, when they moved north (Eiswert et al. 2011:17, *cf.* Weslager 1972).

3.2 Historic Context

The *Delaware Comprehensive Historic Preservation Plan* (Ames et al. 1987) sectioned the historic period in Delaware into five temporal periods that form the basis for historic resource investigations within the state. The *Management Plan for Delaware's Historical Archaeological Resources* (De Cunzo and Catts1990)

utilized the same temporal periods in order to coordinate archaeological and architectural resource studies. These temporal periods include:

- Exploration and Frontier Settlement (1630–1730)
- Intensified and Durable Occupation (1730–1770)
- Early Industrialization (1770–1830)
- Industrialization and Early Urbanization (1830–1880)
- Urbanization and Early Suburbanization (1880–1940)

The regional history surrounding the LOC has been well documented (e.g., Catts et al. 1991 and Tabachnick et al. 1992). As a result, this section focuses on the local history of the LOC, with particular emphasis placed on the Phase I Survey Area.

3.2.1 Harbeson LOC Historic Context

The history of Harbeson has been the subject of extensive research for cultural resource studies, most recently by Clark (2013; discussed below). Harbeson is situated in Broadkiln Hundred. Settlement within the hundred is first documented in 1673. Early hamlets and villages in the Hundred developed around "grist and saw mill, and cotton and bark" industries (Clark 2013:6). Regarding the progression of Harbeson's settlement, Clark (2013:6-7) notes:

> A 1860s road paper primarily illustrating the northeastern Georgetown Hundred division line also depicts one of the earliest known settlers of/near what would soon thereafter become known as the community of Harbeson. [It was] Located near the southernmost point of Broadkiln Hundred, along the northeastern side of the Georgetown Hundred division line . . . Historically, the area was referred to and known as Beaver Dam, also reflected and reiterated in the historic names of some of the local resources like the church, school, and cemetery. . . By 1869 with the establishment of a new railroad station stop between Georgetown and Lewes, the name of the community was changed to Harbeson in honor and recognition of Harbeson Hickman, the wealthy and major landowner of the area that provided for the construction of the railroad and local station on his lands. . . By 1890, the community of Harbeson had a Methodist Church, a school, a blacksmith shop, two stores, and ten houses. "The early enterprises which aided its economic growth involved the shipping of great amounts of timber and lumber cut in the nearby forests and sawed at the numerous mills in the vicinity" (Carter 1976:39 and WPA 1938:494 in Clark 2013). Recreational sites - a racetrack and fairgrounds – existed in the late nineteenth century, but both had vanished by the early twentieth century (WPA 1938:494 in Clark 2013).

In 2013, John Milner Associates, Inc. (JMA) conducted a historic resource study for DelDOT (Clark 2013), which included extensive documentary research for all properties situated within the current LOC, including the Phase I Survey Area. The following discussion summarizes the parcel history of the Phase I Survey Area, using the research conducted by Clark (2013), as well as map and aerial photo data collected for the current archaeological investigation.

Figures 3-1 to 3-12 are the historic and modern maps and aerial photographs of the Harbeson LOC utilized to research the progression of settlement of the Phase I Survey Area. The 1868 Beers Atlas (Figure 3-1) notes the

presence of a school, "SH 78," on the parcel. By 1919, the school was no longer present (Clark 2013:93). During the early twentieth century, S. J. Warrington owned the property, which had "a chicken house, privy, dwelling, garage gas pump, and shed" (Clark 2013:93). S. W. Warrington owned the parcel by 1923, which at that point "contained a one-story, frame garage, frame dwelling, and machine shop, all facing east toward Harbeson Road/SR 5" (Clark 2013:93). By 1936, the property, now owned by S. W. Warrington's widow, Leta, contained "a one-story dwelling, repair shop, and gas pumps" (Clark 2013:93). A 1937 aerial (Figure 3-2) of the property shows the area largely clear of vegetation; however, it is difficult to discern structures situated on the parcel. USGS topographic maps and aerial photographs from 1938 to 1961 (Figure 3-3 to Figure 3-6) show two structures on the property, although Clark (2013:93) notes that State Highway Department documents mention only one structure by 1960. Leta Warrington owned the parcel through 1960. By 1968, only the current structure was still present (Clark 2013:94). Figures 3-7 to 3-12 show how the property changed over the next forty years.

The current structure on the parcel, the Warrington Dwelling, may not be original to the property. "Previous survey and investigation (1992) described this two-and-one-half-story dwelling as being located at the northwest corner of the intersection of SR 404 and SR 5. Previous identification and survey from eleven years earlier (1983) noted the same dwelling. However, it also noted that the house had been moved to this location, but it is unclear when this occurred and from where (Goddard and Hawk 1983 and Tabachnick et al. 1992)" (Clark 2013:94).

Figure 3-1. 1868 Beers Atlas Map.

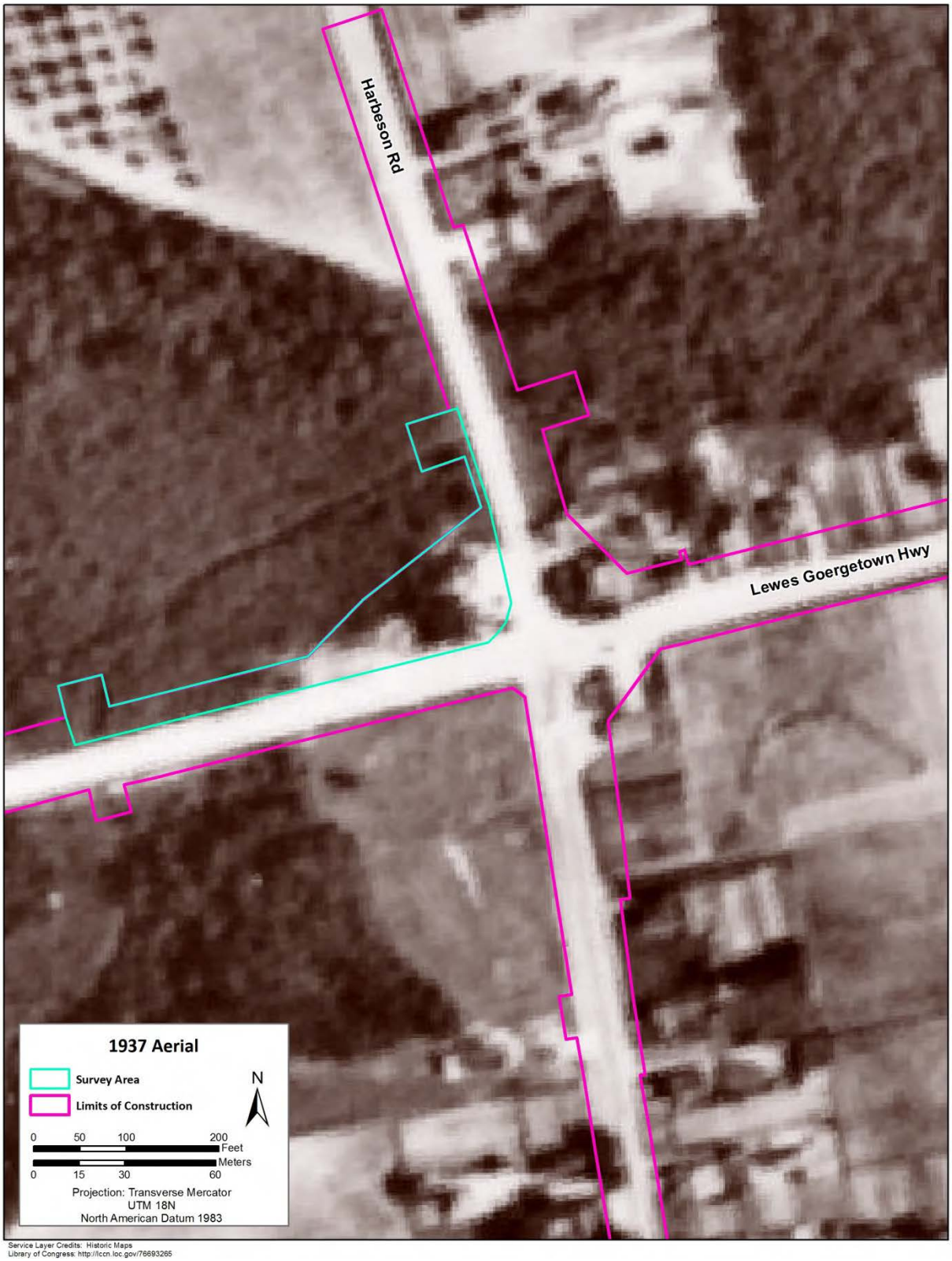
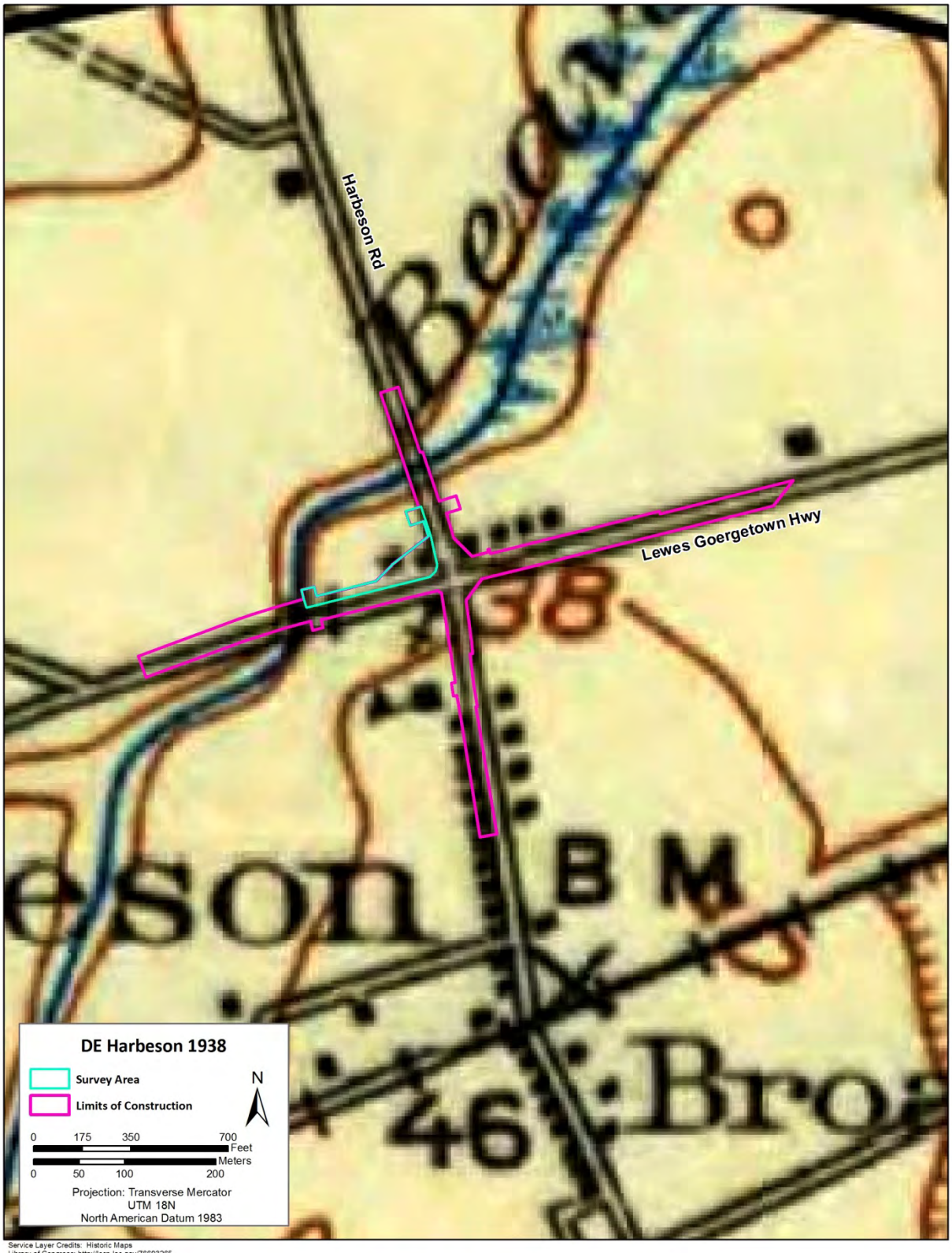


Figure 3-2. 1937 aerial photograph of the LOC and survey areas.



Service Layer Credits: Historic Maps
Library of Congress: http://lccn.loc.gov/76693265

Figure 3-3. 1938 USGS Harbeson, DE Map.

Service Layer Credits: Historic Maps
Library of Congress: http://lccn.loc.gov/76693265

Figure 3-4. 1944 USGS Harbeson, DE Map.

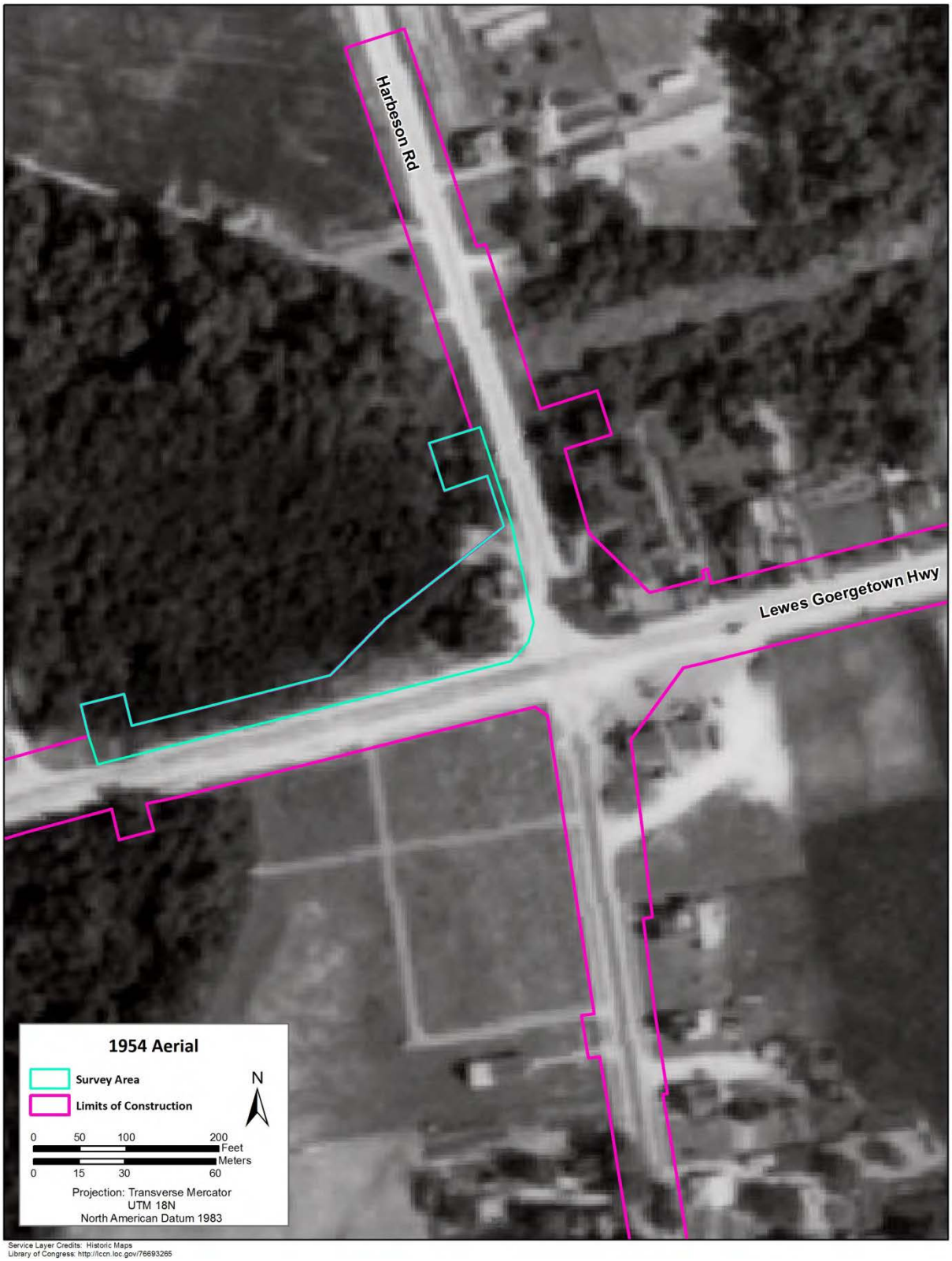


Figure 3-5. 1954 aerial photograph of the LOC and survey areas.

Service Layer Credits: Historic Maps
Library of Congress: http://lccn.loc.gov/76693265

Figure 3-6. 1955 USGS Harbeson, DE Map.

Service Layer Credits: Historic Maps
Library of Congress: http://lccn.loc.gov/76693265

Figure 3-7. 1961 aerial photograph of the LOC and survey areas.

