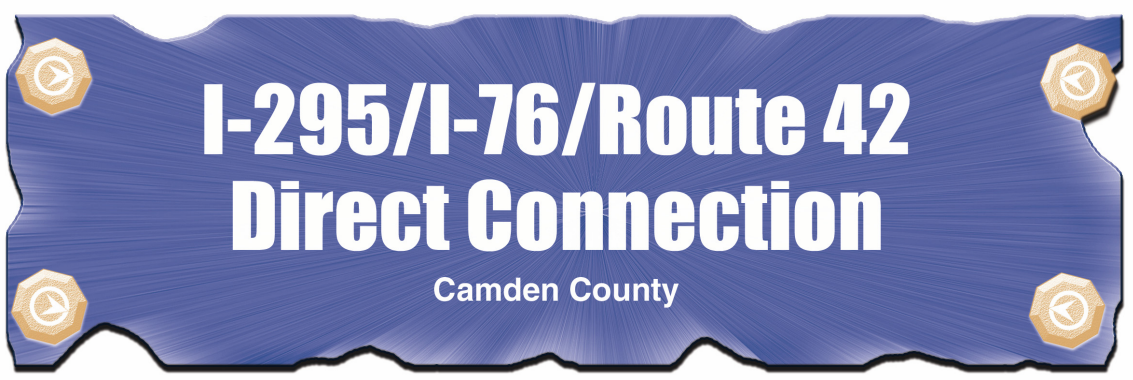


Phase I/II Archaeological Investigation
Technical Environmental Study (Volume I)

March 2006

US Department of Transportation
Federal Highway Administration
New Jersey Department of Transportation

TABLE OF CONTENTS, VOLUME I

EXECUTIVE SUMMARY ..... *i*

1.0 INTRODUCTION **1-1**

2.0 PROJECT DESCRIPTION **2-1**
- 2.1 Project Area Overview 2-1
- 2.2 Description of Existing Facilities 2-1
  - *2.2.1 Ramps* 2-4
  - *2.2.2 I-295/I-76/Route 42 from the Southern Project Limit* 2-4
  - *2.2.3 I-295/I-76/Route 42 from the Northern Project Limit* 2-5
- 2.3 Purpose and Need 2-6
  - *2.3.1 Purpose* 2-6
  - *2.3.2 Need* 2-6
  - *2.3.3 Goals and Objectives* 2-9
- 2.4 Description of Alternatives 2-10
  - *2.4.1 Alternative D* 2-11
  - *2.4.2 Alternative D1* 2-12
  - *2.4.3 Alternative G2* 2-13
  - *2.4.4 Alternative H1* 2-14
  - *2.4.5 Alternative K* 2-15
  - *2.4.6 No Build Alternative* 2-17

3.0 METHODOLOGY **3-1**
- 3.1 Definition of the Area of Potential Effects 3-1
- 3.2 National Register of Historic Places Eligibility Criteria 3-1
- 3.3 Existing Data Review 3-3
- 3.4 Archaeological Investigation 3-4
  - *3.4.1 Measuring Prehistoric Archaeological Site Probability* 3-5
  - *3.4.2 Measuring Historic Archaeological Site Probability* 3-5
  - *3.4.3 Measuring Prehistoric or Historic Archaeological Site Sensitivity* 3-6
  - *3.4.4 Field Investigations* 3-8

4.0 SUMMARY OF FINDINGS/EXISTING CONDITIONS **4-1**
- 4.1 Prehistoric Cultural Context 4-1
  - *4.1.1 Paleoenvironments and Human Adaptation* 4-1
  - *4.1.2 Late Wisconsin (18to 10 ka)* 4-1
  - *4.1.3 Early Holocene (10 to 8 ka)* 4-3
  - *4.1.4 Mid-Holocene (8 to 2 ka)* 4-4
  - *4.1.5 Late Holocene (2 to 0 ka)* 4-6
  - *4.1.6 Historic Settlement Horizon (ca. A.D. 1600)* 4-8
- 4.2 Documented Archaeological Sites and Previous Cultural Resources Surveys 4-9
- 4.3 Historic Cultural Context 4-10

4.4 Summary Assessment of Archaeological Sensitivity 4-74
4.4.1 Prehistoric Archaeological Site Probability 4-74
4.4.2 Historic Archaeological Site Probability 4-76
4.4.3 Summary Assessment of Archaeological Sensitivity 4-77
4.5 Archaeological Investigation Results 4-77
4.5.1 New Saint Mary's Cemetery (Area I) 4-78
4.5.2 Bellmawr Ball Fields (Area II) 4-114
4.5.3 Annunciation B.V.M. Church (Area III) 4-124
4.5.4 I-295/I-76/Route 42 Infield Island (Area IV) 4-138

