2.0 RESULTS

2.1 Background Research

According to the predictive modeling accomplished by Custer (n.d.) for pre-contact period archaeological resources in Delaware, the project APE is contained within low probability areas (Custer *et al.* 1984). This is mostly due to the upland topographic setting of and lack of streams and/or marshes in the School Bell Road Improvements project APE. More specifically, Custer (1986:195) indicates that the research significance for the project APE is moderate and that the project APE "includes areas with medium to high significant site probabilities and medium numbers of sites and data quality."

Background research revealed numerous previously completed cultural resources surveys in the immediate vicinity of the School Bell Road Improvements project APE (Catts *et al.* 1988:54). The northern portion of School Bell Road, between S.R. 1 and S.R. 7, was surveyed as part of the Route 7 South Corridor by the University of Delaware Center for Archaeological Research and the DelDOT in 1981/1982 and 1985/1986 (Catts *et al.* 1988). This survey identified seven pre-contact period archaeological sites (7NC-E-9, 7NC-E-16, 7NC-E-32, 7NC-E-50, 7NC-E-52, 7NC-E-54, and 7NC-E-81) ranging in age from the Archaic to the Woodland II periods, and five historic period sites (Union African Methodist Church and Cemetery, three sites in the Patterson Lane Site complex, and the Nowakowski Site) ranging in age from the mid-eighteenth through twentieth centuries (Catts *et al.* 1988:i). "Prehistoric site location data indicate a very ephemeral utilization of upland interior areas in the southern portion" of the Route 7 project area located closest to the current School Bell Road Improvements project APE (Catts *et al.* 1988:i).

Review of the Delaware archaeological site files did not yield any previously recorded pre-contact period archaeological sites within the project APE; however, several previously recorded archaeological sites are located near the project APE. A summary of these sites is included in Table 1.

Table 1.
Previously Recorded Pre-contact Period Archaeological Sites Located Within 0.8 Km (0.5 Mi) of the School Bell Road Improvements Project APE

Site	Location	Description
7NC-E-32	*ca.* 182.9 m (600.0 ft) south of farm lane south of S.R. 273 and 243.8 m (800.0 ft) east of S.R. 7 Northeast of woods.	22 non-diagnostic quartz chunks whose status as artifacts is dubious.
7NC-E-44	*ca.* 213.4 m (700.0 ft) southwest of the intersection of S.R. 7 and S.R. 273.	large knoll overlooking the Christiana River; badly disturbed open site; surface collection and excavation; large camp of unknown cultural or temporal affiliation; heat altered rock; projectile points, bifaces, and a ceramic.
7NC-E-50	*ca.* 15.2 m (50.0 ft) south of School Bell Road and 304.8 m (1,000.0 ft) east of the intersection of S.R. 7 and School Bell Road.	slope of a knoll; cultivated field; surface collection and excavations; thin lithic scatter of mainly quartz debitage; bifaces; historic artifacts, as well.

Additionally, numerous pre-contact archaeological sites are located within 2.4 km (1.5 mi) of the School Bell Road Improvements project APE. A summary of these sites is included in Table 2.

Table 2.
Previously Recorded Pre-contact Period Archaeological Sites Located Within 2.4 Km (1.5 Mi) of the School Bell Road Improvements Project APE

Site	Distance and Direction from Project APE	Description
7NC-E-9	*ca.* 1.1 km (0.7 mi) north-northwest.	surface collection; Wolfe Neck and Hell Island ceramics; Woodland I.
7NC-E-25	*ca.* 1.0 km (0.6 mi) east.	surface collection; heat altered rock; lithic flakes and quartz chunks.
7NC-E-27	*ca.* 1.1 km (0.7 mi) northwest.	surface collection; bifurcate and narrow blade/ contracting stem projectile points, bifaces, and flakes; Piedmont Archaic.
7NC-E-47	*ca.* 1.9 km (1.2 mi) southwest.	fallow field; surface collection; 3 loci; projectile point, quartz blade fragment, core fragment, and flake; Late Archaic/Woodland I.