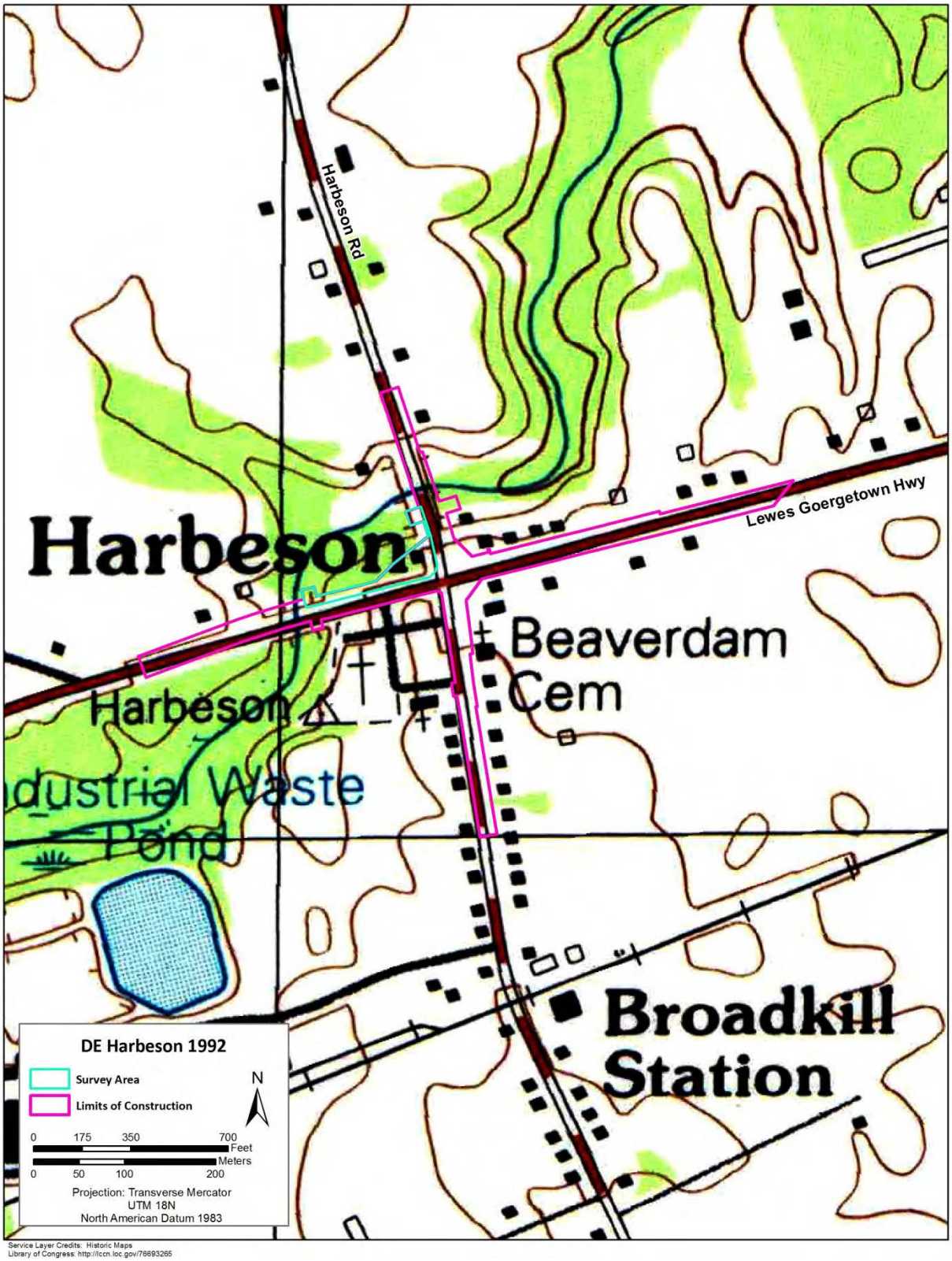


Figure 3-8. 1992 USGS Harbeson Map.

Figure 3-9. 1992 aerial photograph of the LOC and survey area.

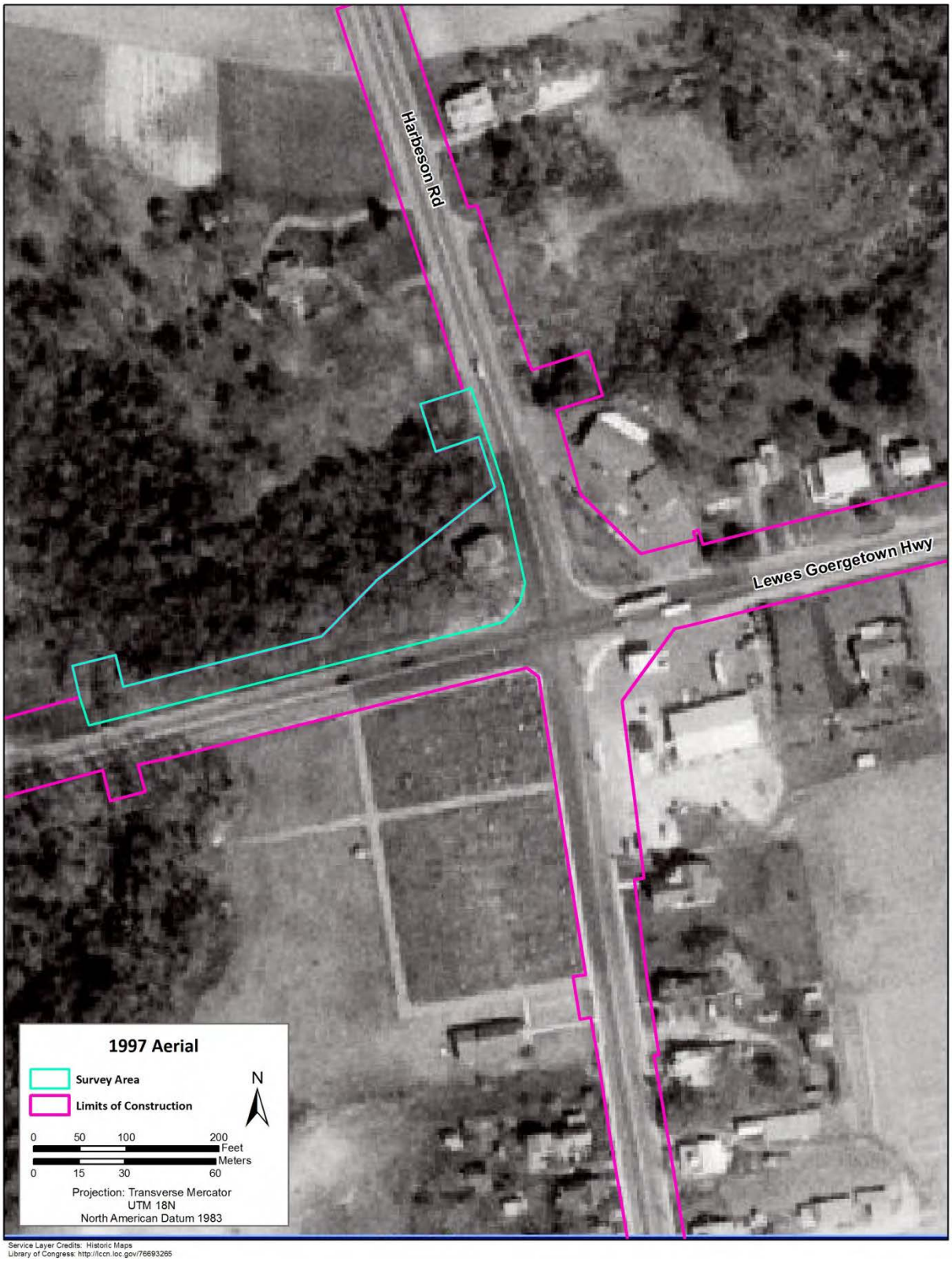


Figure 3-10. 1997 aerial photograph of the LOC and survey areas.

Figure 3-11. 2002 aerial photograph of the LOC and survey areas.

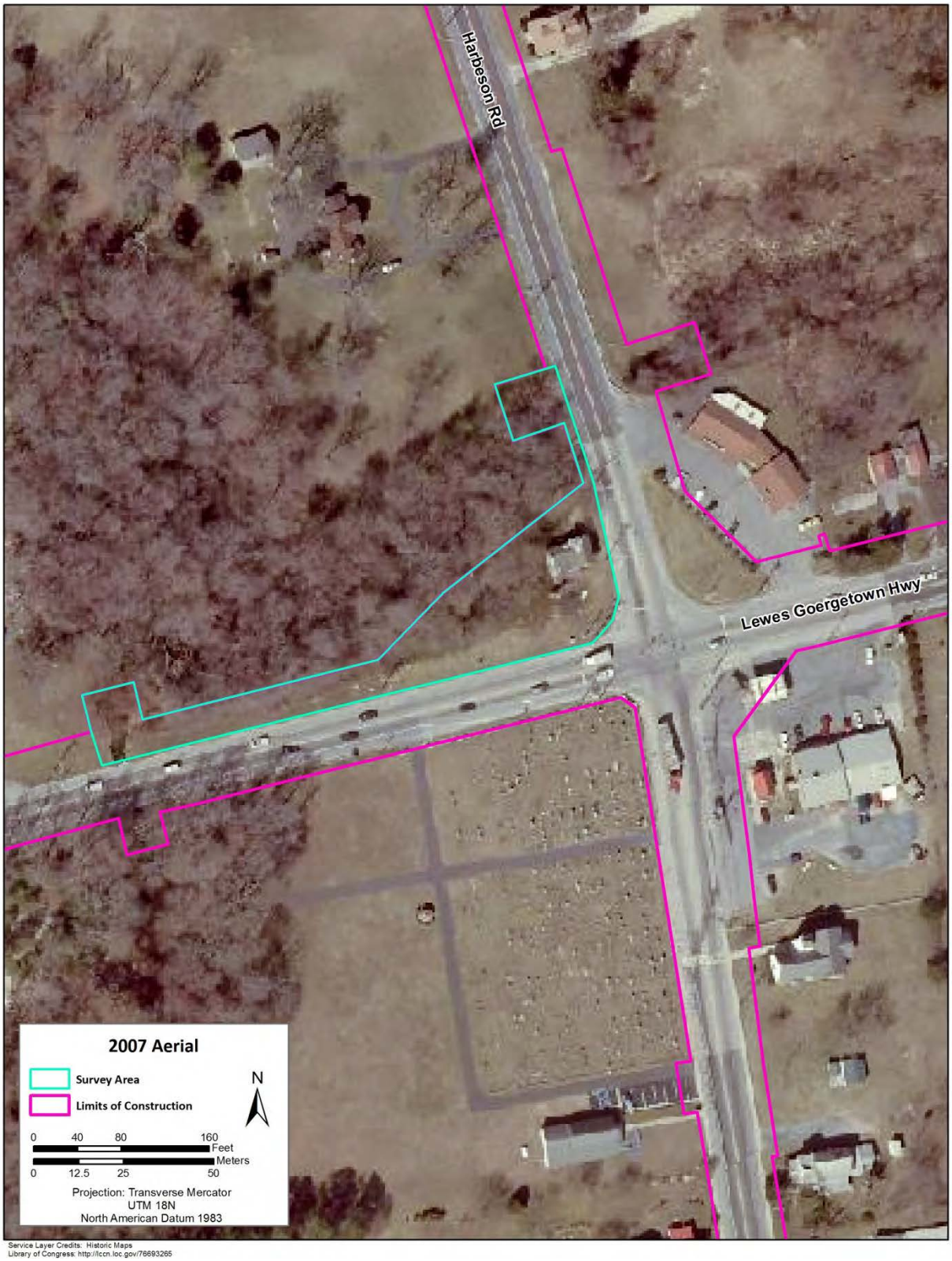


Figure 3-12. 2007 aerial photograph of the LOC and survey areas.

3.3 Known Sites and Previous Investigations

No previously recorded archaeological sites are located within a 0.5-mile radius of the LOC. Table 3-2 lists the previously recorded historic architectural sites within a 0.5-mile radius of the LOC. Table 3-3 lists cultural resource studies within the same area.

As discussed above, the Warrington Dwelling (S-03573) is situated within the current Phase I Survey Area. JMA (Clark 2003) recommended the dwelling/property as not eligible for listing in the NRHP under Criterion A, B, or C. However, regarding Criterion D, Clark (2003:94) notes:

> Although it is possible that the dwelling incorporates standard late nineteenth-century construction techniques, deconstruction and/or demolition may reveal that it contains information important to the understanding of vernacular architecture traditions, which may be determined in a more thorough investigation by a qualified conservator. Further investigation would be necessary to fully determine whether the property is eligible under Criterion D and has important information to yield.

Table 3-2. Previously recorded historic architectural sites within a 0.5-mile radius of the LOC.

Delaware SHPO Designation	Description	National Register Status
S-03531	Beaver Dam Cemetery/Harbeson Cemetery	Not eligible
S-03532	Beaver Dam School No. 88/Harbeson Church Hall	Not eligible
S-03533	Johnson/Rust Dwelling	Not eligible
S-03534	Dwelling	Not eligible
S-03535	Dwelling Complex	Not eligible
S-03536	Dwelling	Not eligible
S-03537	Dwelling Complex	Not eligible
S-03538	Dwelling Complex	Not eligible
S-03539	Dwelling Complex	Not eligible
S-03540	Dwelling Complex	Not eligible
S-03541	RR Station Complex-Brick	Not eligible
S-03542	Dwelling Complex	Not eligible
S-03543	Dwelling Complex	Not eligible
S-03544	Dwelling Complex	Not eligible
S-03545	Dwelling Complex	Not eligible
S-03546	Dwelling Complex	Not eligible
S-03547	Dwelling Complex	Not eligible
S-03548	Dwelling Complex	Not eligible
S-03549	Dwelling Complex	Not eligible
S-03550	Dwelling Complex	Not eligible
S-03554	Dwelling Complex	Not eligible
S-03555	Dwelling Complex	Not eligible

Table 3-2. Previously recorded historic architectural sites within a 0.5-mile radius of the LOC.

Delaware SHPO Designation	Description	National Register Status
S-03556	Dwelling Complex	Not eligible
S-03557	Dwelling Complex	Not eligible
S-03558	Dwelling Complex	Not eligible
S-03559	Dwelling Complex	Not eligible
S-03560	Dwelling Complex	Not eligible
S-03561	Dwelling Complex	Not eligible
S-03562	Dwelling Complex	Not eligible
S-03563	Dwelling	Not eligible
S-03564	Rust Dwelling	Not eligible
S-03565	Barker/Wagamon Dwelling	Not eligible
S-03566	Dwelling	Not eligible
S-03567	Beaver Dam Methodist Protestant Church/ Harbeson United Methodist Church	Eligible
S-03568	Dwelling Complex	Not eligible
S-03569	Davidson Dwelling	Not eligible
S-03570	Dwelling Complex	Not eligible
S-03571	Post Office and Barber Shop	Not eligible
S-03572	Store	Not eligible
S-03573	Warrington Dwelling	Not eligible
S-03574	Dwelling Complex	Not eligible
S-3618	Agricultural Complex Brick	Not eligible
S-3617	Agricultural Complex Brick	Not eligible
S-03642	Agricultural Complex; Mrs. S. Sherman	Not eligible
S-03643	Dwelling Complex	Not eligible
S-03644	Dwelling Complex	Not eligible
S-03645	Dwelling Complex	Not eligible
S-08501	Dwelling	Not eligible
S-8502	Dwelling	Not eligible
S-8503	Dwelling	Not eligible
S-8504	Dwelling	Not eligible
S-08505	Building	Not eligible
S-08506	Dwelling Complex	Not eligible
S-12262	Store	Not eligible
S-12263	Auto Garage	Not eligible
S-12264	Dwelling	Not eligible

Table 3-2. Previously recorded historic architectural sites within a 0.5-mile radius of the LOC.

Delaware SHPO Designation	Description	National Register Status
S-12265	Dwelling	Not eligible
S-12266	Post Office/Barber Shop	Not eligible
S-12267	Dwelling	Not eligible

Table 3-3. Previous cultural resource investigations within a 0.5-mile radius of the LOC.

Title	Investigator	Author/Report Date	Report Type
Cultural Resource Survey of Broadkill Hundred	Delaware SHPO	Goddard and Hawk 1983	Cultural Resource Survey
A Cultural Resources Reconnaissance Planning Study of the Proposed Sussex East-West Corridor Delaware Routes 404/18 and 9 Sussex County, Delaware	University of Delaware Department of Anthropology Center for Archaeological Research	Catts et al. 1991	DelDOT Archaeology Series No. 86
Location Level Historic Resources Survey Sussex East West Corridor Study, Sussex County	DelDOT	Tabachnick et al. 1992	Historic Resources Survey
US 9 and SR 5 Intersection Improvements Project, Harbeson, Sussex County, Delaware	John Milner Associates, Inc.	Clark 2013	Architectural Survey and Evaluation

4 Research Design and Methodology

4.1 Research Design

The primary objective of the Phase I survey was to identify archaeological resources within proposed work areas and make recommendations regarding the NRHP eligibility of any discovered sites. Archaeological survey of the project area was conducted in accordance with the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* and the DE SHPO *Guidelines for Conducting Architectural and Archaeological Surveys in Delaware* (1993, as amended).

4.2 Field Methods

The Phase I archaeological investigation included a controlled surface inspection of the LOC followed by excavation of shovel test pits (STPs). STPs were excavated at 15-m intervals. STPs measured 30 cm in diameter and were excavated to sterile subsoil. The soil removed from each shovel test was screened through ¼-inch hardware cloth for standardized artifact recovery. Each shovel test was recorded using HDR's iPad field recording system. Recorded data included provenience, stratigraphic data such as depth, texture, and Munsell color, and the presence or absence of artifacts in each stratum. The nature of any features encountered in the excavations was described in detail and documented via drawings and photographs. Artifacts recovered from the STPs were bagged and labeled by provenience for laboratory processing.

One feature was identified during the excavation of STPs. A 0.5-m by 0.5-m test unit (TU) was placed next to the STP to further investigate the feature. A 1-m by 1-m TU was also excavated during the survey to better determine and document the geological context and stratigraphic integrity of deposits. The TUs were excavated in arbitrary 10-cm levels within natural strata. All soil was screened through ¼-inch hardware mesh for standardized artifact recovery. All recovered artifacts were bagged and labeled by provenience for laboratory processing. A standardized digital unit excavation form was completed for each provenience (i.e., TU, stratum, and level) using HDR's iPad field recording system. These forms included descriptions of the soil characteristics, artifact content, and cultural and natural features of the provenience. Plan view, profile drawings, and photographs were completed for the TUs.

4.3 Laboratory Methods

All artifacts recovered during the field survey were returned to HDR's archaeology laboratory in Vienna, Virginia for processing and analysis. All materials were processed, sorted, and cataloged according to the protocols established by the Delaware SHPO and the Delaware State Museum for the processing and curation of archaeological collections. The focus of the laboratory analysis was to determine the occupation span, likely function, and degree of artifact preservation at each recorded site. Typological analysis of diagnostic artifacts was the principal mechanism for dating the sites. Artifact assemblages were compared with those described in site reports and publications in order to aid in the identification of both cultural and chronological association. Likely site functions were evaluated in terms of the density and types of artifacts present, the physiographic characteristics of the site, the site size, and the presence and nature of any identified archaeological features and/or structures.

Upon acceptance of the final report, all artifacts and supporting documentation (field notes and forms, maps and drawings, other paper records, photographic records, and all other materials associated with project documentation) will be prepared for permanent curation and delivered to the Delaware Museums Island Field Repository.

5 Field Investigation Results

The Phase I archaeological survey included a controlled surface inspection of the entire LOC followed by excavation of STPs and TUs within the Phase I Survey Area (Figure 5-1). The following section discusses the results of the field investigation. No cultural materials were recovered during the controlled surface inspection of the LOC.

Figure 5-1. Results of the archaeological investigation of the Phase I Survey Area.

