improvement in these areas will consist of pavement overlay, resulting in no disturbance beyond the extent of the existing road surface and graded shoulder.

Background Research

To provide a context for potential cultural material discovered in the survey area, a records search was conducted at the Delaware State Historic Preservation Office (DESHPO) to determine whether cultural resources were known in the project area.

The records search indicated that several cultural resource investigations have occurred in the vicinity of the project area. A summary of these archaeological investigations appears in Table 1, appended to this report. No investigations have been conducted within project area boundaries. Thirty-three archaeological sites were recorded within a 2.4 km/1.5 mile radius of the survey area. Ten of these sites were historic, while 23 were prehistoric. Table 2, appended to this report, summarizes information on these sites. Figure 2 illustrates the site locations. In addition to this research, selected historic maps were reviewed (Heald 1820 in Catts et al. 1986; Rea & Price 1849; Beers 1868, Hopkins 1881; Baist 1893). Upper Pike Creek Road is not drawn on Henry Heald's map of "Roads of New Castle County," dated 1820, but does appear on the Rea and Price map of New Castle County, dated 1849. None of the maps indicate the presence of structures within the project area.

Physiography, Soils, and the Implications for Cultural Resources

The Upper Pike Creek Road Slope Stabilization project area lies in the Piedmont physiographic zone of northern Delaware (Figure 3). The Piedmont is a region of comparatively high relief, underlain by crystalline bedrock and dissected by narrow stream valleys. Surface topography is typically hilly, with soils that weather directly from the underlying parent material, or bedrock. The soils are eroded or susceptible to erosion.

Soils in the project area are of the Glenelg-Manor-Chester association, consisting of well-drained and often steeply inclined upland soils. They are described as medium-textured and weathered out of micaceous crystalline rocks, either gneiss or schist (Matthews and Lavoie 1970). Such soft, unconsolidated material, or rotted bedrock, that

underlies surficial sediments and grades to hard rock, is referred to as saprolite (Butzer 1976). Saprolite is the characteristic substrate in the project area.

Prehistoric archaeological sites in the Piedmont uplands are typically small, short-term occupation or single-episode use sites. Archaeological evidence for these sites is usually not extensive (Custer 1988), occurring mainly in the form of scattered lithic debris resulting from *ad hoc* tool manufacture, or the chipping of tools for specific, on-site uses. Except for special cases, such as rock shelters or lithic outcrops quarried for tool-making material, prehistoric archaeological sites are not usually found on steeply inclined slopes. Estimates for an incline threshold beyond which occupation sites are typically not found lie in the neighborhood of 15 percent[1] (Kavanagh 1981; Custer 1988; Stewart and Kratzer 1989). Sites that do occur on sloping terrain may be disturbed: either moved downslope as a whole, as part of one or more episodes of mass wasting (soil slump or soil creep); or deflated, forming lag deposits as smaller sediments are transported downslope through surface erosion. In contrast, if near the toe of a slope, sites may be buried by colluvial build-up.

Given the steep slopes within the current project area, only relatively level areas, such as benches on side slopes, would be expected to contain evidence of prehistoric archaeological activity. Sites present in these locations would be expected to be small, possibly lying in secondary or disturbed contexts. Colluvial deposition may also be present, if the bench is extensive enough to form a small toe. The depth of potential cultural deposition in the area will be directly related to the vertical position of saprolitic material in the soil column. That is, because highly micaceous sediment weathering out of the schist bedrock is pre-Holocene in age, where identified, the material implies that sedimentary deposits that developed prior to the arrival of humans in the region have been reached.

Field Methodology

Field testing consisted of the excavation of shovel test pits (STPs) placed on a 15 m interval in targeted areas. Due to the variability of the terrain, a continuous, systematic transect was not practical. The locations of individual tests were left to the professional discretion of the archaeological surveyors. Shovel tests measured 50 cm in diameter and were excavated to pre-Holocene deposits or 1 m in depth. Tests were excavated by

[1] Stewart and Kratzer (1989:27) note that the 15 percent figure "is a standard feature...of archaeological modeling." Custer (1988:32) notes that piedmont uplands sites tend to be located on 3-8 percent slopes.