Table 2.
Previously Recorded Pre-contact Period Archaeological Sites Located Within 2.4 Km (1.5 Mi) of the School Bell Road Improvements Project APE (Continued)

Site	Distance and Direction from Project APE	Description
7NC-E-48	*ca.* 1.3 km (0.8 mi) southeast.	agricultural fields; surface collection; debitage, quartz chunks, biface fragment, corner-notched projectile point fragment, anvil stone; Middle Archaic.
7NC-E-122	*ca.* 2.3 km (1.4 mi) southwest.	terrace overlooking the Christiana River; excavations; lithic procurement; Rossville projectile point, flakes, core, biface, and Wolfe Neck ceramics; Woodland I.
7NC-E-123	*ca.* 2.3 km (1.4 mi) southwest.	terrace overlooking the Christiana River; excavations; lithic procurement; flakes.
7NC-E-125	*ca.* 1.5 km (0.9 mi) west-northwest.	wooded finger of terrace overlooking Christiana River; shovel test pits; pre-contact and historic contexts; fire cracked rock and flakes.
7NC-E-182	*ca.* 1.6 km (1.0 mi) west.	wooded finger of terrace overlooking Christiana River; shovel test pits; pre-contact and historic contexts; fire cracked rock and flakes.

Based on the presence of numerous previously recorded pre-contact period archaeological sites adjacent to or nearby the project APE; the information contained in the statewide contexts, including a categorization of the area as having good site potential in concert with a need for research; and the presence of soils of appropriate age to contain pre-contact period archaeological remains, the School Bell Road Improvements project APE is considered to have a moderate potential to contain pre-contact period archaeological remains. Based on the project APE's topographic setting, if pre-contact period archaeological remains are identified, they will most likely represent ephemeral transitory use (procurement sites according to Custer 1986) of this upland area as part of a more general settlement pattern which included larger more permanent base camps along the lower Christiana River and in the vicinity of Churchman's Marsh (Catts *et al.* 1988:196).

Several historic period archaeological sites are recorded near the School Bell Road Improvements project APE. They are summarized in Table 3.

Table 3.
Previously Recorded Historic Period Archaeological Sites Located Within 2.4 Km (1.5 Mi) of the School Bell Road Improvements Project APE

Site	Distance and Direction from Project APE	Description
Union African Methodist Church and Cemetery	*ca.* 0.3 km (0.2 mi) northwest.	Negro Religious Context; last half of the nineteenth century; demarcated cemetery with some gravestones.
Allen Site (7-NC-78)	*ca.* 1.1 km (0.7 mi) north-northwest.	Middle nineteenth century domestic residence which probably belonged to George Allen who engaged in local commercial and industrial activities.
7NC-D-191	*ca.* 1.0 km (0.6 mi) southwest.	Early eighteenth to twentieth century iron mine.
Partridge House Cemetery Site (7NC-E-149)	*ca.* 1.0 km (0.6 mi) southwest.	House site with cemetery.
Nowakowski Site	*ca.* 0.3 km (0.2 mi) northwest.	Mid to late eighteenth century historic artifact scatter.

Historic period mapping of the School Bell Road Improvements project APE indicates that the area has remained rural throughout the historic period, but has been subject to intense continued development since *ca.* 1946 when the Fair Winds housing development began. On an 1850 (Rea and Price 1850) map of the project APE, only one structure is shown adjacent to School Bell Road within the limits of the current project (Figure 3). School House Number 49 is located on the western corner of the intersection of School Bell Road and the Frenchtown Turnpike (S.R. 40). This schoolhouse would have been where the Fair Winds Restaurant is today. A second structure, the African Church, is shown along the south side of School Bell Road northwest and outside of the existing project APE (Rea and Price 1850). The Beers (1868) map shows these same two structures, but the Union African Methodist Church is now placed on the north side of School Bell Road (but still outside of the current project APE) (Figure 4). In addition, three other

residences (E.T. Holcomb's Silver Hill, G. Morrison, and L. Reynolds) are shown near School Bell Road, but not immediately adjacent to it. The locations of all three of these residences appear to fall outside of the current project APE. Baist's 1893 map of New Castle County indicates several different landowners for the project APE, including George Whitfield, A. Lofland, Moody, and McAlister (Figure 5). Baist (1893) also shows the Union African Methodist Church and School House No. 49 in their same locations as the 1868 map. The 1904 USGS Wilmington, Delaware and 1940 New Castle County, Delaware topographic quadrangles show structures on both corners of the intersection of School Bell Road and S.R. 40 but do not show the African Church; therefore, sometime between 1893 and 1904 it appears that the African Church building was razed or destroyed (Figures 6 and 7). By 1953, the Newark East, Delaware USGS topographic quadrangle shows the Fair Winds housing development along the southeast end of School Bell Road within the project APE, as well as two roads intersecting School Bell Road with attendant buildings further northwest. School House No. 49 is no longer present on the 1953 map. This map (USGS 1953) shows the beginnings of the suburbanization and modern development of the project APE (Figure 8).