The Phase I Survey Area is situated on the northwest side of the US 9/SR 5 intersection in Harbeson (Figure 5-2 to Figure 5-7). It is bounded by Beaverdam Creek to the north and west, US 9 to the south, and SR 5 to the east. During the controlled surface inspection of the Phase I Survey Area, early modern to recent debris was observed intermittently across the surface of the parcel; none of these items were collected (see Figure 5-8 to Figure 5-12). The archaeological investigation included the excavation of 19 shovel tests placed at 15-m intervals (Figure 5-13), 5 of which were positive for a mix of historic artifacts (n=91) and modern items (n=18). One feature, an intact brick drain, was identified in an additional judgmental STP (labeled J1) placed approximately 5 m west of the structure (Figure 5-14 to Figure 5-15). A 0.5-m by 0.5-m TU was placed immediately southeast of STP J1 to further expose the brick drain (Figure 5-16). Table 5-1 lists the positive STPs and the artifact types and totals recovered. All artifacts and modern items from STP J1 and the 0.5-m by

0.5-m TU were recovered from the stratum above the brick drain and are, therefore, included with the STP artifact types and totals.

Table 5-1. Phase I Survey Area STPs and artifact totals.

STPs	Material Type	Total
1.8, 2.8, 2.9, 3.9, 3.11, J1, 0.5-m by 0.5-m TU	Ceramic	7
	Glass	39
	Metal	26
	Brick	5
	Mortar	4
	Tobacco pipe stem	1
	Shell	8
	Wood	1
	Modern	18
	Total	109

The stratigraphy observed in the shovel tests was inconsistent across the parcel, especially within the vicinity of the structure. Table 5-2 lists the different fill layers encountered intermittently during the investigation. Table 5-3 lists the natural strata encountered during the investigation. Figure 5-17 to Figure 5-26 show several STP stratigraphic profiles. See Appendix A for all the stratigraphic profiles and the complete stratigraphic log. Artifacts and modern items were recovered from Strata 0a, 0d, 0g, I (the A Horizon), and II (the E Horizon).

Table 5-2. Fill strata encountered intermittently in STPs and TUs during the Phase I archaeological survey.

Stratum	Variations	Type	Munsell Designation	Color	Texture
0	a	Fill	10YR 2/2	Very Dark Brown	Sandy Loam/Sand
	b	Fill	10YR 5/2	Grayish Brown	Compact Sand with Clay Inclusions
	c	Fill	10YR 5/6	Yellowish Brown	Clayey Sand
	d	Fill	10YR 5/2 mottled with 10YR 5/3	Grayish Brown and Brown, respectively	Sandy Loam
	e	Fill	10YR 5/6	Yellowish Brown	Clay Sand; Fill
	f	Fill	10YR 2/2	Very Dark Brown	Sandy Loam with Modern Debris
	g	Fill	10YR 2/2	Very Dark Brown	Sandy Loam; Historic/Modern Mix
	h	Fill	10YR 4/3	Brown	Sand with Gravel and Asphalt Fragments
	i	Fill	10YR 5/3 mottled with 10YR 6/6	Brown and brownish yellow, respectively	Sand
	j	Fill	10YR 2/1	Black	Sandy Loam

Stratum	Variations	Type	Munsell Designation	Color	Texture
	k	Fill	10YR 3/2 mottled with 10YR 5/4	Very Dark Grayish Brown and Yellowish Brown, respectively	Sand
	l	Fill	10YR 2/1	Black	Loam
	m	Fill	10YR 4/2	Dark Grayish Brown	Sandy Loam with gravel
	n	Fill	10YR 6/3	Pale Brown	Sand

Table 5-3. Natural strata encountered beneath fill, in most cases, during subsurface testing.

Stratum	Variations	Type	Munsell Designation	Color	Texture
I	--	A Horizon	10YR 3/2	Very Dark Grayish Brown	Sandy Loam
II	--	E Horizon	10YR 5/3	Brown	Sand
III	a	Bw Horizon	10YR 2/2	Very Dark Brown	Silty Sand
	b	Bw Horizon	10YR 6/2	Light Brownish Gray	Sand
IV	--	Bg Horizon	10YR 5/6 mottled with 10YR 6/2	Yellowish Brown and Light Brownish Gray, respectively	Sandy Clay

Following the completion of shovel testing, a 1-m by 1-m test unit was placed in the central portion of the parcel to better determine and document the geological context and stratigraphic integrity of deposits (Figure 5-27 to Figure 5-32). The stratigraphy in the TU was inconsistent with soils encountered in surrounding shovel tests. A 13-cm thick OHorizon was underlain by a 31-cm thick Stratum 0a, a fill deposit of very dark brown (10YR 2/2) sandy loam. The original A Horizon, Stratum I, was a 3-cm thick deposit of very dark grayish brown (10YR 3/2) sandy loam encountered at 44 cm below datum (cmbd). The E Horizon, Stratum II, was a 32 to 43-cm thick deposit of brown (10YR 5/3) sand underlain by the Bw Horizon, Stratum IIIa, a very dark brown (10YR 2/2) silty sand. TU excavation was terminated at 90 cmbd.

In total, 63 late nineteenth/early to mid twentieth-century artifacts and 7 modern items were recovered from the O-horizon and Stratum Ia in TU 1. Table 5-4 lists the artifact types and totals recovered from the unit.

Table 5-4. Survey Area 1 TU 1 artifacts and totals.

Material Type	Total
Ceramic	2
Glass	28
Metal	28
Brick	4
Composite	1
Modern	7
Total	70

Figure 5-2. General view of the Phase I Survey Area, along US 9, from the southwest corner, facing east.

Figure 5-3. General view of the Phase I Survey Area 1 from the southwest corner, facing north.

Figure 5-4. General view of the Phase I Survey Area, along US 9, from the southeast corner, facing west.

Figure 5-5. General view of the Phase I Survey Area, along SR 5, from the southeast corner, facing north.

Figure 5-6. General view of the Phase I Survey Area, along SR 5, from the northeast corner, facing south.

Figure 5-7. General view of the area behind (west) the structure, facing southwest.

Figure 5-8. General view of early modern surface debris located behind (west) the structure, facing east/southeast.

Figure 5-9. General view of early modern surface debris located behind (west) the structure, facing north/northeast.

Figure 5-10. General view of early modern surface debris located behind (west) the structure, facing southwest.

Figure 5-11. General view of structural debris located behind (west) the structure, facing northeast.

Figure 5-12. General view of surface debris located behind (west) the structure, facing southeast.

Figure 5-13. General view of work in progress, facing southwest.

Figure 5-14. STP J1 profile.

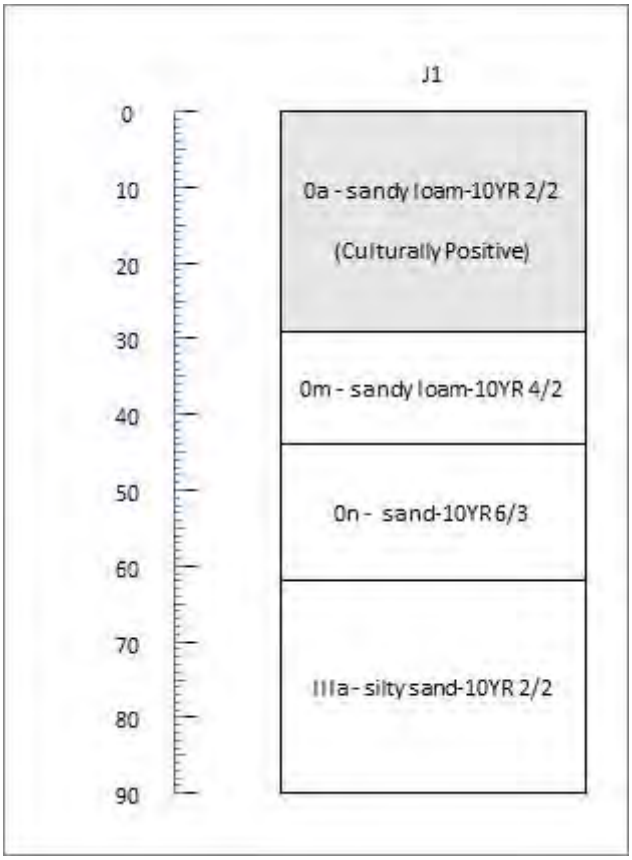


Figure 5-15. STP J1 profile.

Figure 5-16. General view of Feature 1 within J1 and 0.5-m by 0.5-m TU.

Figure 5-17. STP 1.5 profile.

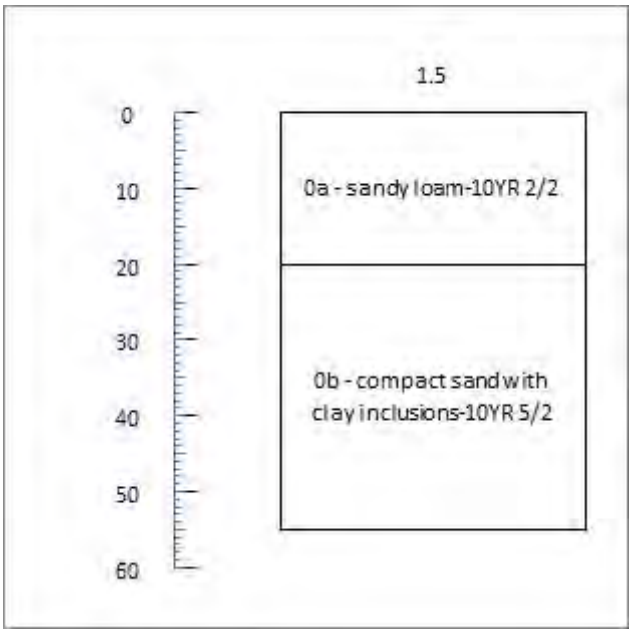


Figure 5-18. STP 1.5 profile.

Figure 5-19. STP 1.8 profile.

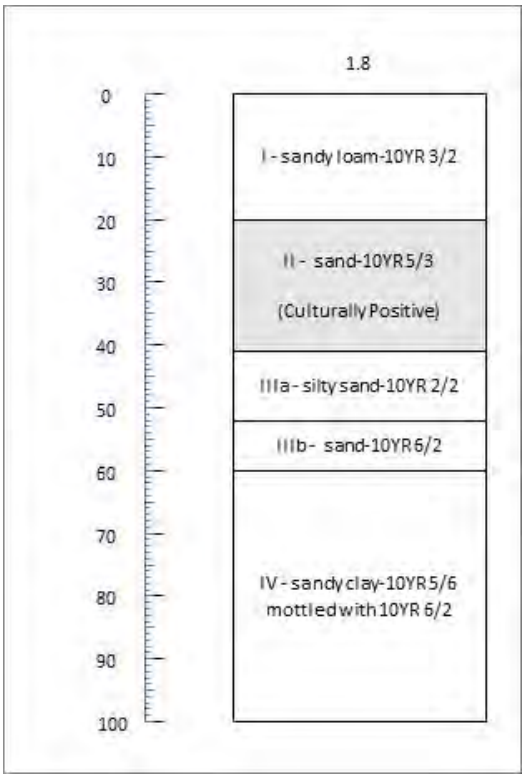


Figure 5-20. STP 1.8 profile.

Figure 5-21. STP 2.9 profile.

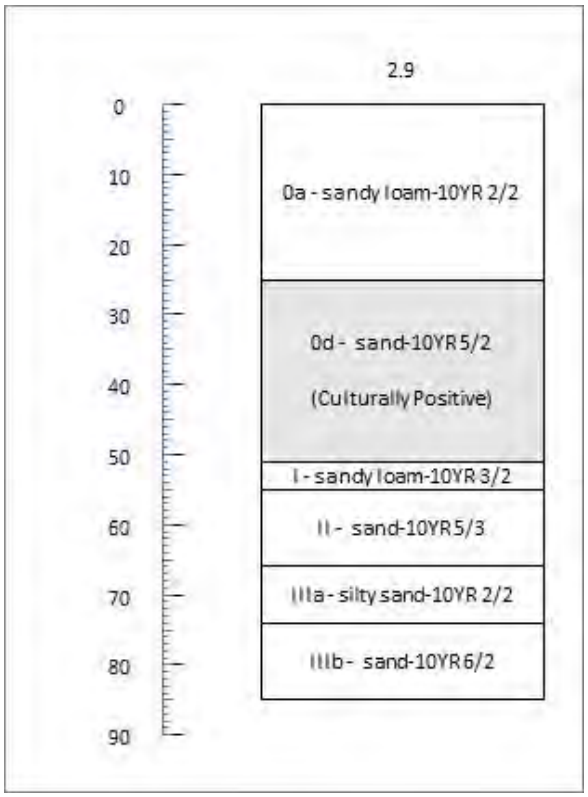


Figure 5-22. STP 2.9 profile.

Figure 5-23. STP 3.8 profile.

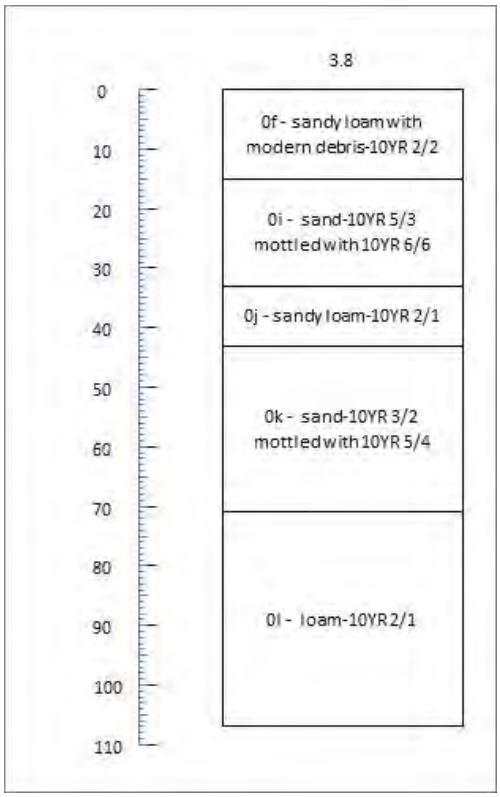


Figure 5-24. STP 3.8 profile.

Figure 5-25. STP 3.11 profile.

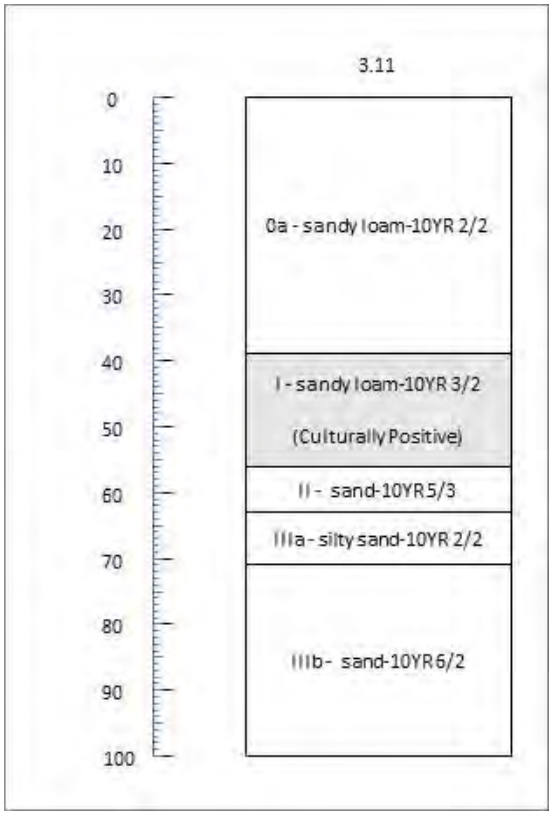


Figure 5-26. STP 3.11 profile.

Figure 5-27. General view of TU 1 pre-excavation.

Figure 5-28. General view of TU 1 post excavation.

Figure 5-29. TU 1 North profile.

Figure 5-30. TU 1 South profile.

Figure 5-31. TU 1 East profile.

Figure 5-32. TU 1 West profile.

6 Laboratory Results and Discussion

A principal goal of the artifact analysis was to determine the occupational history and function of the site from which the artifacts were recovered. The following section provides a discussion of the artifact assemblage and what information, though limited, can be gleaned from these data.

A total of 154 historic artifacts and 25 modern items were recovered during the investigation of the Phase I Survey Area. The majority of the historic assemblage dates from the early to mid twentieth century, with the exceptions being an undecorated pearlware sherd (ca. 1780–1840), a blue transfer printed pearlware or whiteware sherd (ca. 1784–1860), a decorative 4-hole Cu Alloy and ferrous metal button (possibly mid/late nineteenth century), a tobacco pipe stem fragment (6/64” diameter bore; ca. 1680–1720), possible broad glass fragments (n=2; nineteenth century), cut nails (n=2; nineteenth century), and mold-made brick fragments (n=at least 1). Except for the brick fragment, all of these older artifacts were recovered from the natural Stratum I or Stratum II, along with modern items. The remainder of the assemblage—composed primarily of architectural debris and domestic refuse—was recovered from fill layers.

The majority of the historic assemblage can be linked to the early to mid twentieth-century occupation of the parcel by the Warrington family. The presence of the older domestic artifacts indicates an earlier occupation in the area, possibly related to the school house noted on the 1868 Beers Atlas map. However, interpretation beyond determining an approximate temporal range for these artifacts is difficult considering the disturbed context from which they were recovered.

During the survey, investigation of the structure revealed cut nails were used in its original construction, and mold-made brick was used for at least one of its chimneys. It appears at some point within the last 30 years, major renovations were undertaken on the house, including the installation of new windows. The chimneys were dismantled as well (see Figure 6-1 and Figure 6-2). The older architectural items, mold-made brick and square cut nails, recovered during the subsurface testing are likely the remains of the structural elements that were removed from the house during the renovation.