5.0 DETERMINATION OF ELIGIBILITY AND EFFECT OF ARCHAEOLOGICAL RESOURCES 5-1
5.1 Harrison-Glover Prehistoric Site 3 (28-Ca-106), Area I 5-1
5.2 Harrison-Glover Prehistoric Site 2 (28-Ca-107), Area I 5-2
5.3 Harrison-Glover Prehistoric Site 1 (28-Ca-110), Area I 5-3
5.4 Annunciation B.V.M. Church Prehistoric Site (28-Ca-105), Area III 5-5
5.5 Application of Effect 5-6
5.5.1 Alternative D 5-6
5.5.2 Alternative D1 5-6
5.5.3 Alternative G2 5-7
5.5.4 Alternative H1 5-7
5.5.5 Alternative K 5-7

6.0 CONCLUSIONS AND RECOMMENDATIONS 6-1
6.1 New St. Mary's Cemetery (Area I) 6-1
6.2 Bellmawr Ball Fields (Area II) 6-3
6.3 Church of the Annunciation (Area III) 6-3
6.4 I-295/I-76/Route 42 Infield Median (Area IV) 6-5

7.0 REFERENCES 7-1

TABLE OF CONTENTS, VOLUME I (CONTINUED)

LIST OF FIGURES

Figure 1 – Project Location Map 2-2
Figure 2 – Ramp Diagram..... 2-3
Figure 3 – Alternative D 2-18
Figure 4 – Alternative D1 2-19
Figure 5 – Alternative G2 2-20
Figure 6 – Alternative H1 2-21
Figure 7 – Alternative K 2-22
Figure 8 – Archaeological Area of Potential Effects (APE)..... 3-2
Figure 9 – Undated Anonymous Map Showing Dutch Occupation in the Vicinity of Fort Nassau 4-12
Figure 10 – 1915 Johnson Map of New Sweden 1638-1655..... 4-14
Figure 11 – *Circa* 1678 Thornton & Greene Map Showing Bethlem Town..... 4-18
Figure 12 – 1700 Sharp Map Showing the Newton Colony..... 4-19
Figure 13 – 1845 Mickle Map Showing Early Layout of Gloucestertown..... 4-21
Figure 14 – 1808 Hills Map Showing John T. Glover's Property..... 4-28
Figure 15 – *Circa*-1778 Anonymous Map Showing the Haddonfield-Gloucester Road..... 4-36
Figure 16 – 1981 Leap Map Showing Historic Roads in the Vicinity of the Project Area 4-37
Figure 17 – 1778 DuChesnoy Map of the Battle of Gloucester 4-41
Figure 18 – *Circa*-1845 Tanner Map Showing Camden City as the County Seat..... 4-44
Figure 19 – 1932 West Jersey and Seashore Railroad Map Showing Southern New Jersey Railroads 4-46
Figure 20 – 1907 Cram Map Showing the Camden County Railroad (Currently Conrail's Grenloch Industrial Track)..... 4-49
Figure 21 – 1847 Williams Map Showing the Black Horse Pike..... 4-55
Figure 22 – 1955 New Jersey State Highway Department Map Showing Highway Development in the Vicinity of the Project Area..... 4-71
Figure 23 – Area I Archaeological Base Map, Western Portion of APE 4-79
Figure 24 – Area I Archaeological Base Map, Eastern Portion of APE..... 4-80
Figure 25 – Area I, N1000 Transect Soil Profiles 4-84
Figure 26 – 1907 Hopkins Atlas of Camden County..... 4-91
Figure 27 – Lithic Reduction Sequences 4-99
Figure 28 – TU N1272 E1442, East Wall Profile..... 4-110
Figure 29 – Area II Base Map..... 4-116
Figure 30 – Area III Archaeological Base Map..... 4-125
Figure 31 – TU N980 E575, West wall profile..... 4-131
Figure 32 – Horizontal Distribution of the Prehistoric Artifact Assemblage in Site 28-Ca-105, Area III 4-137
Figure 33 – Area IV Archaeological base map..... 4-139

LIST OF TABLES

Table 1 – Interchange Sections with Poor LOS 2-9
Table 2 – Testing Methodology for Phase II Evaluation by Site 3-9
Table 3 – Gloucester County's Pre-Revolutionary Population 4-33
Table 4 – Station Stops along the Camden County Railroad 4-48
Table 5 – Parallel Railroads and Highways in Early-Twentieth-Century Camden County 4-58
Table 6 – Camden County Boroughs Created between 1874 and 1929 4-62
Table 7 – Late-eighteenth-century Ceramics Recovered from Area I 4-105