Catts *et al.* (1988) and De Cunzo and Catts (1990) present an in-depth discussion of the history of the project area, as well as the statewide historic contexts within which identified historic period resources may be evaluated. De Cunzo and Catts (1990:28, 172) place the School Bell Road Improvements project APE within the Ft. Casimir/New Amstel/ New Castle areas of seventeenth and early eighteenth century exploration and frontier settlement. The project APE is also squarely located in the New Castle/Christiana Bridge/ Cantwell's Bridge triangle of overland transportation networks, and the New Castle urbanization/suburbanization area (De Cunzo and Catts 1990:173,176). The School Bell Road Improvements project APE is also threatened by modern development by virtue of its location adjacent to the S.R. 40 corridor. Based on the information contained in historic mapping, Catts *et al.* (1988), and De Cunzo and Catts (1990), it appears that the area surrounding the School Bell Road Improvements project APE has a moderate potential to contain historic period archaeological resources dating from the early seventeenth century to the recent past. Based on the project APE's location and general land-use history, if historic period archaeological remains are identified, they will most likely represent rural domestic and/or agricultural activities.

2.2 Geomorphology

The School Bell Road Improvements project APE was investigated for the presence of landforms and soils which might have the potential to contain intact archaeological resources. Many soil auger borings were taken within the project APE, with many exhibiting disturbed or truncated stratigraphic profiles. Four undisturbed soil profiles were examined and described in detail according to the methods and nomenclature prescribed by the United States Department of Agriculture--Natural Resources Conservation Service (Schoeneberger 2002). Areas exhibiting these undisturbed stratigraphic profiles were recommended for testing. Tabular descriptions of the auger boring stratigraphic profiles are included in Appendix A.

The project APE is located within the Upper Coastal Plains physiographic province, where the majority of soils have formed in old coastal alluvium which has been deeply weathered and leached of many minerals and nutrients. The soil profiles contain varying amounts of sand, silt, and clay particles according to the conditions of sediment deposition and their location on the landscape. Most soil profiles include a well developed argillic subsoil horizon, the presence of which indicates that they have been stable and exposed *in situ* to weathering throughout at least the entire Holocene period.

The following soils information is taken from Matthews and Lavoie (1970). Soils mapped within the School Bell Road Improvements project APE belong to the Matapeake-Sassafras Association. These soils are nearly level to steep, well drained, medium textured and moderately coarse textured, and are found in uplands. Specific soil types found within the project APE include Matapeake silt loam, 2-5 percent slope, moderately eroded (MeB2); Mattapex silt loam, 0-2 percent slopes (MtA); Sassafras sandy loam, 10-15 percent slopes, severely eroded; and Keyport silt loam, 2-5 percent slopes, moderately eroded. Matapeake soils are fine-silty, mixed mesic Hapudults and Ultisols. They are the most extensive soils in New Castle County. They are deep (although some surface has been lost to erosion), well drained, and found on uplands of the Coastal Plain. The native vegetation of Matapeake soils is mixed hardwoods, chiefly oak. Mattapex soils are fine-silty, mixed mesic, Aquic Hapludults, Ultisols, and Podsolic soils. They are deep, moderately well drained soils found on the Coastal Plain. The native vegetation of Mattapex soils is mostly water-tolerant hardwoods, especially oak. Sassafras soils are fine-loamy, mixed, mesic Typic Hapludults