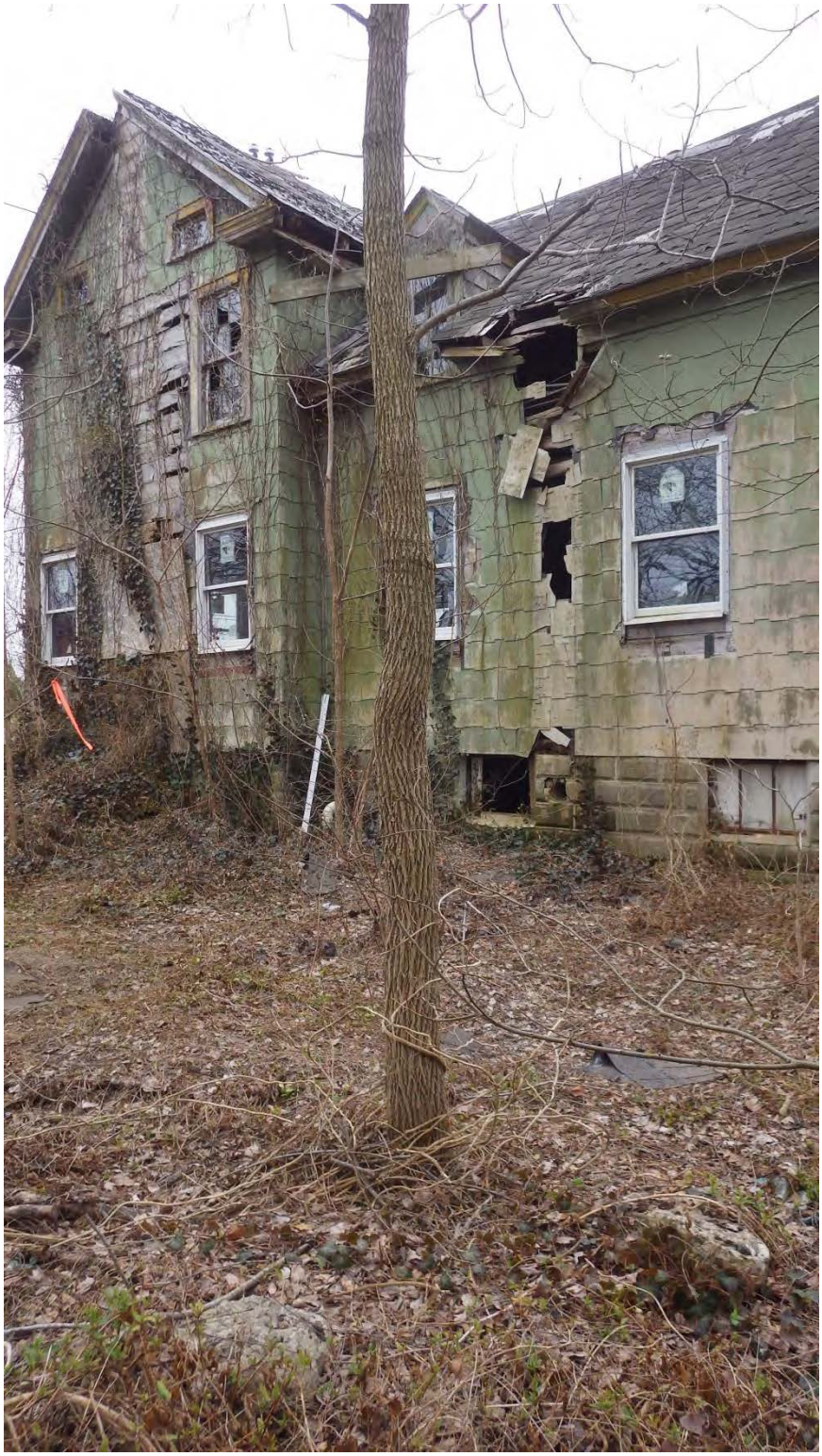


Figure 6-1. General view of the structure showing the missing chimneys and several new windows, facing southeast.

Figure 6-2. General view of the structure showing the missing chimneys and new windows, facing south/southwest.

7 Summary and Recommendations

Under contract to the Delaware Department of Transportation, HDR conducted a Phase I archaeological investigation for the proposed US 9 and SR 5 Intersection Improvements Project in Harbeson, Sussex County, Delaware. DelDOT plans to undertake improvements at the intersection of US 9 and SR 5. The purpose of the investigation was to identify all archaeological resources within the 7.65-acre limit of construction (LOC). The investigation was completed to assist DelDOT in meeting anticipated regulatory obligations under Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. HDR performed the work in accordance with the *Secretary of the Interior's Standards and Guidelines* for Archaeology and Historic Preservation and the Delaware SHPO's *Guidelines for Conducting Architectural and Archaeological Surveys in Delaware* (1993, as amended).

HDR conducted the background research in February and March 2014, and the fieldwork was undertaken in April 2014. The field survey included a controlled surface inspection of the entire LOC, followed by subsurface testing of an approximately 0.08-acre parcel, designated the Phase I Survey Area, situated on the northwest side of the US 9/SR5 intersection.

HDR excavated 20 shovel tests, a 0.5-m by 0.5-m test unit, and a 1-m by 1-m test unit during the archaeological survey. One site was identified (Figure 7-1), which has been designated 7S-F-158 (CRS S03573) by the SHPO. Subsurface testing revealed an inconsistent stratigraphy within the site. A total of 154 historic artifacts and 25 modern items were recovered from five shovel tests and the test units that were excavated within the site. One feature, an intact brick drain was encountered behind (approximately 5 m west) the extant Warrington Dwelling. The majority of the historic assemblage dates from the early to mid twentieth century, with the exception of several domestic and architectural items that date from the eighteenth to nineteenth centuries. Except for a mold-made brick fragment, all of these older artifacts were recovered from the natural strata intermittently encountered across the site beneath layers of fill. However, in all instances, they were also mixed with modern items. The remainder of the assemblage—composed primarily of architectural debris and domestic refuse—was recovered from fill layers.

The primary objective of the Phase I survey was to identify all archaeological resources within the LOC and make NRHP eligibility recommendations for any newly discovered sites. The purpose of the NRHP is to list properties that are "significant in American history, architecture, archaeology and culture" (NHPA Section 101[a][1]). The implementing regulations of the NHPA provide the following criteria for evaluation:

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and
>
> (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (b) that are associated with the lives of persons significant in our past; or
>
> (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (d) that have yielded, or may be likely to yield, information important in prehistory or history" (36 CFR 60.4).

The majority of the historic assemblage can be linked to the early to mid twentieth-century occupation of the parcel by the Warrington family. The presence of the older domestic artifacts indicates an earlier occupation in the area, possibly, in part, related to a school house noted in the vicinity on an 1868 map of the area. However, interpretation beyond determining an approximate temporal range for these artifacts is difficult considering the disturbed context from which they were recovered. The older architectural items, mold-made brick and square cut nails, are likely related to the current structure on the property. During the survey, investigation of the structure revealed cut nails were used in its original construction, and mold-made brick was used for at least one of its chimneys. It appears at some point within the last 30 years, major renovations were undertaken on the house, including the installation of new windows. The chimneys were dismantled as well. These renovations at least partially explain the presence of older architectural items being recovered during the subsurface testing. Based on the mixed historic/modern assemblage recovered and lack of intact archaeological deposits, HDR recommends the site as not eligible for listing in the NRHP. No further work is recommended.

Figure 7-1. Site identified during the archaeological investigation of the Phase I Survey Area. The site boundary was created based on positive STPs and early modern debris scattered across the surface of the parcel.

8 References Cited

Adovasio, J., J. Gunn, J. Donahue, J. Stuckenrath, J. Guilday, and K. Lord
1978 Meadowcroft Rockshelter. In *Early Man in America*, edited by A.L. Bryant, pp. 140-180. University of Alberta Occasional Paper 1. Alberta, Canada.

Adovasio, J., J. Donahue and R. Stuckenrath
1990 Meadowcroft Rockshelter Radiocarbon Chronology 1975-1990. *American Antiquities* 55(2):348-354.

Ames, D. L., M. E. Callahan, B. L. Herman, and R. J. Siders
1987 *Delaware Comprehensive Historic Preservation Plan.* Center for Historic Architecture and Engineering, College of Urban Affairs and Public Policy, University of Delaware, Newark.

Barse, W. and A. Beauregard
1994 *Phase III Data Recovery at the Clifton Site (18CH358)*. Report prepared for the Maryland Department of Transportation by KCI Technologies, Inc.

Beers, D.G.
1868 Atlas of the State of Delaware From Actual Surveys By and Under the Direction of D. G. Beers. Philadelphia, Pennsylvania: Pomeroy & Beers.

Brush, G.
1986 Geology and Paleoecology of Chesapeake Estuaries. *Journal of the Washington Academy of Sciences* 76(3):146–160.

Carbone, V.
1976 *Environment and Society in the Shenandoah Valley*. Ph.D. Dissertation, Catholic University of America, Washington, D.C. University Microfilms International, Ann Arbor.

Catts, Wade P., Jay F. Custer, and Angela Hoseth
1991 *A Cultural Resources Reconnaissance Planning Study of the Proposed Sussex East-West Corridor, Delaware Routes 404/18 and 9, Sussex County, Delaware.* Delaware Department of Transportation Archaeology Series 82, Dover, Delaware.

Clark, Courtney L.
1991 *US 9 and SR 5 Intersection Improvements Project, Harbeson, Sussex County, Delaware*. Delaware. Report prepared by John Millner Associates, Inc. for the Delaware Department of Transportation and Federal Highway Adminstration, Delmar Division.

Custer, J.
1980 Settlement-Subsistence Systems in Augusta County, Virginia. *Quarterly Bulletin of the Archaeological Society of Virginia* 35(1):1–27.

1984 *Delaware Prehistoric Archeology: An Ecological Approach*. University of Delaware Press, Inc. Newark.

1987 Late Woodland Ceramics and Social Boundaries in Southeastern Pennsylvania and the Northern Delmarva Peninsula. *Archaeology of Eastern North America* 15(Fall 1987):13-27

1989 *Prehistoric Cultures of the Delmarva Peninsula: An Archaeological Study*. University of Delaware Press, Inc. Newark, Delaware.

1990 Early and Middle Archaic Cultures of Virginia: Culture Change and Continuity. In *Early and Middle Archaic Research in Virginia*, edited by Theodore R. Reinhart and Mary Ellen N. Hodges, pp. 1-60. The Archaeological Society of Virginia, Special Publication No. 22.

1996 *Prehistoric Cultures of Eastern Pennsylvania.* Anthropological Series No. 7. Pennsylvania Historical and Museum Commission, Harrisburg, Pennsylvania.

2013 Rethinking Late Archaic/Woodland Period Culture Change in the Delaware Coastal Plain. *Journal of Middle Atlantic Archaeology* 29:131-145.

Custer, J.F., and D.R. Griffith
1986 Late Woodland Cultures of the Middle and Lower Delmarva Peninsula. In *Late Woodland Cultures of the Middle Atlantic Region*, edited by Jay F. Custer, pp. 29-57. University of Delaware Press.

Custer, J.F. and S.C. Watson
1985 Archaeological Investigations at 7NC-E-42, a Contact Period Site in New Castle County, Delaware. *Journal of Middle Atlantic Archaeology* 1:97-116.

De Cunzo, L. A., and W. P. Catts
1990 *Management Plan for Delaware's Historical Archaeological Resources.* University of Delaware Center for Archaeological Research, Newark.

Delaware Cultural Historical Resource Information System (CHRIS)
1937 Aerial Photograph. Available online at http://chris.delaware.gov/CHRIS/faces/mainPage.jsp, accessed 15 May 2014.

1954 Aerial Photograph. Available online at http://chris.delaware.gov/CHRIS/faces/mainPage.jsp, accessed 15 May 2014.

1961 Aerial Photograph. Available online at http://chris.delaware.gov/CHRIS/faces/mainPage.jsp, accessed 15 May 2014.

1992 Aerial Photograph. Available online at http://chris.delaware.gov/CHRIS/faces/mainPage.jsp, accessed 15 May 2014.

1997 Aerial Photograph. Available online at http://chris.delaware.gov/CHRIS/faces/mainPage.jsp, accessed 15 May 2014.

2002 Aerial Photograph. Available online at http://chris.delaware.gov/CHRIS/faces/mainPage.jsp, accessed 15 May 2014.

2007 Aerial Photograph. Available online at http://chris.delaware.gov/CHRIS/faces/mainPage.jsp, accessed 15 May 2014.

Delaware State Historic Preservation Office
1993 *Guidelines for Architectural and Archaeological Surveys in Delaware*. Electronic document, http://history.delaware.gov/, accessed 21 October 2013.

Dent, R.
1995 *Chesapeake Prehistory: Old Traditions, New Directions.* Plenum Press, New York.

Eiswert, Robert H., Charles A. Richmond, Brenda L. Weller, Barbara J. Shaffer, W. Andrew Wyatt, Francine F. Arnold, and K.M. Diehl
2011 *Archaeological Identification and Evaluation Survey, I-95/US 202 Interchange Improvement Project, Brandywine Hundred and City of Wilmington, New Castle County, Delaware*. Report prepared for the Delaware Department of Transportation by McCormick Taylor, Inc.

Gardner, W.
1974 The Flint Run Complex: Pattern and Process during the Paleoindian to Early Archaic. In *The Flint Run Paleoindian Complex: A Preliminary Report 1971-73 Seasons*, pp. 5 – 47. Occasional Publication No. 1, Archaeology Laboratory, Department of Anthropology, The Catholic University of America, Washington, D.C.

1977 Flint Run Paleoindian Complex and Its Implications for Eastern North American Prehistory. In, *Amerinds and Their Paleoenvironments in Northeastern North America*, edited by W.S. Newman and B. Salwen, pp. 257-263. Annals of the New York Academy of Sciences No. 288.

Gerhardt, J., and T. Mancl
2011 *Phase I Archaeological Survey of the Plantation Road at Cedar Grove Road/Postal Lane, Intersection Improvements, Lewes, Sussex County, Delaware*. Prepared for the Delaware Department of Transportation by John Milner Associates, Inc.

Goddard, Kathy and Alan Hawk
1983 Cultural Resource Survey of Broadkill Hundred, Delaware Bureau of Archaeology and Historic Preservation (no report).

Gramly, R.
1988 Discoveries at the Lamb Site, Genesee County, New York 1986-7. *Ohio Archaeologist* 38:1, 4-10.

1999 The Lamb Site: A Pioneering Clovis Encampment. *Persimmon Press Monographs in Archaeology*. Persimmon Press, NY.

Griffith, D.R., and J.F. Custer
1985 Late Woodland Ceramics of Delaware: Implications for the Late Prehistoric Archaeology of Northeastern North America. *Pennsylvania Archaeologist* 55:6–20.

Hantman, J.
1990 Virginia in a North American Perspective. In *Early and Middle Archaic Research in Virginia*, edited by Theodore R. Reinhart and Mary Ellen N. Hodges, pp. 133–154. The Archaeological Society of Virginia, Special Publication No. 22.

Kraft, J.
1976 Geological Reconstructions of Ancient Coastal Environments in the Vicinity of the Island Field Archaeological Site, Kent County, Delaware. *Transactions of the Delaware Academy of Science 5*, edited by John C. Kraft, pp. 88-118. The Delaware Academy of Science, Newark.

Lantz, S.
1985 Western Pennsylvania: Appalachian Plateau and Lake Erie Shore. Paleo-Indian Period. In *A Comprehensive State Plan for the Conservation of Archaeological Resources*, vol. II, pp. 164-181. Historic Planning Series 1. Pennsylvania Historical and Museum Commission, Harrisburg.

LeeDecker, C. and C. Holt
1991 Archaic Occupations at the Indian Creek V Site (18PR94), Prince George's County, Maryland. *Journal of Middle Atlantic Archaeology* 7:67–90.

Lenert, M, F. Dunsmore, and C. D. Gill
2014 *Phase I Archaeological Investigation, SR 1, Northeast Front Street Grade Separated Intersection, Milford Hundred.* Report prepared for the Delaware Department of Transportation by A. D. Marble & Company.

Lowery, D.L.
2009 Geoarchaeological Investigations at Selected Archaeological Sites on the DelMarVa Peninsula: The Long Term Interrelationship Between Climate, Geology, and Culture. Ph.D. dissertation, Department of Geology, University of Delaware, Newark.

McAvoy, J., and L. McAvoy
1997 *Archaeological Investigations of Site 44SX202, Cactus Hill, Sussex County, Virginia.* Virginia Department of Historic Resources, Research Report Series No. 8. Richmond.

McNett, C. (editor)
1985 *Shawnee Minisink: A Stratified Paleoindian-Archaic Site in the Upper Delaware Valley of Pennsylvania.* Academic Press, New York.

Mancl, T., E. La Vigne, W. Chadwick, and W. Catts
2013 *Phase I Archaeological Survey of the Red Lion Dike, New Castle, New Castle County, Delaware*. Report prepared for the New Castle Conservation District by John Milner Associates, Inc.

Potter, S.R.
1993 *Commoners, Tribute and Chiefs: The Development of Algonquin Culture in the Potomac Valley.* University Press of Virginia, Charlottesville.

Saasaman, K.E.
1999 A Southeastern Perspective on Soapstone Vessel Technology. In *The Archaeological Northeast*, edited by Mary Levine, Kenneth E. Sassaman and Michael S. Nassaney, pp. 75-95. Bergin & Garvey, Westport, Connecticut.

Stanzeski, A. J., and R. F. Hoffman
2006 The Thomas Paleo-Indian Site (7NC-D-4) New Castle County, Delaware. *Archaeology of Eastern North America* 34:105–120.

Stewart, R.M.
1993 Comparison of Late Woodland Cultures: Delaware, Potomac, and Susquehanna River Valleys, Middle Atlantic Region. *Archaeology of Eastern North America* 21(Fall 1993):163–178.

2014 American Indian Archaeology of the Historic Period in the Delaware Valley. In *Historical Archaeology of the Delaware Valley, 1600–1850*, edited by Richard Veit and David Orr, pp.1–48. University of Tennessee Press.

Stewart, R.M., C. Hummer, and J.F. Custer
1986 Late Woodland Cultures of the Middle and Lower Delaware Valley and the Upper Delmarva Peninsula. In *Late Woodland Cultures in the Middle Atlantic Region*, edited by Jay F. Custer, pp.58–89. University of Delaware Press, Newark.

Tabachnick, Alan, Amy B. Keller, and Kenneth J. Basalik
1992 *Location Level Historic Resources Survey Sussex East West Corridor Study, Sussex County, Delaware.* Delaware Department of Transportation Archaeology and Historical Series No. 97, Dover, Delaware.

Thieler, E.R., W.C. Schwab, P.T. Gayes, O.H. Pilkey, Jr, W. J, Cleary, and K.M. Scanlon
2000 *Paleo-shorelines on the U.S. Atlantic and Gulf Continental Shelf: Evidence for Sea-Level Stillstands, and Rapid Rises during Deglaciation.* Scientific and Technical Abstracts-2000. U.S. Geological Survey Coastal and Marine Geology Program, USGS Woods Hole Field Center, Woods Hole, Massachusetts.

United States Department of Agriculture
2014 Web Soil Survey. Electronic document, http://websoilsurvey.nrcs.usda.gov/, accessed 5 May 2014.

United States Geological Survey (USGS)
1938 Harbeson, DE 7.5 Minute Quadrangle. United States Geological Survey, Washington, DC.