LIST OF PHOTOGRAPHS

Plate 1 – Stormwater retention basin in Area I. View looking south (June 2004) 4-81
Plate 2 – Stockpiled soil in the center of Area I. View looking northwest (June 2004) 4-81
Plate 3 – Harrison-Glover House. View looking north (June 2004) 4-82
Plate 4 – Shovel cut placed in bank to expose fill profile. View looking south (June 2004) 4-86
Plate 5 – Mechanically assisted deep testing in STP N800 E400 (August 2004) 4-87
Plate 6 – Ground disturbance associated with cemetery. View looking north (June 2004) 4-90
Plate 7 – Fiberglass coated pipeline in Trench 1A. View looking northwest (May 2005) 4-95
Plate 8 – Trench 2, representative fill deposits overlying A- and E-horizons. View looking south (May 2005) 4-97
Plate 9 – Trench 5, Stratum III, coal, coal ash, slag and asphalt horizon. View looking west (May 2005) 4-97
Plate 10 – Trench 4, root ball stain. View looking southwest (May 2005) 4-98
Plate 11 – Quartzite Poplar Island projectile point, TU N1192 E1050, Stratum IV 4-101
Plate 12 – Jasper Madison projectile point, TU N1276 E1542, Stratum V 4-101
Plate 13 – Chert thumbnail scraper, STP N1150 E1050, Stratum III 4-102
Plate 14 – Exterior Corded/Interior Smoothed pottery, TU N1296 E1869, Stratum IV 4-102
Plate 15 – Ware Plain pottery TU N1293 E1811, Stratum VIII 4-103
Plate 16 – Gneiss/granite tempered pottery, possibly Gloucester Corded, STP N1300 E1850, Stratum I 4-103
Plate 17 – Late nineteenth-century medicine bottle, STP N1000 E450, Stratum II 4-106
Plate 18 – Industrial porcelain collected from back yard of Harrison-Glover House by Anthony Sansone Sr. (October 2004) 4-115
Plate 19 – Area II, view of wooded ground. View looking south (June 2004) 4-117
Plate 20 – Quartz biface, STP N900 E525, Stratum III 4-120
Plate 21 – Wood and Son makers mark on ironstone fragment, STP N950 E575, Stratum I 4-120
Plate 22 – Ridgeway, Sparks and Ridgeway makers mark on a sherd of institutional porcelain, STP N1000 E525, Stratum II 4-121
Plate 23 – Supplee milk bottle, STP N700 E575, Stratum I 4-123
Plate 24 – Assorted toys recovered from fill deposits in Area II 4-123
Plate 25 – Grassy lawn in Area III. View looking southeast (June 2004) 4-126
Plate 26 – Northern wooded portion of Area III. View looking northwest (June 2004) 4-129
Plate 27 – Quartzite hammerstone, STP N975 E575, Stratum III 4-133
Plate 28 – Jasper flake tool, STP N1000 E575, Stratum I 4-133
Plate 29 – C. S. Field Haviland Limoge makers mark on a sherd of porcelain, STP N750 E525, Stratum I 4-135
Plate 30 – Area I4-149V. View looking northwest (May 2004) 4-140

Plate 31 – Clearing in western portion of Area IV. View looking northwest (May 2004)..... 4-144

LIST OF APPENDICES (Located in Volume II)

Appendix A – Project Documents
Appendix B – Soils Log
Appendix C – Artifact Catalog
Appendix D – New Jersey State Museum Archaeological Site Registration Forms
Appendix E – Qualifications of Researchers

EXECUTIVE SUMMARY

A Phase I/II Archeological Investigation was conducted for the I-295/I-76/Route 42 Direct Connection project, which involves the reconstruction of Interstate 295 (I-295), Interstate 76 (I-76), and New Jersey State Route 42 (Route 42) and affected roadway segments traversing the Boroughs of Bellmawr and Mount Ephraim, and Gloucester City, Camden County, New Jersey. The Phase I/II Archaeological Investigation was performed in May, June and August 2004, and May and August 2005, for the New Jersey Department of Transportation (NJDOT) and Dewberry-Goodkind, Inc. The existing interchange is insufficient to accommodate current traffic volumes and travel speeds safely, resulting in an accident rate that is more than seven times the statewide average. The primary goal of this investigation was to locate and identify any existing archeological resources within the project area that would be affected by the proposed construction and evaluate the eligibility of these resources for inclusion in the National Register of Historic Places.