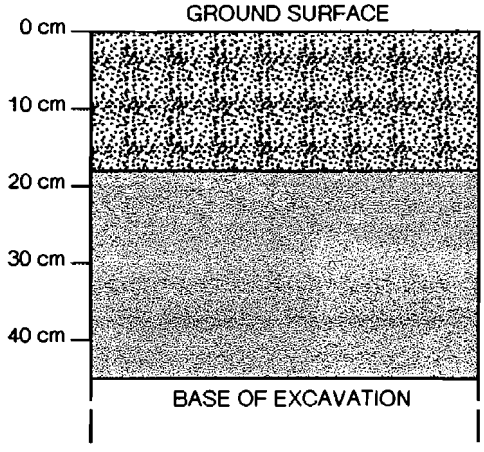
and Ultisols. This soil type is deep, well drained, and found on uplands of the Coastal Plain. The native vegetation is mostly mixed hardwoods, but some shortleaf pine and Virginia pine are also common. Keyport soils are clayey, mixed, mesic, Aquic Hapludults and Ultisols that are susceptible to erosion. These soils are deep, moderately well drained, and found on uplands of the Coastal Plain. The native vegetation is mixed hardwoods that are tolerant of excessive moisture. Based on their topographic positions, drainage, and age, portions of the project APE exhibiting the better drained soils have the higher potential to contain pre-contact and historic period cultural remains. Each of these soils formed in coastal plain alluvium, and vary slightly in degrees of internal drainage from well drained to moderately well drained.

Subsequent to the mapping of the soils by the soil survey, however, much residential development has occurred within the project APE. In several areas, the original soils have been extensively disturbed or completely stripped/excavated during the construction activities associated with the present roadway and housing developments, including the emplacement of side streets, surface drainage ditches, driveways, and subsurface utilities and stormwater drainage networks. The only relatively undisturbed soils remaining within the project APE are located in agricultural fields, where plowing has been only a minor disturbance to the stratigraphic profile.

Within the areas determined to be testable, the soil profiles (Auger Borings 1, 2, 3, and 4) consist of a plowzone (Ap) overlying an intact subsoil (Bt), with minor differences in soil color and horizon thicknesses and depth (Figures 9 and 10). Plowing and exposure to weathering may have caused some localized moderate erosion of the surface.

Stratigraphic soil profiles within the remainder of the project APE have been previously disturbed or truncated. The original surface and upper subsoil of these profiles is no longer present, or has been mixed with fill or road construction materials. In many areas, the C horizon, which is undeveloped parent material normally found deep within the stratigraphic profile, is encountered at the modern ground surface and has been compacted by heavy equipment. In other areas, a thin layer of graded topsoil, which has been spread to enhance lawn growth, is found at the modern ground surface. No archaeological testing is recommended for these areas, which exhibit extensively disturbed or truncated stratigraphic profiles.

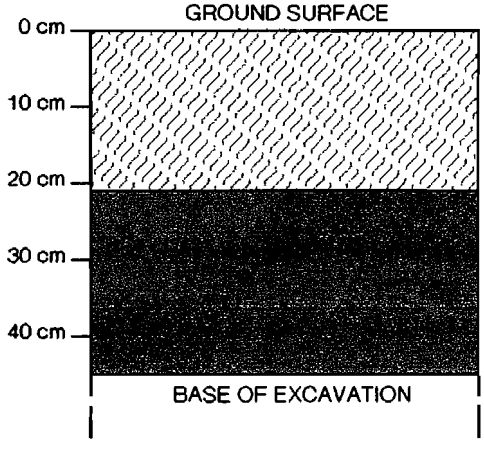
SOIL PROFILE
AUGER BORING 1
TEST AREA 1



Ap 10YR 4/3 Brown loam.

Bt 10YR 5/4 Yellowish brown sandy clay loam.

SOIL PROFILE
AUGER BORING 2
TEST AREA 2

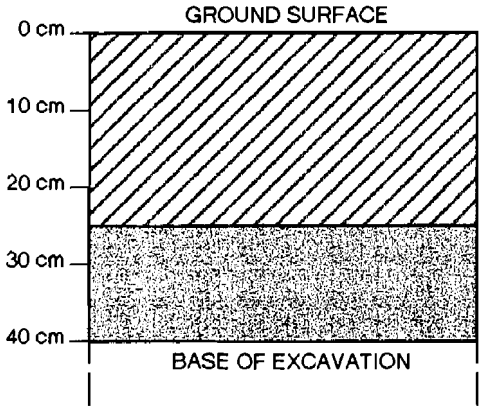


Ap 10YR 4/3 Brown silt loam.

Bt 10YR 5/4 Yellowish brown clay loam.