1944 Harbeson, DE 7.5 Minute Quadrangle. United States Geological Survey, Washington, DC.

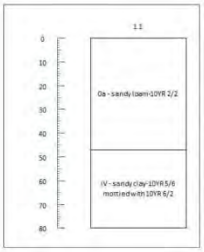
1955 Harbeson, DE 7.5 Minute Quadrangle. United States Geological Survey, Washington, DC.

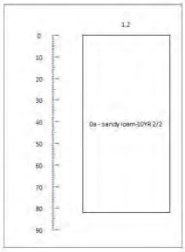
1992 Harbeson, DE 7.5 Minute Quadrangle. United States Geological Survey, Washington, DC.

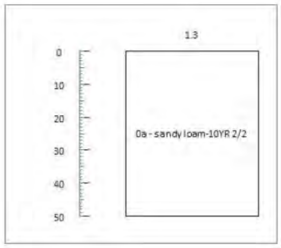
Ward, H.H., E.D. Read, and S. Foell
2013 *Phase IA Archaeological and Architectural History Survey, Newark Regional Transportation Center, Newark, New Castle County, Delaware.* Report prepared for the Delaware Department of Transportation by Parsons Brinkerhoff, Inc.

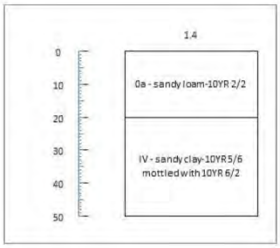
Weslager, Carl A.
1972 *The Delaware Indians: A History*. Rutgers University Press, New Brunswick, New Jersey.

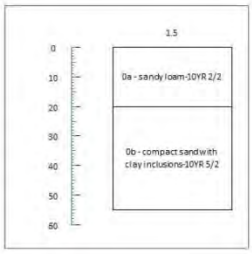
Appendix A: Stratigraphic Profiles and Log

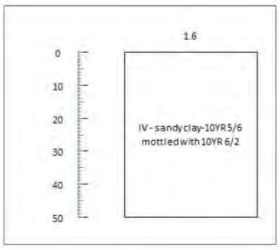

1.1
0a - sandy loam-10YR 2/2
IV - sandy clay-10YR 5/6 mottled with 10YR 6/2

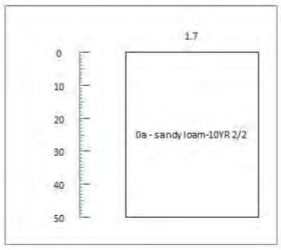

1.2
0a - sandy loam-10YR 2/2

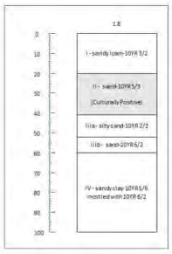

1.3
0a - sandy loam-10YR 2/2

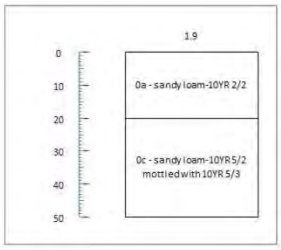

1.4
0a - sandy loam-10YR 2/2
IV - sandy clay-10YR 5/6 mottled with 10YR 6/2

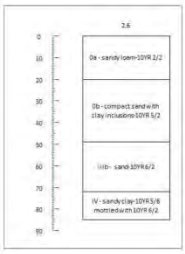

1.5
0a - sandy loam-10YR 2/2
0b - compact sand with clay inclusions-10YR 5/2

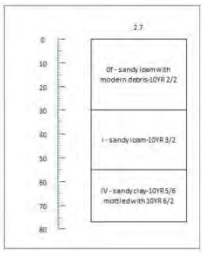

1.6
IV - sandy clay-10YR 5/6 mottled with 10YR 6/2

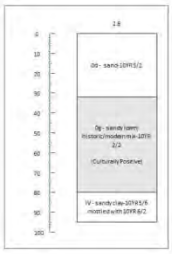

1.7
0a - sandy loam-10YR 2/2

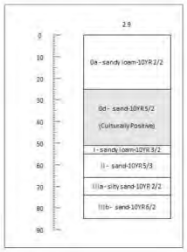

1.8
I - sandy loam-10YR 3/2
II - sand-10YR 5/3 (Culturally Positive)
IIIa- silty sand-10YR 2/2
IIIb- sand-10YR 6/2
IV - sandy clay-10YR 5/6 mottled with 10YR 6/2

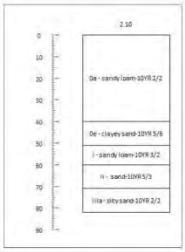

1.9
0a - sandy loam-10YR 2/2
0c - sandy loam-10YR 5/2 mottled with 10YR 5/3

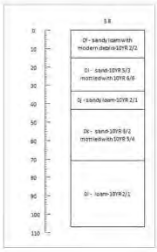

2.6
0a - sandy loam-10YR 2/2
0b - compact sand with clay inclusions-10YR 5/2
IIIb- sand-10YR 6/2
IV - sandy clay-10YR 5/6 mottled with 10YR 6/2

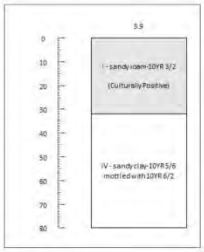

2.7
0f - sandy loam with modern debris-10YR 2/2
I - sandy loam-10YR 3/2
IV - sandy clay-10YR 5/6 mottled with 10YR 6/2

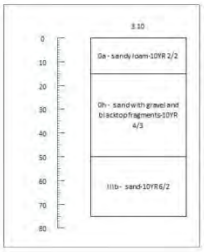

2.8
0a - sand-10YR 5/2
0g - sandy loam mixed w/modern mix-10YR 2/2
(Culturally Positive)
IV - sandy clay-10YR 5/6 mottled with 10YR 6/2

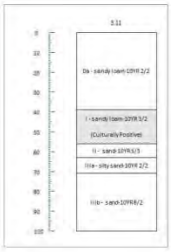

2.9
0a - sandy loam-10YR 2/2
0d - sand-10YR 5/2
(Culturally Positive)
I - sandy loam-10YR 3/2
II - sand-10YR 5/3
IIIa - silty sand-10YR 2/2
IIIb- sand-10YR 6/2

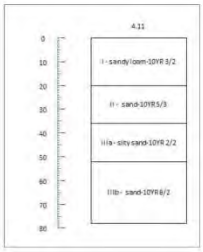

2.10
0a - sandy loam-10YR 2/2
0e - clayey sand-10YR 5/6
I - sandy loam-10YR 3/2
II - sand-10YR 5/3
IIIa - silty sand-10YR 2/2

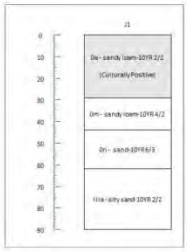

2.11
0f - sandy loam with modern debris-10YR 2/2
0i - sand-10YR 5/3 mottled with 10YR 6/8
0j - sandy loam-10YR 2/1
0k - sand-10YR 6/2 mottled with 10YR 5/4
0l - loam-10YR 2/1


3.9
I - sandy loam-10YR 3/2
(Culturally Positive)
IV - sandy clay-10YR 5/6 mottled with 10YR 6/2


3.10
0a - sandy loam-10YR 2/2
0h - sand with gravel and blacktop fragments-10YR 4/3
IIIb- sand-10YR 6/2


3.11
0a - sandy loam-10YR 2/2
I - sandy loam-10YR 3/2
(Culturally Positive)
II - sand-10YR 5/3
IIIa - silty sand-10YR 2/2
IIIb- sand-10YR 6/2


4.11
I - sandy loam-10YR 3/2
II - sand-10YR 5/3
IIIa - silty sand-10YR 2/2
IIIb- sand-10YR 6/2


J1
0a - sandy loam-10YR 2/2
(Culturally Positive)
0m - sandy loam-10YR 4/2
0n - sand-10YR 6/3
IIIa - silty sand-10YR 2/2

Unit Type	No.	Stratum	Top Depth (cm)	Bottom Depth (cm)	Soil Texture	Soil Color	Notes	Stratum Positive?
STP	1.1	0a	0	47	sandy loam	10YR 2/2	Sock at 45 cmbs	No
STP	1.1	IV	47	80	sandy clay	10YR 5/6	50% gravel; water at 80 cmbs	No
STP	1.2	0a	0	82	sandy loam	10YR 2/2	Modern bottle glass at 60 cmbs	No
STP	1.3	0a	0	50	sandy loam	10YR 2/2		No
STP	1.4	0a	0	20	sandy loam	10YR 2/2		No
STP	1.4	IV	20	50	sandy clay	10YR 5/6		No
STP	1.5	0a	0	20	sandy loam	10YR 2/2		No
STP	1.5	0b	20	55	compact sand with clay inclusions	10YR 5/2	Compact sand with Clay inclusions	No
STP	1.6	IV	0	50	sandy clay	10YR 5/6		No
STP	1.7	0a	0	50	sandy loam	10YR 2/2		No
STP	1.8	I	0	20	sandy loam	10YR 3/2		No
STP	1.8	II	20	41	sand	10YR 5/3		Yes
STP	1.8	IIIa	41	52	silty sand	10YR 2/2		No
STP	1.8	IIIb	52	60	sand	10YR 6/2		No
STP	1.8	IV	60	100	sandy clay	10YR 5/6		No
STP	1.9	0a	0	20	sandy loam	10YR 2/2		No
STP	1.9	0c	20	50	clayey sand	10YR 5/6	Possible utility line trench fill; loose soil	No
STP	1.10	N/A	N/A	N/A	N/A	N/A	Not excavated, road	N/A
STP	2.6	0a	0	20	sandy loam	10YR 2/2		No
STP	2.6	0b	20	49	compact sand with clay inclusions	10YR 5/2	Asphalt fragments	No
STP	2.6	IIIb	49	72	sand	10YR 6/2		No
STP	2.6	IV	72	85	sandy clay	10YR 5/6		No

Unit Type	No.	Stratum	Top Depth (cm)	Bottom Depth (cm)	Soil Texture	Soil Color	Notes	Stratum Positive?
STP	2.7	0f	0	30	sandy loam	10YR 2/2	Stratum has modern debris in it	No
STP	2.7	I	30	55	sandy loam	10YR 3/2		No
STP	2.7	IV	55	77	sandy clay	10YR 5/6	Water at 77 cmbs	No
STP	2.8	0d	0	32	sand	10YR 5/2		No
STP	2.8	0g	32	80	sandy loam	10YR 2/2	Modern historic mix	Yes
STP	2.8	IV	80	95	sandy clay	10YR 5/6		No
STP	2.9	0a	0	25	sandy loam	10YR 2/2		No
STP	2.9	0d	25	51	sand	10YR 5/2	Has 10yr 5/3 inclusions	Yes
STP	2.9	I	51	55	sandy loam	10YR 3/2		No
STP	2.9	II	55	66	sand	10YR 5/3		No
STP	2.9	IIIa	66	74	silty sand	10YR 2/2		No
STP	2.9	IIIb	74	85	sand	10YR 6/2		No
STP	2.10	0a	0	40	sandy loam	10YR 2/2	50% gravel	No
STP	2.10	0e	40	51	clayey sand	10YR 5/6	With gravel	No
STP	2.10	I	51	60	sandy loam	10YR 3/2		No
STP	2.10	II	60	71	sand	10YR 5/3		No
STP	2.10	IIIa	71	82	silty sand	10YR 2/2		No
STP	3.8	0f	0	15	sandy loam with modern debris	10YR 2/2		No
STP	3.8	0i	15	33	sand	10YR 5/3	Mottled with 10YR6/6	No
STP	3.8	0j	33	43	sandy loam	10YR 2/1		No
STP	3.8	0k	43	71	sand	10YR 3/2	Mottled with 10YR5/4	No

Unit Type	No.	Stratum	Top Depth (cm)	Bottom Depth (cm)	Soil Texture	Soil Color	Notes	Stratum Positive?
STP	3.8	0l	71	107	loam	10YR 2/1	Water at 107 cmbs	No
STP	3.9	I	0	32	sandy loam	10YR 3/2		Yes
STP	3.9	IV	32	80	sandy clay	10YR 5/6	Water seeping in at 70cm	No
STP	3.10	0a	0	15	sandy loam	10YR 2/2		No
STP	3.10	0h	15	50	sand with gravel and blacktop fragments	10YR 4/3		No
STP	3.10	IIIb	50	75	sand	10YR 6/2	Water at 75 cmbs	No
STP	3.11	0a	0	39	sandy loam	10YR 2/2		No
STP	3.11	I	39	56	sandy loam	10YR 3/2		Yes
STP	3.11	II	56	63	sand	10YR 5/3		No
STP	3.11	IIIa	63	71	silty sand	10YR 2/2		No
STP	3.11	IIIb	71	100	sand	10YR 6/2		No
STP	4.11	I	0	20	sandy loam	10YR 3/2		No
STP	4.11	II	20	36	sand	10YR 5/3		No
STP	4.11	IIIa	36	52	silty sand	10YR 2/2		No
STP	4.11	IIIb	52	78	sand	10YR 6/2		No
STP	J1	0a	0	29	sandy loam	10YR 2/2		Yes
STP	J1	0m	29	44	sandy loam	10YR 4/2	With gravel. Contains a lens of 10yr 5/4 sandy clay from 29-32cm.	No
STP	J1	0n	44	62	sand	10YR 6/3		No
STP	J1	IIIa	62	90	silty sand	10YR 2/2		No
TU	0.5 x 0.5	0a	0	30	sandy loam	10YR 2/2		Yes
TU	1	O Horizon	0	13	loam	10YR 2/2		Yes

Unit Type	No.	Stratum	Top Depth (cm)	Bottom Depth (cm)	Soil Texture	Soil Color	Notes	Stratum Positive?
TU	1	0a, level 1	13	23	sandy loam	10YR 2/2		Yes
TU	1	0a, level 2	23	36	sandy loam	10YR 2/2		No
TU	1	0a, level 3	36	44	sandy loam	10YR 2/2		Yes
TU	1	I, level 1	44	47	sandy loam	10YR 3/2		Yes
TU	1	II, level 1	47	57	sand	10YR 5/3		Yes
TU	1	II, level 2	57	76	sand	10YR 5/3	level ranges from 57 cmbs to stopping at 76 to 87 cmbs	No
TU	1	IIIa, level 1	76	90	silty sand	10YR 2/2	level ranges from starting at 76 t0 87 cmbs; stops at 90 cmbs	No

Appendix B: Artifact Catalog

Artifact Catalog -- Historic Ceramic

STP	TU	Stratum/ Level	Depth Range	Count	Group	Class	Material	Ware	Type	Decoration Description	Vessel	Segment	Notes
1.8	-	II	20-41 cmbs	1	Architecture	Ceramic	Unidentified	Unidentified	Tile	N/A	Tile	Body	Pink glazed bathroom, kitchen, etc. tile; late historic/modern
2.8	-	0g	32-80 cmbs	1	Unidentified	Ceramic	Refined Earthenware	Whiteware	Undecorated		Unidentified	Body	Twentieth century
2.8	-	0g	32-80 cmbs	1	Unidentified	Ceramic	Porcelain	Porcelain	Molded; red painted band around rim lip		Unidentified	Rim	Twentieth century
2.8	-	0g	32-80 cmbs	5	Architecture	Ceramic	Unidentified	Unidentified	Tile	N/A	Tile	Body	White glazed bathroom, kitchen, etc. tile; modern
2.9	-	0d	25-51 cmbs	1	Unidentified	Ceramic	Porcelain	Porcelain	Undecorated		Unidentified	Body	
3.11	-	I	39-86 cmbs	1	Kitchen	Ceramic	Refined Earthenware	Pealrware	Undecorated		Unidentified	Body	Small fragment
3.11	-	I	39-86 cmbs	1	Kitchen	Ceramic	Refined Earthenware	Pearlware or whiteware	Blue transfer printed	Probably scenery	Unidentified	Body	Small fragment
3.11	-	I	39-86 cmbs	1	Kitchen	Ceramic	Ironstone	Ironstone	Molded	Beaded	Unidentified	Body	
-	1	0a/3	23-36 cmbd	1	Unidentified	Ceramic	Ironstone	Ironstone	Molded	Scallopecd rim and body	Unidentified	Rim	
-	1	0a/3	23-36 cmbd	1	Unidentified	Ceramic	Ironstone	Ironstone	Undecorated		Unidentified	Base	Partial marker's mark present, illegible

Artifact Catalog -- Glass

STP	TU	Stratum / Level	Depth Range	Count	Group	Class	Material	Color	Segment	Notes
1.8	-	II	20-41 cmbs	2	Architecture	Window	Glass	Aqua	Body	Possible broad glass
1.8	-	II	20-41 cmbs	7	Architecture	Window	Glass	Aqua	Body	
1.8	-	II	20-41 cmbs	1	Unidentified	Possibly medicinal bottle	Glass	Slighlty solarized	Finish	Probable rectangular bottle with tooled extract finish; probably early twentieth century
2.8	-	0g	32-80 cmbs	11	Architecture?	Window?	Glass	Aqua	Body	Late historic/modern
2.8	-	0g	32-80 cmbs	1	Unidentified	Unidentified vessel	Glass	Milk	Body	Late historic/modern
2.9	-	0d	25-51 cmbs	2	Architecture	Window	Glass	Aqua	Body	
2.9	-	0d	25-51 cmbs	1	Unidentified	Unidentified botle	Glass	Brown	Body	
3.9	-	0a	0-32 cmbs	1	Architecture	Window	Glass	Aqua	Body	
3.9	-	0a	0-32 cmbs	1	Architecture	Window	Glass	Colorless	Edge	
3.9	-	0a	0-32 cmbs	2	Unidentified	Unidentified botle	Glass	Colorless	Body	Modern
3.9	-	0a	0-32 cmbs	1	Kitchen	Probable beer bottle	Glass	Brown	Complete	Embossed manufacturer's mark on base, Thatcher Mfg. Co. 1944-1985
3.11	-	I	39-86 cmbs	1	Architecture	Window	Glass	Colorless	Body	
3.11	-	I	39-86 cmbs	1	Unidentified	Unidentified botle	Glass	Brown	Body	Modern
3.11	-	I	39-86 cmbs	1	Unidentified	Unidentified vessel	Glass	Colorless	Body	Early to mid twentieth century
3.11	-	I	39-86 cmbs	1	Unidentified	Unidentified vessel	Glass	Colorless	Body	Modern
3.11	-	I	39-86 cmbs	1	Unidentified	Unidentified vessel	Glass	Colorless	Rim	Modern
J1	-	0a	0-30 cmbs	3	Architecture	Window	Glass	Aqua	Body	
J1	-	0a	0-30 cmbs	1	Architecture	Window	Glass	Colorless	Body	
J1	-	0a	0-30 cmbs	1	Unidentified	Unidentified vessel	Glass	Milk	Body	Late historic/early modern
J1	-	0a	0-30 cmbs	1	Unidentified	Unidentified vessel	Glass	Brown	Body	Late historic/early modern
J1	-	0a	0-30 cmbs	1	Unidentified	Unidentified vessel	Glass	Colorless	Body	Modern
J1	-	0a	0-30 cmbs	1	Unidentified	Unidentified vessel	Glass	Colorless	Body	Modern
J1	-	0a	0-30 cmbs	1	Unidentified	Unidentified bottle	Glass	Colorless	Nearly complete	Possible homeopathic vial bottle; mold-made with tooled finish; early to mid twentieth century
J1	-	0a	0-30 cmbs	1	Possibly medicinal	Possibly medicinal bottle	Glass	Aqua	Complete	Rectangular bottle with extract finish; machine-made; early to mid twentieth century
-	0.5 x 0.5	0a	0-30 cmbs	2	Architecture	Window	Glass	Aqua	Body	
-	0.5 x 0.5	0a	0-30 cmbs	1	Unidentified	Unidentified bottle	Glass	Brown	Body	Modern
-	0.5 x 0.5	0a	0-30 cmbs	1	Unidentified	Unidentified vessel	Glass	Colorless	Body	Modern
-	1	O/1	0-13 cmbd	1	Architecture	Window	Glass	Aqua	Body	
-	1	O/1	0-13 cmbd	1	Unidentified	Unidentified bottle	Glass	Aqua	Body	Embossed, illegible
-	1	O/1	0-13 cmbd	1	Kitchen	Probable Coke bottle	Glass	Aqua	Finish	Crown top finish; machine made; late historic/modern