The Area of Potential Effect (APE) consists of the area within which the proposed improvements to the I-295/I-76/Route 42 Interchange may directly or indirectly cause changes in the character or use of identified National Register-listed or eligible resources. Based on the reconnaissance survey of the proposed archaeological APE, four separate sections of ground within the APE were determined to be archaeologically sensitive and required an archaeological survey. Area I comprises a 2.5-hectare parcel of land within the APE located on the north and west sides of the New Saint Mary's Cemetery. Area II is a 1.0-hectare parcel located between the Bellmawr Baseball ball fields and the ramp to I-295 southbound. Area III consists of an approximately 1.1-hectare parcel of ground situated between the off ramp for I-295 and the Annunciation B.V.M. Church. Area IV consists of a 0.4-hectare parcel located in the infield median east of I-76, north of the ramp from Route 42 northbound to I-295 northbound, and south of the ramp from southbound I-295 to the northbound lane of I-76.

Three prehistoric archaeological sites, 28-Ca-106, 28-Ca-107, and 28-Ca-110, were identified within the wooded highway right-of-way in the APE in Area I. These three sites produced diagnostic prehistoric pottery, stone tools, and fire-cracked rock fragments in fill, A-, and E-horizon deposits. In general, diagnostic artifacts indicate a Middle to Late Woodland period association for the sites; although a Middle Archaic to Middle Woodland projectile point was recovered as well. Testing identified late-nineteenth- through twentieth-century grading and landscaping in the yard area of the Harrison-Glover House, but no features associated with the eighteenth-century occupation of the property. A fourth site, 28-Ca-105, was identified on an intact landform in Area III. Site 28-Ca-105 produced a large assortment of flakes from fill, plowzone and E-horizon deposits, but no diagnostic materials.

The Phase I/II Archaeological Investigation revealed that the project APE has been disturbed by agricultural land use, roadway construction activities and commercial/residential development. Prehistoric archaeological deposits found in the APE represent the remnants of sites impacted by plowing and landscaping, and offer little potential to provide new information about Native American lifeways. Historic archaeological deposits have been dispersed through plowing and the introduction of fill. No additional archaeological investigations are recommended in the project APE.

1.0 Introduction

1.0 INTRODUCTION

The following report summarizes the results of a Cultural Resources Survey conducted in association with the proposed improvements to the I-295/I-76/Route 42 Interchange in Bellmawr and Mount Ephraim boroughs, and Gloucester City, Camden County, New Jersey. A. D. Marble & Company completed this work for Dewberry-Goodkind, Inc. and the New Jersey Department of Transportation (NJDOT). The investigation included documentary research, field survey, and analysis. The purpose of the investigation was to identify and evaluate archaeological resources located within proposed Area of Potential Effects (APE).

This report contains an archaeological survey (Phase I) of the proposed APE and an evaluation (Phase II) of the significant archaeological resources documented in the proposed APE. The purpose of the archaeological survey is to determine whether significant archaeological resources are present in the proposed APE. The Phase I Archaeological Survey was conducted in two parts. A Phase IA assessment identifies the sensitivity of prehistoric and historic archaeological resources in the project APE based on the results of previous archaeological investigations conducted in the vicinity, an understanding of the prehistoric and historic background of the project area, and level of ground disturbance present in the APE. The Phase IB Archaeological Survey utilizes systematic field excavations to identify the presence or absence of archaeological deposits within the APE. The Phase II evaluation-level archaeological investigation is used to assess if the archaeological resources present within the proposed APE contain unique information regarding prehistory or history and warrant inclusion in the National Register of Historic Places. The historical investigation was performed to identify areas of cultural resources sensitivity within the proposed APE, and to provide an appropriate and accurate historic context in which to evaluate the significance of any archaeological deposits within the proposed APE.

The investigations were conducted in accordance with the 1996 NJHPO *Guidelines for Phase I Archaeological Investigations: Identification of Archaeological Resources*, with Section 106 of the National Historic Preservation Act of 1966, as amended; the Procedures for the Protection of Historic and Cultural Properties set forth in 36 CFR 800, as amended; 23 CFR 771, as amended; guidance published by the Advisory Council on Historic Preservation (ACHP); Sections 1(3) and

2(b) of Executive Order 11593; and the National Environmental Policy Act of 1966. This legislation requires that the effect(s) of any federally assisted undertaking on historically significant buildings, structures, districts, objects, or sites be taken into account during the project planning process. Significant resources are those that are listed in or eligible for listing in the National Register of Historic Places.