DELAWARE DEPARTMENT OF TRANSPORTATION
SCHOOL BELL ROAD (S.R. 1 TO U.S. 40) IMPROVEMENTS NEW CASTLE HUNDRED NEW CASTLE COUNTY
SOIL PROFILES AUGER BORINGS 1 (TEST AREA 1) & 2 (TEST AREA 2)
FIGURE - 9 / SKELLY AND LOY, INC. CONSULTANTS IN ENVIRONMENT - ENERGY ENGINEERING - PLANNING

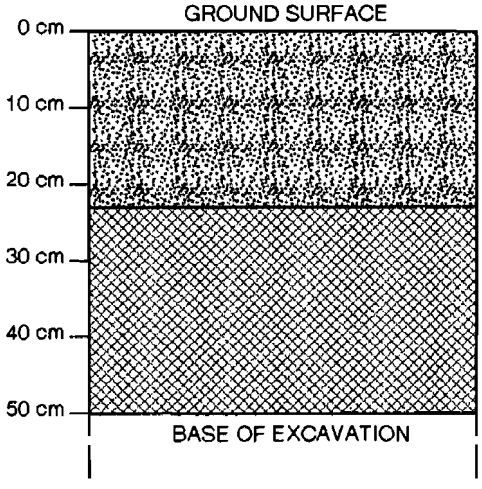
SOIL PROFILE
AUGER BORING 3
TEST AREA 3



Ap 10YR 4/2 Dark grayish brown silt loam.

Bt 10YR 5/3 Brown clay loam, with few 10YR 5/2 Grayish brown mottles.

SOIL PROFILE
AUGER BORING 4
TEST AREA 4



Ap 10YR 4/3 Brown silt loam.

Bt 10YR 5/4 Yellowish brown sandy clay loam.

DELAWARE DEPARTMENT OF TRANSPORTATION

SCHOOL BELL ROAD
(S.R. 1 TO U.S. 40) IMPROVEMENTS
NEW CASTLE HUNDRED
NEW CASTLE COUNTY

SOIL PROFILES AUGER BORINGS
3 (TEST AREA 3) & 4 (TEST AREA 4)

FIGURE - 10

SKELLY AND LOY, INC.
CONSULTANTS IN
ENVIRONMENT - ENERGY
ENGINEERING - PLANNING

In general, primary (i.e., bedrock) sources of lithic raw materials are uncommon in the vicinity of the project APE, as the majority of the Upper Coastal Plain physiographic province is covered by a think mantle of Pleistocene sediments. While this situation virtually excludes surficial bedrock exposures of raw material, the same processes that resulted in the deposition of these sediments also transported a variety of knappable stone from primary outcrops located to the north. Thus, Native American knappers could have selected from a variety of lithic raw materials, including chalcedony, chert, quartz, and quartzite, from secondary deposits (e.g., stream terraces, lag deposits, gravel bars) for stoneworking (Catts *et al.* 1988:14). Especially common in Delaware lithic assemblages is quartz, a tenacious stone of variable flaking quality. While quartz is suitable for the manufacture of flaked stone tools, its ubiquity in the region and its propensity to shatter when struck during plowing or other earthmoving activities makes the attribution of some quartz specimens as pre-contact artifacts problematic.

In many areas of the eastern United States, the precise definition of chert or other raw material types can be used to pinpoint the procurement location (outcrop) and allow for a rough approximation of territorial range of a group to be determined. In Delaware, however, most artifacts of chert, quartzite, and chalcedony consist of materials derived from secondary deposits; thus, many regional specialists do not assign the raw material to a specific named type (see, for instance, Jacoby *et al.* 1997 and Petraglia *et al.* 1998).

Occasionally, artifacts from primary bedrock sources are found on sites in the region. Sources of Iron Hill Jasper are located to the west of the project area near Newark. This distinctive material varies in color from yellow to dark brown and ranges in quality from excellent to poor. When good to excellent quality jasper is found, a wide variety of lithic tool forms are easily made (Petraglia and Knepper 1996). In addition to being found in primary outcrops, jasper cobbles can be found as secondary sources in certain streams on the Delmarva Peninsula.

Primary sources of ironstone, an iron cemented sandstone, are located along the Elk River and Herring Island at the upper end of Chesapeake Bay (Ward 1988:7). This material is noted with some frequency from site assemblages located in the general vicinity of the project APE, and Ward notes a cluster of sites with relatively high proportions of ironstone in the vicinity of Churchman's Marsh, to the northeast of the project APE (Ward 1988:15).