Artifact Catalog -- Glass

STP	TU	Stratum / Level	Depth Range	Count	Group	Class	Material	Color	Segment	Notes
-	1	O/1	0-13 cmbd	2	Unidentified	Unidentified bottle	Glass	Green	Body	Late historic/early modern
-	1	O/1	0-13 cmbd	3	Unidentified	Unidentified vessel	Glass	Colorless	Body	Modern
-	1	0a/1	13-23 cmbd	9	Architecture	Window	Glass	Aqua	Body	
-	1	0a/1	13-23 cmbd	2	Unidentified	Unidentified vessel	Glass	Aqua	Body	
-	1	0a/1	13-23 cmbd	1	Unidentified	Unidentified botle	Glass	Green	Body	Late historic/early modern
-	1	0a/1	13-23 cmbd	4	Unidentified	Unidentified vessel	Glass	Colorless	Body	Modern
-	1	0a/3	23-36 cmbd	2	Architecture	Window	Glass	Aqua	Body	
-	1	0a/3	23-36 cmbd	1	Unidentified	Unidentified vessel	Glass	Aqua	Body	
-	1	0a/3	23-36 cmbd	3	Unidentified	Unidentified vessel	Glass	Colorless	Body	
-	1	0a/3	23-36 cmbd	4	Unidentified	Unidentified bottle	Glass	Colorless	Nearly complete	Pcs. mend; possible homeopathic vial bottle; mold-made with tooled finish; early to mid twentieth century
-	1	0a/3	23-36 cmbd	1	Kitchen	Canning jar lid liner	Glass	Milk	Complete	Unidentified embossed symbol and "CONSOLIDATED FRUIT COMPANY, NEW YORK"; ca. 1871-1908

Artifact Catalog -- Brick

STP	TU	Stratum / Level	Depth Range	Count	Group	Class	Length (in.)	Width (in.)	Height (in.)	Notes
2.8	-	0g	32-80 cmbs	1	Architecture	Mold-made	N/A	Approx. 4	2 1/4	
2.9	-	0d	25-51 cmbs	1	Architecture	Machine-made	N/A	N/A	2 1/4	Mortar present
3.11	-	I	39-86 cmbs	3	Architecture	Unidentified	N/A	N/A	N/A	Small fragments
-	1	O/1	0-13 cmbd	1	Architecture	Unidentified	N/A	N/A	N/A	Small fragment
-	1	0a/1	13-23 cmbd	3	Architecture	Unidentified	N/A	N/A	N/A	Small fragments

Artifact Catalog -- Metal

STP	TU	Stratum / Level	Depth Range	Count	Group	Class	Material	Type	Condition	Notes
1.8	-	II	20-41 cmbs	1	Clothing	Button	Ferrous and Cu Alloy	Decorative 4-hole	Complete	
1.8	-	II	20-41 cmbs	1	Architecture	Probable staple	Ferrous	Unidentified	Complete	
2.8	-	0g	32-80 cmbs	1	Agricultural or Activities	Horse shoe	Ferrous	Unidentified	Nearly complete	
2.9	-	0d	25-51 cmbs	1	Unidentified	Unidentifed	Ferrous	Unidentified	Fragment	
2.9	-	0d	25-51 cmbs	1	Architecture	Nail	Ferrous	Wire	Fragment	
2.9	-	0d	25-51 cmbs	1	Kitchen	Can pull tab	Aluminum	Unidentified	Complete	Late historic/modern
3.9	-	0a	0-32 cmbs	5	Architecture	Nail	Ferrous	Wire	Fragment	
3.11	-	I	39-86 cmbs	2	Architecture	Nail	Ferrous	Unidentified	Fragment	
3.11	-	I	39-86 cmbs	2	Architecture	Nail	Ferrous	Cut	Complete	
3.11	-	I	39-86 cmbs	1	Architecture	Bolt?	Ferrous	Unidentified	Fragment	
3.11	-	I	39-86 cmbs	1	Unidentified	Unidentifed	Ferrous	Unidentified	Fragment	
J1	-	0a	0-30 cmbs	5	Architecture	Nail	Ferrous	Unidentified	Fragment	
J1	-	0a	0-30 cmbs	1	Architecture	Nail	Ferrous	Wire	Complete	Probably roofing nail
J1	-	0a	0-30 cmbs	1	Kitchen	Can pull tab	Aluminum	Unidentified	Complete	Late historic/modern
-	0.5 x 0.5	0a	0-30 cmbs	1	Unidentified	Unidentifed	Ferrous	Unidentified	Fragment	
-	0.5 x 0.5	0a	0-30 cmbs	1	Unidentified	Wire	Ferrous	Unidentified	Fragment	Fencing material?
-	1	O/1	0-13 cmbd	1	Architecture	Nail	Ferrous	Cut or wire	Fragment	
-	1	O/1	0-13 cmbd	1	Unidentified	Can	Aluminum	Unidentified	Fragment	Late historic/modern
-	1	0a/1	13-23 cmbd	4	Architecture	Nail	Ferrous	Wire	Fragment	
-	1	0a/1	13-23 cmbd	2	Unidentified	Unidentifed	Ferrous	Unidentified	Fragment	
-	1	0a/3	23-36 cmbd	1	Unidentified	Unidentifed	Cu Alloy and ferrous	Unidentified	Fragment	Mechanical part?
-	1	0a/3	23-36 cmbd	4	Unidentified	Unidentifed	Ferrous	Unidentified	Fragment	
-	1	0a/3	23-36 cmbd	1	Architecture	Bolt	Ferrous	Unidentified	Fragment	
-	1	0a/3	23-36 cmbd	14	Architecture	Nail	Ferrous	Probable wire	Fragment	

Artifact Catalog -- Other

STP	TU	Stratum / Level	Depth Range	Count	Material	Type	Condition	Notes
1.8	-	II	20-41 cmbs	1	Clay	Tobacco pipe	Stem	6/64" diameter, 1680-1720
2.8	-	0g	32-80 cmbs	1	Mesh	Probable window screen	Fragment	
2.8	-	0g	32-80 cmbs	2	Shell	Oyster	Fragment	
2.8	-	0g	32-80 cmbs	4	Mortor	Usand-based?	Fragment	
2.8	-	0g	32-80 cmbs	1	Stone?	Tile	Complete	Rectangular
3.9	-	0a	0-32 cmbs	1	Plastic	Unidentified	Fragment	
J1	-	0a	0-30 cmbs	4	Shell	Oyster	Fragment	
-	0.5 x 0.5	0a	0-30 cmbs	1	Wood	Unidentified	Fragment	
-	0.5 x 0.5	0a	0-30 cmbs	2	Shell	Oyster	Fragment	
-	0.5 x 0.5	0a	0-30 cmbs	0	Possible asbestos			DISCARDED IN LAB
-	1	0a/1	13-23 cmbd	1	Composite, metal and graphite?	Wiring	Fragment	

Appendix C: Site Form

Appendix D: Resumes of Key Personnel

ONE COMPANY | *Many Solutions*™

James G. Parker, MA, RPA
Archaeology Project Director and Laboratory Director
2600 Park Tower Drive, Suite 100
Vienna, VA 22180-7342
(571) 327-5832

Education
Master of Arts, Anthropology, East Carolina University, 2008

Bachelor of Science, Anthropology, Mercyhurst College, 2002

Professional Registrations
Register of Professional Archaeologists, 2014-Present

Professional Affiliations
Society for Historical Archaeology, Member, 2011-Present

Association for Gravestone Studies, Member, 2011-Present

HDR Tenure
3 years

Industry Tenure
14+ Years

Professional Experience

Mr. Parker has over 14 years of archaeological experience, the majority of which have involved cultural resource management projects throughout the Northeast, Mid-Atlantic and Southeast. He has over six years of experience at the supervisory level, overseeing Phase I and Phase II archaeological investigations on pipeline projects, military installations, and state and federally funded projects. Mr. Parker holds a master's degree in anthropology with a concentration in historical archaeology, and has extensive experience conducting research for and excavating mid eighteenth through early twentieth-century sites. He also possesses considerable experience in all phases of lab work, including artifact processing, conservation, cataloguing, analysis, and curation preparation. Mr. Parker's varied work experiences as well as academic archaeological projects have provided him numerous opportunities to become proficient in many aspects of the National Historic Preservation Act (NHPA) Section 106 process, including research, testing and assessment.

Relevant HDR Project Experience

Archaeological Testing Next to the Bellwood House/Building 42 for Proposed Improvements to the House Drainage System, Defense Supply Center Richmond, Chesterfield County, Virginia (May 2014-Current). Archaeology Project Director. Conducted archaeological testing next to the Bellwood House to determine whether intact cultural deposits related to the construction and early occupation of Bellwood were present. Analyzed the historic assemblage and lead author of the report.

Phase I Archaeological Survey for HISP NCC, SR 71, Old Porter Road to SR 7, Red Lion, New Castle County, Delaware (2/14-Current). Archaeology Project Director. Conducted a Phase I archaeological survey for the Delaware Department of Transportation. Conducted the SHPO and background/historical research. Analyzed the historic assemblage and lead author of the report.

Phase I Archaeological Survey for HISP US 9 and SR 5 Intersection Improvements, Sussex County, Delaware (2/14-Current). Archaeology Project Director. Conducted a Phase I archaeological survey for the Delaware Department of Transportation. Conducted the SHPO and background/historical research. Analyzed the historic assemblage and lead author of the report.

Phase I Archaeological Survey at Blossom Point Training Facility, Welcome, Maryland (12/13-Current). Archaeology Project Director. Conducted a Phase I archaeological survey at the installation, lead author of the final report, and wrote the cultural resource section of the Environmental Assessment report.

Sea Girt Phase I/II Archaeological Survey and Evaluation at Sea Girt Army National Guard Installation, Sea Girt, New Jersey (10/13-01/14). Archaeology Project Director. Conducted a Phase I survey at the NJ Army National Guard installation in Sea Girt. Identified a late nineteenth to mid twentieth-century site during the Phase I, and evaluated the site during the Phase II. Processed and analyzed the historic assemblage recovered from the site, and lead author of the final report.

Phase I Archaeological Survey at the Rhode Island Air National Guard Station (ANGS), North Smithfield, Providence County, Rhode Island (04/13–6/13). Archaeologist. Conducted a Phase I archaeological survey to identify surface and subsurface cultural resources on the RI ANGS. Conducted the SHPO and background/historical research. Wrote the historic context section of the final report.

Phase I Archaeological Survey, Gulfport CRTC, Gulfport, Mississippi (1/13-4/13). Archaeology Project Director. Conducted a Phase I archaeological investigation of the installation and wrote the archaeology section of the report.

Sea Girt Phase II Archaeological Evaluation at Sea Girt Army National Guard Installation, Sea Girt, New Jersey (12/12-Current). Archaeology Crew Chief. Conducted a Phase II evaluation of a eighteenth to mid-nineteenth-century domestic site for the NJ Army National Guard in Sea Girt. Processed and analyzed the historic assemblage recovered from the site, and lead author of the final report.

East Ship Island Phase I Archaeological Survey, Mississippi (11/12). Archaeology Crew Chief. Conducted a Phase I archaeological investigation along the southern shoreline of East Ship Island. Co-authored the final report.

Friendship Hill National Historic Site (FRHI) Phase I Archaeological Survey, Pennsylvania (10/12-2/13). Archaeologist. Conducted a Phase I archaeological investigation at FRHI for the National Park Service. Processed and analyzed the historic assemblage recovered from the site, wrote the management summary, and lead author of the final report.

Phase I Archaeological Survey at Edison Mission Energy Homer City Generation L.P. for Proposed Wetland Mitigations, Pennsylvania (9/12). Archaeology Crew Chief. Conducted Phase I archaeological investigations of two proposed wetland mitigation areas at the Homer City Generation L.P. Lead author of the final report.

Xcel Project, Colorado (6/12-7/12). Archaeology Monitor and Field Archaeologist.

Phase II Archaeological Evaluations at Defense Supply Center Richmond / Defense Logistics Agency Enterprise Support (DES) Richmond (5/12-6/12). Field Archaeologist. Participated in the Phase II evaluation of sites 44CF616, 44CF648, and 44CF650 in Chesterfield County, Virginia. Analyzed the historic assemblages from sites 44CF648 and 44CF650. Co-authored the final report.

Phase I Archaeological Survey at Charlotte International Airport (IAP) Air National Guard Base (ANGB) and Stanly County Airport Air National Guard Station (ANGS), North Carolina (4/12). Field Archaeologist. Participated in Phase I surveys conducted at the ANGB located at the Charlotte-Douglas International Airport and at the ANGS located at the Stanly County Airport.

Natural Resource Damage Assessment (NRDA) for the MC 252 Oil Spill / NOAA, LA/MS/AL/FL (11/11-Current). Archaeology Monitor. Monitor biologists conducting biota and intertidal oyster sampling.

MC 252 Response Cultural Resources Assessment Program / BP Exploration & Production, Inc., LA/MS/AL/FL (10/11-Current). Field Archaeologist/Archaeology Monitor/Lab Archaeologist. Monitor oil clean-up crews, participate in Phase I archaeological surveys, and site delineations, in addition to conducting historic artifact analysis.

Jamestown Island, VA – Complete Transportation Infrastructure Project, National Park Service, Jamestown, Virginia (9/11-7/12). Archaeology Monitor. Monitored construction activities in the vicinity of the reconstructed Glasshouse demonstration building and Glasshouse ruins. Wrote the final monitoring report.

ONLine Project, Nevada (9/11). Archaeology Monitor. Monitored construction activities for the installation of a power line running from Ely to Las Vegas, Nevada.

Hardwood Air National Guard Range, Juneau County, Wisconsin (7/11). Field Archaeologist. Participated in a Phase I survey and a Phase II evaluation of a Woodland period site.

Proposed PPV Utilities Project, Naval Support Facility, New Orleans, Louisiana (7/11-8/11). Field Archaeologist. Participated in a Phase I survey of the installation. Co-authored the management summary and was the lead author of the final report.

Phase II Archaeological Evaluations at Defense Supply Center Richmond / Defense Logistics Agency Enterprise Support (DES) Richmond (5/11-6/11). Field Archaeologist. Participated in the Phase II evaluation of sites 44CF647 and 44CF649 in Chesterfield County, Virginia. Analyzed the historic assemblages recovered from both sites and lead author of the report.

Phase III Data Recovery at Pointville Town Site, Joint Base McGuire-Dix-Lakehurst, Burlington County, New Jersey (4/11). Field Archaeologist. Participated in a Phase III data recovery at a nineteenth to early twentieth-century town site.

Relevant Non-HDR Project Experience

Phase I Archaeological Surveys and Phase II Archaeological Evaluations for the Secondary Programmatic Agreement (2PA) Project/FEMA MSRO, Biloxi, MS (10/09-9/10; 10/10-3/11). Historic Preservation Specialist. Served as an archaeology field operations team member on a long-term FEMA deployment in support of the 2PA, which was created to assess the effects of Hurricane Katrina and subsequent debris removal and cleanup on cultural resources in Forrest, Pearl River, Stone, George, Hancock, Harrison and Jackson counties. In addition to field work, responsibilities included preparing right-of-entry letters for survey areas, conducting documentary research, preparing excavation unit and survey area field work summaries, and processing, cleaning and cataloguing artifacts.

Savage Fire House Phase II Archaeological Evaluation/Town of Savage, MD (9/10-10/10). Field Archaeologist. Participated in a Phase II archaeological investigation of a late nineteenth to mid twentieth-century farmstead.

Phase I Archaeological Surveys and Phase II Archaeological Evaluations for the Mississippi Development Authority (MDA) Project/Mississippi Development Authority, MS Gulf Coast (7/08-8/09). Crew Chief. Supervised Phase I and II archaeological investigations for property owners participating in the Small Rental Assistance and Elevation Grant Programs sponsored by the MDA for Hurricane Katrina recovery efforts in Pearl River, Hancock, Harrison and Jackson Counties. Additional responsibilities included conducting documentary research, and writing reports for submission to the MS State Historic Preservation Office (SHPO).

Phase I Archaeological Survey for Florida Gas Transmission (FGT) Project/Florida Gas Transmission Company, LLC, southern Alabama and Florida (2/08-7/08). Archaeologist II. Participated in and supervised Phase I archaeological surveys for a proposed natural gas pipeline.

Phase I Archaeological Survey for Elba Express Pipeline Project/Elba Express Pipeline Company, Georgia and South Carolina (3/08-4/08). Archaeologist II. Participated in a Phase I archaeological survey for a proposed natural gas pipeline.

Various Phase I Archaeological Surveys for Eglin Air Force Base, northwest Florida (11/07-1/08). Field Archaeologist. Participated in Phase I archaeological surveys at various locations on the military base in support of NHPA Section 106 compliance efforts.

Phase I Archaeological Survey for Kinder Morgan Pipeline Project/Mustang Pipeline Company, southeast Oklahoma to northern Alabama (10/07-11/07). Field Archaeologist. Participated in a Phase I archaeological survey for a proposed natural gas pipeline.