A.D. Marble & Company of Mount Laurel, New Jersey, prepared this report in association with Dewberry-Goodkind, Inc. of Parsippany, New Jersey, on behalf of the NJDOT. The archaeological assessment was conducted in May, June, and August 2004, and August 2005, and the archaeological evaluation was conducted in May and August 2005. Scott Emory was the Principal Investigator for the project. The Field Director was Amy Fanz, with Christine Gill, Brynn Torrelli, Andrew Stanzeski, Lauren Milideo, and Sheena Batchelor assisting as field technicians. Paul W. Schopp served as the Project Historian. Scott A. Emory, Amy Fanz and Paul W. Schopp authored the report.

2.0 Project Description

2.0 PROJECT DESCRIPTION

2.1 Project Area Overview

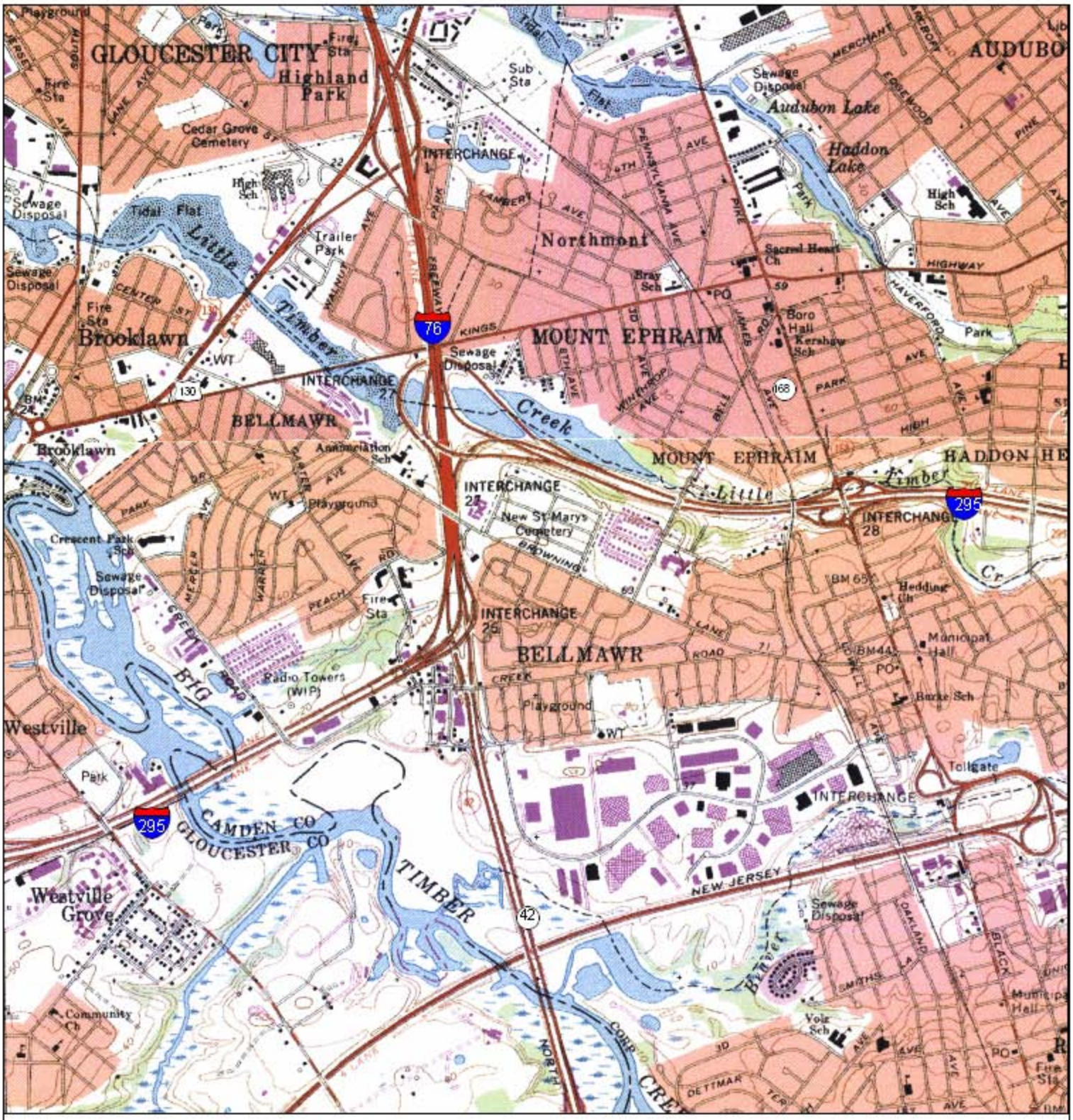
The I-295/I-76/Route 42 Direct Connection project involves the reconstruction of Interstate 295 (I-295), Interstate 76 (I-76), New Jersey State Route 42 (Route 42), and affected roadway segments traversing the Boroughs of Bellmawr and Mount Ephraim and Gloucester City, Camden County. The existing interchange, which was constructed between 1958 and 1961, is insufficient to accommodate current traffic volumes and travel speeds safely, resulting in an accident rate that is more than seven times the statewide average. Additionally, failing levels of service on the interchange ramps, combined with the congestion of local streets, adversely affects the quality of life in the surrounding communities.