Phase I Archaeological Surveys and Phase II Archaeological Evaluations at Virginia Army National Guard, Fort Pickett, VA (5/07-8/07). Crew Chief. Supervised Phase I and Phase II archaeological surveys at various locations on the military post in support of NHPA Section 106 compliance efforts, in addition to conducting documentary research, and writing reports for submission to the Virginia SHPO.

Queen Anne's Revenge Shipwreck Project/North Carolina Department of Cultural Resources, Greenville, NC (9/05-5/06; 8/06-5/07). Conservation Lab Graduate Assistant. Participated in processing, cleaning and conserving artifacts recovered from excavations of the early eighteenth-century shipwreck believed to be Blackbeard's flagship.

Fort Pickett Historic Cemeteries Project/Virginia Army National Guard, Fort Pickett, VA (intermittent between 8/04 and 8/07). Field/Lab Archaeologist. Conducted a historic cemetery survey of Fort Pickett and the surrounding area, which entailed creating recordation forms for the field survey; undertaking documentary research; field locating and recording cemeteries and graves/grave markers contained within, and if present, mapping associated farmstead/plantation remains; and writing the final report, which was submitted to the Virginia SHPO and local communities.

Fort Michilimackinac, Michigan (7/04). Archaeology Volunteer. Participated in the excavations of the eighteenth-century fort remains. Excavated units, water screened soils, and completed unit paperwork.

Phase I Archaeological Surveys and Phase II Archaeological Evaluations at Virginia Army National Guard, Fort Pickett, VA (6/03-8/05; 5/06-8/06). Field/Lab Archaeologist. Participated in Phase I and Phase II archaeological investigations at various locations on the military post in support of NHPA Section 106 compliance efforts, in addition to conducting documentary research, and preparing and writing reports for submission to the Virginia SHPO.

Irvine Mills Site/Mercyhurst College Anthropology Department Historic Field School (9/01-6/02). Student Director, Mercyhurst Archaeological Institute Historic Lab. Supervised lab technicians, catalogued and analyzed artifacts from the Irvine Mills Site, and maintained the artifact database.

Various Projects/Mercyhurst College Anthropology Department/Mercyhurst Archaeological Institute, Pennsylvania (intermittent between 9/98 and 8/01). Field/Lab Archaeologist. Participated in various field projects. Worked in the Processing and Historic Labs cleaning, labeling, cataloguing, and analyzing historic artifacts.

Various Phase I Archaeological Surveys and Phase II Archaeological Evaluations /Rochester Museum and Science Center, New York (intermittent between 8/98 and 8/00; 7/02-5/03). Field/Lab Archaeologist. Participated in Phase I and II archaeological investigations, catalogued and analyzed artifacts, conducted historical/documentary research, and prepared and wrote reports for submission to the New York SHPO.

Professional Reports

Lead author with Brandon M. Gabler, Caroline Wright, and Paul Weishar
In press *Phase II Archaeological Investigation at the New Jersey Army National Guard, Sea Girt National Training Center, Monmouth County, New Jersey*. Prepared for The New Jersey National Guard by HDR Environment, Operations, and Construction, Inc., Vienna, Virginia.

Lead author with Caroline Wright and Paul Weishar
2014 *Phase I/II Archaeological Investigation at the New Jersey Army National Guard, Sea Girt National Training Center, Monmouth County, New Jersey*. Prepared for The New Jersey National Guard by HDR Environment, Operations, and Construction, Inc., Vienna, Virginia.

Lead author with Gregory D. Lockard and Derek Johnson
2014 *Phase I Archaeological Survey for the Expansion of Satellite Ground Communications Terminal Facilities and Operations at Blossom Point Research Facility, Charles County, Maryland*. Report prepared for U.S. Army Garrison, Adelphi Laboratory Center.

With Gabler, Brandon, Marjorie Nowick, and Kathryn Plimpton
2014 *Cultural Resources Survey of North Smithfield Air National Guard Station, Providence County, Rhode Island*. Report prepared for Rhode Island Air National Guard, National Guard Bureau, Air National Guard Readiness Center.

With Melissa Wiedenfeld and Paul Weishar
2013 *Cultural Resources Survey and Evaluation Gulfport Combat Readiness Training Center, Gulfport, Mississippi*. Report prepared for the Mississippi Air National Guard, National Guard Bureau.

With Brandon Gabler, Julette Vogel, Melissa Wiedenfeld, Barry Wharton and David L. Brown
2013 *Phase I Archaeological Survey of East Ship Island, Harrison County, Mississippi*. Report prepared for the National Park Service.

Lead author with Brandon Gabler and Kari Schmidt
2013 *Phase I Archaeological Investigation at Friendship Hill National Historic Site, Point Marion, Pennsylvania*. Report prepared for the National Park Service.

Lead author with Brandon Gabler and Robert Quiggle
2012 *Phase I Archaeological Survey for the Homer City Upgrade Project, Wetland Replacement Areas, Black Lick and Center Townships, Indiana, Pennsylvania*. Report prepared for Edison Mission Energy Homer City Generation L.P.
With Brandon Gabler and Gregory D. Lockard
2012 *Phase II Archaeological Evaluation of Sites 44CF616, 44CF648, and 44CF650 at the Defense Supply Center Richmond, Chesterfield County, Virginia*. Report prepared for the Defense Logistics Agency (DLA) Installation Support Richmond.

2012 *Archaeological Monitoring of Construction During the Complete Transportation Infrastructure for Jamestown Project at Colonial National Historical Park, Jamestown, Virginia*. Report prepared for the National Park Service.

Lead author with Alvin Banguilan, Barry Wharton and Laura Dreibelbis
2011 *Phase I Archaeological Survey of the Proposed PPV Utilities Project, Naval Support Activity New Orleans, Louisiana*. Report prepared for NAVFAC SE.

Lead author with Gregory D. Lockard, Alvin Banguilan, and Lori Vermaas
2011 *Phase II Archaeological Evaluation of Sites 44CF647 and 44CF649 at the Defense Supply Center Richmond, Chesterfield County, Virginia*. Report prepared for the Defense Logistics Agency (DLA) Installation Support Richmond.

With Heather Crowl and Audrey Maass
2009 *Phase II Archaeological National Register Evaluation of Site 22HR1042, 1034 Beach Boulevard, Biloxi, MDA Elevation Grant Program, Application Id# 06HA028665, Harrison County, Mississippi*. Report prepared for the Mississippi Development Authority by URS Corporation, Baton Rouge, LA.

2007 *Fort Pickett Historic Cemeteries: Dinwiddie, Nottoway and Brunswick Counties, Virginia*. Fort Pickett Cultural Resource Management Project 2005.06, CMI MLD CR-27. Conservation Management Institute, Virginia Polytechnic Institute and State University Cultural Resources Program, Blackstone, Virginia.

With Wayne C. J. Boyko
2007 *Phase I Archaeological Survey of a Proposed Rehabilitation of Beaver Trail Creek, 51.4 ha (127.05 acres), In Training Area 13, MTC Fort Pickett, Dinwiddie County, Virginia*. Fort Pickett Cultural Resource Management Project 2007.06, CMI MLD CR-33, VDHR File No. 2007-1021. Conservation Management Institute, Virginia Polytechnic Institute and State University Cultural Resources Program, Blackstone, Virginia.

With Wayne C. J. Boyko and Joe R. Davis
2003 Phase IA Cultural Resource Investigations for the Proposed Sterling Autobody Center Town of Greece, Monroe County, New York. RMSC/RHPP PIN 2003.02. The Regional Heritage Preservation Program, Rochester Museum and Science Center. Rochester, New York.

With Mary F. Trudeau and Andrew K. Graupman
2003 Phase IA and Phase IB Cultural Resource Investigations for the Proposed Willow Landing Development, Division Street and Meadow Drive, Town of Palmyra, Wayne County, New York. RMSC/RHPP PIN 2003.04. The Regional Heritage Preservation Program, Rochester Museum and Science Center. Rochester, New York.

With Mark W. Ewing
2003 Phase II Cultural Resource Investigations for RMSC Nap 044 (Naples Community Park 1) and RMSC Nap 045 (Naples Community Park 2) for the Proposed Naples Community Park Project Town of Naples, Ontario County, New York. NYSOPRHP Project Review Number 98PR2588, RMSC/RHPP PIN 2002.08. The Regional Heritage Preservation Program, Rochester Museum and Science Center. Rochester, New York.

Professional Presentations

2007 *Rural Settlement Patterns in the Southern Virginia Piedmont*. Paper presented at the 40th Annual Society for Historical Archaeology Conference, Williamsburg, Virginia.

Professional Publications

2007 Review of *Burial Terminology: A Guide for Researchers*, Roderick Sprague, Alta Mira Press. *Historical Archaeology* 41(2):221.

ONE COMPANY | *Many Solutions*

Brandon M. Gabler, PhD, RPA

Archaeology Project Manager
5405 Data Court
Ann Arbor, Michigan 48108
(734) 332-6412

Education
Doctor of Philosophy, Anthropology, University of Arizona, 2009

Master of Arts, Anthropology, University of Arizona, 2004

Bachelor of Arts, Mathematics, Mercyhurst College, 2003

Bachelor of Arts, Anthropology/Archaeology, Mercyhurst College, 2002

Professional Registrations
Register of Professional Archaeologists, 2013—Present

Professional Affiliations
Society for American Archaeology, Member, 2000-Present

Midwest Archaeological Conference, 2013-Present

HDR Tenure
Three years

Industry Tenure
Fourteen years

Professional Experience

Dr. Gabler has 14 years of experience working on professional archaeological projects and 5 years of experience directing projects in the United States. During these 14 years, he has documented cultural resources in both academic (research-based) and contract (client-based) settings in the Northeast, Southeast, Mid-Atlantic, Southwest, Great Basin, and Mojave Desert regions. He has taught courses in anthropology and archaeology at the University of Arizona. He exceeds the Secretary of the Interior's Standards for archaeology.

Dr. Gabler has substantial experience with project management, agency and tribal consultation, budget oversight, quality control, database development and management, data analysis, GIS data collection and analysis, and cartographic production through all phases of a wide range of cultural resource projects, including Section 106 compliance as well as preservation-based projects. These projects range from initial surveys through data recovery efforts for both private and government clients. Dr. Gabler contributed database and software implementation standards to a research team tasked with designing and executing a tablet-computer- and online-collaboration-based field data collection and reporting strategy. Dr. Gabler is currently leading a team tasked with identifying and changing the industry standards for processing CSX and BNSF railroad tower construction NEPA and NHPA compliance, involving the FCC and many THPOs and SHPOs throughout the US.

HDR Project Experience

CSX Positive Train Control Tower Compliance / CSX Transportation / PA, MD, NC, TN, KY, GA, AL (08/13–present). Project Manager. Designed and implemented database workflow for real-time entry and sharing of critical FCC tower consultation information with client. Working with Indian tribes and the various SHPOs to identify historic properties and areas of Indian heritage that may be affected by tower construction. Workflow involves gathering and processing of background information, GIS data, state archaeological and historic site data, and preparation of cultural resource memos and reports provided to Indian tribes and other interested parties on short notice. Responsible for training other cultural resource personnel to conduct same research and coordinate on the processing towers in seven states to date. Coordinates in tangent with CSX PTC Program Manager and PTC program personnel. Coordinates with Indian tribes on behalf of CSX in consultation with FCC. Co-leading a position statement to request that the FCC allow bundling of towers into groups by region, as well as a statement to exempt replacement towers from the review process. $980,000.

Burlington Northern Santa Fe Positive Train Control Tower Compliance / BNSF / Illinois, Kansas (08/13–present). Project Manager. Designed and implemented database workflow for real-time entry and sharing of critical FCC tower consultation information with client. Working with over two dozen Indian tribes and the Kansas and Illinois SHPOs to identify historic properties and areas of Indian heritage that may be affected by tower construction. Workflow involves gathering and processing of background information, GIS data, state archaeological and historic site data, and preparation of cultural resource memos and reports provided to Indian tribes and other interested parties on short notice. Also

responsible for training other cultural resource personnel to conduct same research and coordinate on the processing of over 40 towers to date. Coordinates with Indian tribes on behalf of CSX in consultation with FCC. IDIQ.

Natural Resources Damage Assessment (NRDA) Cultural Resources Assessment / BP Exploration & Production, Inc., and NOAA / LA/MS/AL/FL (10/11–present). Project Manager. Coordinated and directed the archaeological monitoring of biota and submerged oil sampling throughout the area affected by the Deepwater Horizon oil spill. Provided treatment recommendations to SHPO and federal trustee representatives throughout the four states for NHPA Section 106 compliance. $482,809.

MC 252 Response Cultural Resources Assessment Program / BP Exploration & Production, Inc., LA/MS/AL/FL (7/11–present). Coordinator and Field Archaeologist. Provides SCAT archaeology support, operations archaeology monitoring, and laboratory coordination for the Deepwater Horizon oil spill cleanup effort. Serves as Federal Lands Coordinator to act as liaison between National Park Service/US Fish and Wildlife Service/Naval Air Station/Bureau of Land Management and HDR for NHPA Section 106 compliance, including field response, data management, and evaluation of treatment for cultural resources on federal lands. $10,000,000.

Section 110 Compliance Support Project, U.S. Customs and Border Protection (2/13–02/14). Technical Lead. HDR is leading a multi-disciplinary and multi-faceted project to assist CBP in complying with Sections 106 and 110 of the National Historic Preservation Act for its 361 facilities nationwide. Gabler reviewed reports following the pilot-study survey of six CBP facilities nationwide for archaeological and historic architectural resources including the review of NRHP eligibility evaluation recommendations for surveyed resources. Gabler is also the archaeology technical lead for the combined archaeological and historic architectural surveys planned for 45 additional CBP facilities nationwide to fulfill the goals outlined in the Section 110 program plan.

Phase I Archaeological Survey for the London State Fish Hatchery Capital Project, Union Township, Madison County, Ohio / London State Fish Hatchery, Ohio Department of Natural Resources / Madison County, Ohio (11/13–12/13). Project Manager. Coordinated and managed Phase I archaeological survey in advance of electric line replacement at London State Fish Hatchery. Determined areas for pedestrian and subsurface testing, coordinated GIS data and iPad field recording data collection, and authored final report.

Phase I Archaeological Survey for the Patoka to Trunkline Pipeline Project / Eastern Gulf Crude Access / Marion, Wayne, and Clay Counties, Illinois (05–11/13). Project Director. Coordinated and directed Phase I Archaeological survey in advance of pipeline in southern Illinois. Determined areas for pedestrian and subsurface testing, coordinated and assisted in report preparation and data analysis. Coordinated GIS data and iPad field recording data collection and maintenance.

Phase I Archaeological Survey and Site Delineations on East Ship Island / BP Exploration & Production, Inc. / Harrison County, Mississippi (11/12–08/13). Project Director. Coordinated and directed Phase I Archaeological survey in support of continued oil spill cleanup activities on East Ship Island. Evaluated previous survey information for cultural resource data and implemented surface and subsurface testing strategy along the south shore of the island. $75,000.

Sea Girt Phase II Archaeological Evaluation / New Jersey Army National Guard / Sea Girt, New Jersey (12/12–08/13). Archaeology Project Director. Directed a Phase II evaluation of a historic site for the NJ Army National Guard in Sea Girt. Analyze field data, research and analyze historical maps, and co-author the management summary and final report. $55,000.

Burlington Northern Santa Fe La Crosse Rail Yard / BNSF / La Crosse, Wisconsin (06/13–07/13). Project Manager. Provided project support and directed meetings with Wisconsin state agencies to determine the level of effort necessary for the rail yard expansion. Developed plan of action to allow BNSF to proceed without delay in construction while meeting state requirements and exceeding cultural resource responsibilities.

Phase I Intensive Archaeological Survey at the Rhode Island Air National Guard Station, North Smithfield, Rhode Island / North Smithfield, Providence County, Rhode Island (04/13–07/13). Project Director. Coordinated and directed Phase I Archaeological survey to identify surface and subsurface cultural resources on the RI Air National Guard installation. Coordinated with RI Tribal Historic Preservation Office. $35,000.

H Street/Benning Road Streetcar Project / DDOT / Washington, DC (5/12–06/13). Project Director. Coordinated and directed Phase IA archaeological survey and geoarchaeological coring in advance of a proposed trolley maintenance facility. Provided treatment recommendations to DC HPO. $69,793.

Phase I Archaeological Investigations at Friendship Hill National Historic Site / National Park Service / Point Marion, Pennsylvania (9/12–2/13). Project Director. Coordinated and directed Phase Ib Archaeological survey in advance of Knoll Road widening. $17,500.

Environmental Assessment for the Homeporting of the Littoral Combat Ship on the East Coast of the United States, U.S. Navy (7/12–2/13). Technical Section Lead. Prepared the cultural resources sections for an Environmental Assessment (EA). $217,828.

Archaeological Sensitivity Model for MacDill Air Force Base, Florida (9/12–12/12). Technical Section Lead. Developed archaeological sensitivity model and prepared documentation for the MacDill Installation Development Environmental Assessment (IDEA). $10,000.

Phase I Archaeological Survey for the Homer City Upgrade Project, Wetland Replacement Areas, Black Lick and Center Townships, Indiana County, Pennsylvania (9/12). Project Director. Coordinated archaeological survey, produced project maps, and reviewed project deliverables for the Homer City Power Plant. $20,000.

Defense Supply Center Richmond / Defense Logistics Agency Enterprise Support (DES) Richmond (5/12–7/12). Project Director. Conducted Phase II evaluation of two prehistoric lithic scatters (44CF616 and 44CF648) and a historic site (44CF650) in Chesterfield County, Virginia, including excavation, artifact analysis, and reporting. $49,807.

Defense Supply Center Richmond / Defense Logistics Agency Enterprise Support (DES) Richmond (4/12). Field Archaeologist. Monitored construction activity at a prehistoric lithic scatter (44CF568) in Chesterfield County, Virginia.

Charlotte IAP ANGB and Stanly County Airport ANGS Phase I Survey / National Guard Bureau Air National Guard (4/12). Field Archaeologist. Conducted Phase I archaeological investigations of 210 acres in Mecklenburg and Stanly Counties, North Carolina. $32,692.

Archaeology Monitoring in the Glasshouse Area of Colonial Parkway, Jamestown Unit, Colonial National Historical Park / National Park Service (10/11–5/12). Field Archaeologist. Provided archaeological monitoring for road construction and landscaping at the historic site of Jamestown (44JC0986), James City, Virginia. $16,140.