A Project Location Map is provided in Figure 1. The study area for the I-295/I-76/Route 42 Direct Connection project includes several residential, commercial, industrial, and public/recreational areas in Bellmawr, Mount Ephraim, and Gloucester City. The project limits for the I-295/I-76/Route 42 Direct Connection follow.

Along the Route 42/I-76 corridor, the study area extends from the southerly limit of Route 42 at Leaf Avenue, Mile Post (M.P.) 13.82, north to where Route 42 ends at M.P. 14.28 and merges with I-295 at M.P. 26.79. The I-295 corridor includes only a short section of I-295 roadway from M.P. 26.79 to M.P. 26.96 before I-295 continues north following Ramp A. Additionally, the I-76 section of the project begins at M.P. 0.00 and continues to the northerly limit just south of Crescent Boulevard (Route 130) over I-76 at M.P. 1.15. Along I-295, the study area extends from the southerly limit of Creek Road (CR 753) over I-295 (M.P. 26.03), to the merge with Route 42 (M.P. 26.79), and continues north to M.P. 28.16, where Black Horse Pike (Route 168) crosses over I-295.

2.2 Description of Existing Facilities

The following is a description of the existing roadways. Figure 2 is an excerpt from the NJDOT Straight Line Diagram, which provides an overview of the interchange configuration.



SOURCE:

- Camden, NJ-PA
  USGS 7.5 Minute Quadrangle
  1967, Revised 1994
- Runnemede, NJ
  USGS 7.5 Minute Quadrangle
  1964, Revised 1994