CP Rail–Kenmare Rehabilitation Project, Kenmare, ND (8/11). Field Archaeologist. Participated in Phase I pedestrian survey and shovel probe testing of 3-mile corridor around CP Railway within the Des Lacs Wildlife Refuge. $150,000.

Non-HDR Project Experience

Calnev Pipeline Expansion Project / Kinder Morgan Energy Partners, San Bernardino County, CA (4/10–5/11). Project Director, William Self Associates, Inc. (WSA). Directed the Class I/III records search and Phase I survey of a 200-mile pipeline through San Bernardino County, California. Coordinated with BLM, USFS, and SHPO officials for project compliance and review. $500,000.

Pantano Townsite Archaeological Mapping Project / Pima County, Arizona (7/10–3/11). Project Director, WSA. Directed the Class I/III records search, archival review, Phase I survey, mapping, and geodatabase development for the high-resolution surface mapping of the Old and New Pantano Townsites, two early railroad era communities along the Southern Pacific Railroad in the Cienega Creek Natural Preserve, southern Arizona. $35,000.

UNEV Pipeline Project / Holly Energy Partners, Utah and Nevada (4/09–5/11). Cartography Director and Assistant Laboratory Director, WSA. Managed laboratory and cartography personnel throughout data recovery and artifact and spatial data processing of data from excavations at 16 prehistoric and historic archaeological sites; developed Access relational database for management of all project data, including artifact analysis of over 80,000 artifacts; used Microsoft Project to coordinate field effort with project managers; and managed and participated in final reporting for the compliance volumes. $6,000,000.

El-Paso-to-Phoenix (EPX) Pipeline Project / Kinder Morgan Energy Partners, Tucson, AZ (4/09–11/10). Assistant Laboratory Director and Cartography Director, WSA. Oversaw final map production, conducted spatial and other statistical analyses, and wrote parts of final compliance report as well as peer-reviewed Arizona State Museum volume resulting from the data recovery investigations at five prehistoric archaeological sites in southern Arizona. $2,000,000.

Fort McDowell Well Sites Survey / Fort McDowell Yavapai Reservation, AZ (7/10). Field Director, WSA. Conducted Class I/III records search and Phase I survey of 5-acre area around well construction locales. $7,000.

ASU Pipeline Removal / Kinder Morgan Energy Partners, Mesa, AZ (7/10). Field Technician, WSA. Participated in surface artifact collection and processing; monitored test trench excavation and sketched representative trench profiles in advance of the removal of a legacy petroleum pipeline near a Hohokam village site in Maricopa County, Arizona. $100,000.**Ft. Huachuca Fire Station Survey / Ft. Huachuca City, AZ (7/09).** Field Director, WSA. Conducted Class I/III records search and Phase I survey of small plot for the expansion of a fire station. Prepared final report. $2,000.

Land Conveyance and Transfer (C&T) Project / U.S. Department of Energy, Los Alamos, NM (6/04–5/09). Field Technician and Researcher, Los Alamos National Laboratory. Participated in the excavation of 15 Ancestral Pueblo field houses in Los Alamos, New Mexico. Conducted spatial and other data analyses using data from these and other surveys and excavations in Los Alamos and the neighboring Bandelier National Monument. The overarching settlement pattern of the Ancestral Puebloan occupants of the region was a secondary research project. $10,000,000.

Ironwood Forest National Monument Inventory / BLM, Tucson Field Office (1/05–12/05). Research Associate, University of Arizona. Entered archaeological data into AZSite, Arizona's archaeological repository; conducted statistical analyses for the final compliance report; edited and assembled final report.

Sanford Ranch Inventory / BLM, Tucson Field Office (1/05–12/05). Research Associate, University of Arizona. Edited and assembled final report.

Santa Ana de Cuiquiburitac Inventory / BLM, Tucson Field Office (1/05–12/05).

Research Associate, University of Arizona. Edited and assembled final report.

Lakeview Landfill Survey / Erie County, Pennsylvania (9/02). Field Technician, Wilbur Smith Associates. Participated in Phase I survey surface walkover and shovel probe testing of 30-acre area.

Presque Isle Visitor Center / City of Erie, Pennsylvania (1/02). Field Technician, Mercyhurst Archaeological Institute. Participated in Phase I survey including grid setup with Sokkia Set IIB Total Station and shovel probe testing with stratigraphic section preparation.

Buckaloons (36WA29) / Archaeological field school for Mercyhurst College, Warren, PA (6/00–7/00). Field Technician/Field School Student, Mercyhurst Archaeological Institute. Excavated Middle-Late Archaic and Woodland materials. Surveyed and collected 10 acres of the site area.

Fort LeBeouf Survey / Waterford, Pennsylvania, and Girard, Pennsylvania (7/99). Field Technician, Mercyhurst Archaeological Institute. Assisted in ground resistivity survey; conducted Phase I shovel probing and stratigraphic section preparation.

Various Projects / Mercyhurst Archaeological Institute (9/98–5/02). Laboratory Assistant. Washed, sorted, and labeled artifacts. Processed soil samples using water screening, flotation, and hydrochloric acid processing. Cataloged items using Borland Paradox and MS Excel. Prepared soil profile drawings using CorelDraw.

Refereed Publications

B.M. Gabler (2012) Modeling Livestock's Contribution to the Duration of the Village Farming Lifeway in Pre-State Societies. *Journal of Ecological Anthropology* 15(1):5–21.

Boley, M. J. and **B. M. Gabler** (2011) Flaked Stone Analysis. In *The Prehistory of the Marsh Station Road Site (AZ EE:2:44[ASM]), Cienega Creek, Southeastern Arizona*, edited by J. C. Ravesloot, M. J. Boley, and M. A. Medeiros, pp. 185-222. Arizona State Museum Archaeological Series 202, University of Arizona Press, Tucson.

McKee, B. R., M. Trowbridge, and **B. M. Gabler** (2011) Ceramic Analysis. In *The Prehistory of the Marsh Station Road Site (AZ EE:2:44[ASM]), Cienega Creek, Southeastern Arizona*, edited by J. C. Ravesloot, M. J. Boley, and M. A. Medeiros, pp. 151-184. Arizona State Museum Archaeological Series 202, University of Arizona Press, Tucson.

Medeiros, M. A., **B. M. Gabler**, M. J. Boley, and John C. Ravesloot (2011) Synthesis and Interpretations. In *The Prehistory of the Marsh Station Road Site (AZ EE:2:44[ASM]), Cienega Creek, Southeastern Arizona*, edited by J. C. Ravesloot, M. J. Boley, and M. A. Medeiros, pp. 347-360. Arizona State Museum Archaeological Series 202, University of Arizona Press, Tucson.

Medeiros, M. A., J. C. Ravesloot, M. J. Boley, **B. M. Gabler**, P. M. Rawson, J. McClelland, and G. Huckleberry (2011) Archaeological Investigations at the Marsh Station Road Site, AZ EE:2:44(ASM). In *The Prehistory of the Marsh Station Road Site (AZ EE:2:44[ASM]), Cienega Creek, Southeastern Arizona*, edited by J. C. Ravesloot, M. J. Boley, and M. A. Medeiros, pp. 37-149. Arizona State Museum Archaeological Series 202, University of Arizona Press, Tucson.

Gabler, B. M. (2007) Ethnic Boundary Maintenance and Historical Archaeology from an Agent-based Modeling Perspective. In *Digital Discovery: Exploring New Frontiers in Human Heritage,* edited by J. T. Clark and E. M. Hagemeister, pp. 42-48. CAA 2006. Computer Applications and Quantitative Methods in Archaeology. Archeolingua Press, Budapest.

Lansing, J. S., M. P. Cox, S. S. Downey, **B. M. Gabler**, B. Hallmark, T. M. Karafet, P.

Norquest, J. W. Schoenfelder, H.Sudoyo, J.C. Watkins and M.F. Hammer. (2007) Coevolution of Languages and Genes on the Island of Sumba, Eastern Indonesia. *Proceedings of the National Academy of Sciences* 104:16022-16026.

Dissertation and Thesis

Gabler, B. M. (2009) *Panarchy on the Plateau: Modeling Prehistoric Settlement Pattern, Land Use, and Demographic Change on the Pajarito Plateau, New Mexico*. Ph.D. Dissertation, Department of Anthropology, University of Arizona. UMI, Ann Arbor.

Gabler, B. M. (2004) *Projecting Duration in Pre-state Farming Societies*. Unpublished MA Thesis, Department of Anthropology, University of Arizona. On file at the Arizona State Museum, Tucson.

Professional reports

Parker, J. G., and **B. M. Gabler** (2014) *Phase II Archaeological Investigation at the New Jersey Army National Guard Sea Girt National Guard Training Center, Monmouth County, New Jersey*. Prepared for The New Jersey National Guard. On file at HDR.

Gabler, B.M. (2013) *Phase I Archaeological Survey for the London State Fish Hatchery Capital Project, Union Township, Madison County, Ohio*. Prepared for London State Fish Hatchery, Ohio Department of Natural Resources. On file at HDR.

Gabler, B. M. and J. G. Parker (2013) *Phase I Intensive Archaeological Survey of North Smithfield Air National Guard Station, Providence County, Rhode Island*. Prepared for National Guard Bureau, Air National Guard. On file at HDR.

Parker, J. G., and **B. M. Gabler** (2013) *Phase I Archaeological Investigation at Friendship Hill National Historic Site, Point Marion, Pennsylvania*. Prepared for The National Park Service. On file at HDR.

Parker, J. G., **B. M. Gabler**, and R. Quiggle (2012) *Phase I Archaeological Survey for the Homer City Upgrade Project, Wetland Replacement Areas, Black Lick and Center Townships, Indiana County, Pennsylvania*. Prepared for Edison Mission Energy, Homer City Generation, L.P. On file at HDR.

Gabler, B. M. and A. McKee (2012) *Geoarchaeological Survey of the Proposed Car Barn Training Center for the H Street/Benning Road Streetcar Project, Washington, DC*. Prepared for District Department of Transportation, Washington, DC. On file at HDR.

Gabler, B. M., J. G. Parker, and G. D. Lockard (2012) *Phase II Archaeological Evaluation of Sites 44CF616, 44CF648, and 44CF650 at the Defense Supply Center Richmond, Chesterfield County, Virginia*. Prepared for Department of Defense, DLA Installation Support at Richmond. On file at HDR.

Gabler, B. M., J. G. Parker, and G. D. Lockard (2012) *Phase I Archaeological Survey of the Charlotte IAP Air National Guard Base, Mecklenburg County, and Stanly County Airport Air National Guard Station, Stanly County, North Carolina*. Prepared for National Guard Bureau, Air National Guard. On file at HDR.

O'Mack, S., A. M. Smith, **B. M. Gabler**, and L. M. Wygant (2011) *Data Recovery Along the UNEV Pipeline Project Route, Utah Segment—Davis, Salt Lake, Tooele, Juab, Millard, Beaver, Iron, and Washington Counties: Volume IV. History and Archaeology at 42SL255, A Historic Farmstead Site Near Salt Lake City*. WSA Technical Report No. 2011-29; Utah State Project No. U-06-SQ-1530bfps. William Self Associates, Tucson, Arizona.

O'Mack, S., A. M. Smith, B. R. McKee, P. Fransworth, and **B. M. Gabler** (2011) *Data Recovery Along the UNEV Pipeline Project Route, Utah Segment—Davis, Salt Lake, Tooele, Juab, Millard, Beaver, Iron, and Washington Counties: Volume V. The Basin's Edge: Historic Sites at the Edge of Utah's Western Desert*. WSA Technical Report No. 2011-29;

Utah State Project No. U-06-SQ-1530bfps. William Self Associates, Tucson, Arizona.

Gabler, B. M., S. O'Mack, M. J. Boley, and J. C. Ravesloot (2010) *Class III Cultural Resources Survey Addendum: Proposed Calnev Expansion Project, California Portion*. WSA Technical Report No. 2010-26. William Self Associates, Inc., Tucson, Arizona.

Medeiros, M., J. C. Ravesloot, M. J. Boley, **B. M. Gabler**, and P. M. Rawson (2010) Archaeological Investigations at the Marsh Station Road Site (AZ EE:2:44[ASM]) (with M. Medeiros, J. Ravesloot, M. Boley, and P. Rawson). In *Results of Testing and Data Recovery, SFPP, LP, El Paso to Phoenix Expansion Project, Arizona Portion: Cochise and Pima Counties, Arizona*, edited by J. Ravesloot, M. J. Boley, and M. Medeiros. Technical Report No. 2008-49. William Self Associates, Tucson.

Boley, M. J. and **B. M. Gabler** (2010) Flaked Stone Analysis. In *Results of Testing and Data Recovery, SFPP, LP, El Paso to Phoenix Expansion Project, Arizona Portion: Cochise and Pima Counties, Arizona*, edited by J. Ravesloot, M. J. Boley, and M. Medeiros. Technical Report No. 2008-49. William Self Associates, Tucson.

McKee, B. R., M. Trowbridge, and **B. M. Gabler** (2010) Ceramic Analysis. In *Results of Testing and Data Recovery, SFPP, LP, El Paso to Phoenix Expansion Project, Arizona Portion: Cochise and Pima Counties, Arizona*, edited by J. Ravesloot, M. J. Boley, and M. Medeiros. Technical Report No. 2008-49. William Self Associates, Tucson.

Boley, M. J. and **B. M. Gabler** (2009) *A Cultural Resources Survey for the PBW Fire Department Station #2 Addition, Cochise County, Arizona*. WSA Technical Report No. 2009-45. William Self Associates, Inc., Tucson.

Gabler, B. M. (2009) *Class I Inventory and Class III Survey, Fort McDowell Yavapai Nation Well Site 3 and Well Site 4 Arsenic Mitigation, Maricopa County, Arizona*. WSA Technical Report No. 2009-31. William Self Associates, Inc., Tucson.

Gabler, B. M. (2008) Settlement Change and Demography on the Pajarito Plateau. In *The Land Conveyance and Transfer Project: Volume 4, Research and Conclusions*, edited by B. J. Vierra and K. M. Schmidt, pp. 161-183. Los Alamos, New Mexico: Los Alamos National Laboratory. LA-UR-07-6205.

Reid, J. J., M. P. Heilen, and **B. M. Gabler** (2006) Introduction. In *Class III Cultural Resources Survey of Ironwood Forest National Monument*, edited by M. P. Heilen and J.J. Reid, pp. 1-17. Tucson, AZ: Bureau of Land Management, Tucson Area Field Office.

Gaines, E. P., and **B. M. Gabler** (2006) Ironwood Forest National Monument Petroglyph Survey. In *Class III Cultural Resources Survey of Ironwood Forest National Monument*, edited by M.P. Heilen and J.J. Reid, supplemental CD-ROM. Tucson, AZ: Bureau of Land Management, Tucson Area Field Office.

Non-refereed publications

Reid, J. J. and **B. M. Gabler** (2006) Roosevelt Redware of Grasshopper Pueblo, CD-ROM, available from J. Jefferson Reid, Department of Anthropology, University of Arizona.

Premo, L. S., J. T. Murphy, J. B. Scholnick, **B. M. Gabler**, and J. E. Beaver (2005) Making a Case for Agent-Based Modeling. *Society for Archaeological Sciences Bulletin* 28:11-13.

Professional presentations

Gabler, B. M., and G. D. Lockard (2013) *Lithic Technology during the Transition to Agriculture at the Defense Supply Center Richmond, Chesterfield County, Virginia*. Paper presented at the 78th Annual Meeting of the Society for American Archaeology.

Gabler, B. M., L. Neff, A. Smith, and D. S. Miller (2012) *Preservation and Community Involvement at the Pantano Townsite Conservation Area, Pima County, Arizona*. Paper

presented at the 77th Annual Meeting of the Society for American Archaeology.

Gabler, B. M., D. Yoder, M. J. Boley, M. Medeiros, and J. C. Ravesloot (2011) *Small Sites, Big Questions: Seasonality, Foraging, and Fremont Horticulture in the Eastern Great Basin.* Poster presented at the 76th Annual Meeting of the Society for American Archaeology.

McKee, B. R., **B. M. Gabler**, D. Stone, and M. J. Boley (2010) *Great Basin Raw Material Selection in a Redundant Lithic Landscape*. Poster presented at the 32nd Great Basin Anthropological Conference.

Ravesloot, J. C., D. T. Yoder, **B. M. Gabler**, B. R. McKee, M. Medeiros, and M. J. Boley (2010) *On the Surface of It: Assessing Archaeological Deposits in Western Utah*. Poster presented at the 32nd Great Basin Anthropological Conference.

Yoder, D. T., **B. M. Gabler**, B. R. McKee, J. C. Ravesloot, M. J. Boley, and M. Medeiros (2010) *Digging in the Dunes: Fremont Site Investigations at the Gunnison Bend (42MD3014) and Crater Bench Dune (42MD3285) Sites, Millard County, Utah*. Poster presented at the 32nd Great Basin Anthropological Conference.

Gabler, B. M. (2009) *Aggregation, Migration, and the Environment: Quantitative Approaches to the Puebloan Occupation of the Pajarito Plateau, NM.* Poster presented at the 74th Annual Meeting of the Society for American Archaeology.

Gabler, B. M. (2007) *Modeling Settlement Change and Demography on the Pajarito Plateau.* Invited paper in session called "A Window into the Past," at the 72nd Annual Meeting of the Society for American Archaeology. Austin, TX.

Gabler, B. M. (2006) Organizer and chair of digital simulation session at the Second Biennial Archaeological Sciences of the Americas Symposium. Tucson, AZ.

Gabler, B. M. (2006) *Modeling Landscape Use and Aggregation on the Pajarito Plateau, New Mexico*. Digital presentation in Second Biennial Archaeological Sciences of the Americas Symposium. Tucson, AZ.

Gabler, B. M. (2006) Invited Panelist, Academic Symposium, *Sustainability: Imagining the Role of Science in Earth-Human Engagement*. Mercyhurst College, Erie, PA.

Gabler, B. M. (2006) *Ethnic Boundary Maintenance and Historical Archaeology from an Agent-Based Modeling Perspective*. Invited Long Paper at the Computer Applications and Quantitative Methods in Archaeology Symposium. Fargo, ND.

Gabler, B. M. (2002) *Regression Analysis of Pre-State Farming Societies*. Poster presented at the 67th Annual Meeting of the Society for American Archaeology. Denver, CO.

Non-HDR Training

GRASS Open Source GIS
ESRI ArcInfo
SPSS
Systat
JMP
NORTHEAST REGION NPS ACMS+ / ICMS SOFTWARE TRAINING, 2012