0 1,000 2,000 4,000 Feet

N

Q:\26521\technical\GIS\GIS Database\HW Sites\HWSCREENING\PROJECT LOCATION MAP

NEW JERSEY DEPARTMENT OF TRANSPORTATION

PROJECT LOCATION MAP

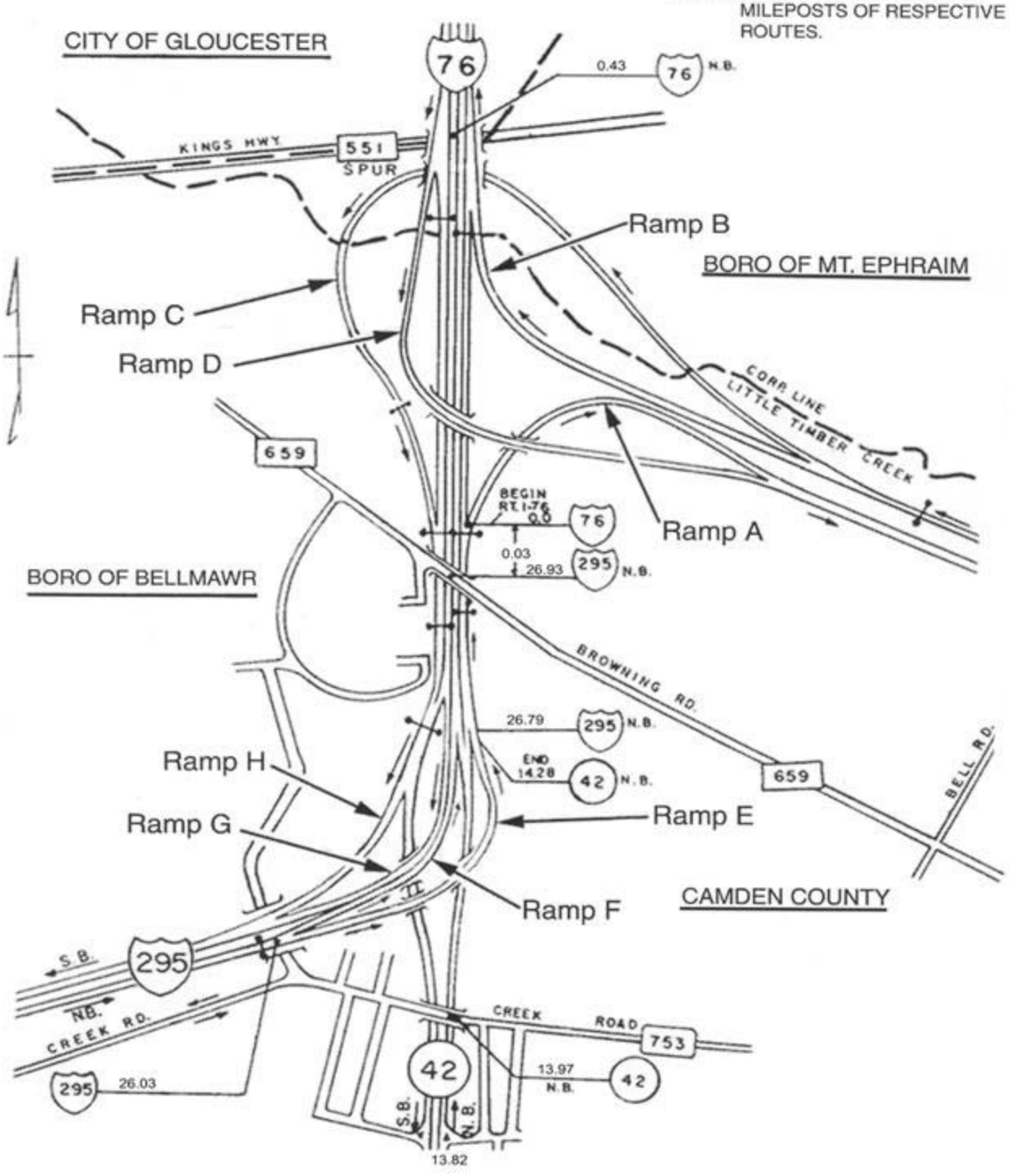
I-295 / I-76/ Route 42 Direct Connection
Camden County, New Jersey

SCALE: AS INDICATED

DATE: AUGUST 2005

Dewberry-Goodkind, Inc.

Figure 1



NEW JERSEY DEPARTMENT OF TRANSPORTATION

I-295 / I-76 / ROUTE 42
Direct Connection
Camden County
Figure 2
Ramp Diagram

Dewberry-Goodkind, Inc.

2.2.1 Ramps

Ramp A

Ramp A connects northbound Route 42 with northbound I-295.

Ramp B

Ramp B connects southbound I-295 with northbound I-76.

Ramp C

Ramp C connects southbound I-295 with southbound Route 42.

Ramp D

Ramp D connects southbound I-76 with northbound I-295.

Ramp E

Ramp E connects northbound I-295 with northbound I-76.

Ramp F

Ramp F connects northbound I-295 with the I-76 northbound express lanes.

Ramp G

Ramp G connects the I-76 southbound express traffic with southbound I-295.

Ramp H

Ramp H connects southbound I-76 with southbound I-295.

2.2.2 I-295, I-76, Route 42 from the Southern Project Limit

I-295 northbound consists of three 12-foot lanes with a 12-foot right shoulder. There is a 50-foot wide grass median separating the northbound and southbound lanes. The three lane section terminates in the vicinity of the bridge over Essex Avenue in Bellmawr and forms Ramps E and F, which lead traffic to I-76 northbound local and express lanes, respectively. Ramp E becomes

Ramp A, which is considered a continuation of I-295 northbound and carries I-295 through-traffic northbound. Ramp A merges with Ramp D, carrying I-76 northbound traffic onto I-295 and together re-form the three lane section of I-295 northbound.

Route 42 northbound consists of four 12-foot lanes with a 12-foot right shoulder and a concrete median barrier curb. Route 42 ends at the merge of Ramp E carrying traffic from I-295 northbound. At this point, Route 42 becomes I-295 northbound which continues to the Ramp A gore. At the gore, I-76 northbound begins for through-traffic, while traffic heading to I-295 must exit onto Ramp A. Traffic traveling from Route 42 northbound to I-295 northbound must merge across the lanes created by Ramp E to exit onto Ramp A to continue onto I-295, as the lanes of Ramp E form part of the express and local lanes of I-76 northbound.

2.2.3 I-295, I-76, Route 42 from the Northern Project Limit

I-295 southbound consists of three 12-foot lanes with a 12-foot right shoulder. Approximately 1,000 feet south of the Bell Road overpass in Mt. Ephraim, the travel lanes diverge into Ramps B and C. Ramp B carries traffic to I-76 northbound lanes. Ramp C, also known as "Al-Jo's Curve," carries I-295 southbound through-traffic via Ramp H, while traffic to Route 42 exits from the left lane. Ramp G, carrying I-76 and Route 42 southbound traffic, merges with Ramp H re-forming the 3-lane southbound section of I-295.

I-76 southbound consists of four 12-foot lanes with a 12-foot shoulder. Ramp D carries traffic from I-76 to I-295 northbound. At the Ramp C merge, I-76 ends, becoming I-295 southbound. Traffic continuing on I-295 southbound exits at Ramp G, while through-traffic continues onto Route 42 southbound past the Ramp G exit. Traffic traveling on I-76 to Route 42 must stay in the right lane after the Ramp C merge, then move to the left lane across merging traffic from I-295 southbound to continue onto Route 42. Traffic continuing to I-295 southbound exits right onto Ramp H.

2.3 Purpose and Need

2.3.1 Purpose

The purpose of this project is to improve traffic safety, reduce traffic congestion, and meet driver expectations by improving the direct connection of the I-295 mainline and the interchange of I-295/I-76/Route 42.

2.3.2 Need

There is a significant accident history at the interchange. The interchange's existing roadways include a number of geometric deficiencies that can be considered contributing factors to the high number of accidents. The deficiencies were identified from NJDOT record construction drawings and Structural Inventory and Appraisal (SI&A) Sheets.

Improve Safety

Accident data for the years 1995 through 2000 were reviewed. Since statewide accident rates were available for 1995, 1996, and 1999, a comparison of the accident rates on I-295, I-76, and Route 42 for these years was made with the statewide average.

During the 1995 to 1999 period, the I-295 roadway segments from M.P. 26.4 to M.P. 28.2 had accident rates over seven times the statewide average. Of these segments, M.P. 26.4 and 27.6 and M.P. 28 to 28.2, lengths that encompass the area of the interchange with Route 42 and I-76, had a substantially higher number of accidents than sections of I-295 immediately north and south of the interchange. For example, in 1995, M.P. 26.4 to 27.0 had almost seven times more accidents than the statewide average, while M.P. 26.8 to M.P 27.1 had the most accidents in each of the analyzed years.

All six segments of Route 42 (from M.P. 13.2 to M.P. 14.28) had accident rates in excess of the statewide average. In 1996, four segments (from M.P. 13.45 to M.P. 14.28) had accident rates, per million vehicle miles, greater than the statewide average. In 1999, four segments (from M.P. 13.44 to M.P. 14.28) had accident rates, per million vehicle miles, greater than the statewide

average. In the years 1995, 1996, and 1999, one segment had an accident rate four times the statewide average.

I-76 accident rates were similar to those of I-295 and Route 42 in the 1995 to 1999 time frame. For 1995, four segments (from M.P. 0.0 to M.P. 0.8) had accident rates that exceed the statewide average. One segment had an accident rate twice the statewide average. In 1996, five segments (from M.P. 0.0 to M.P. 0.8) had accident rates greater than the statewide average, with one segment being three times the statewide average. On I-76 in 1999, three segments (from M.P. 0.0 to M.P. 0.53) had accident rates in excess of the statewide average. In 1999, one segment had an accident history four times greater than the statewide average. Segments that were over-represented in all three years that were compared with statewide averages were M.P. 0.0 to 0.3 and 0.3 to 0.5. These segments mainly encompass the area in which I-76 combines with I-295.

Geometric and Structural Deficiencies

The existing interchange has numerous substandard geometric design elements. These include horizontal curvature, stopping sight distance, superelevation, shoulder widths, and acceleration and deceleration lane lengths. These are present along I-295, I-76, Route 42, and ramps at various locations. Since a majority of the improvements will be on new alignments, these substandard features will be addressed as part of the project.

In addition to the geometric deficiencies noted above, several bridges within the interchange have been identified as structurally deficient or functionally obsolete due to substandard vertical and horizontal clearances. Once again, since a majority of the improvements will be on new alignments, these structures will be replaced as part of the project.

Driver Expectations

While there is a definite need to correct the geometric deficiencies in existing ramps and structures, driver expectations also play a large role in the high accident rates at the interchange and necessitate improved safety. The posted speed limits on the existing ramps that serve the through-traffic on I-295 are inconsistent with typical operating speeds on an interstate highway.

The posted speed limit on all of the highway approaches to the interchange is 55 miles per hour (MPH). The 20 MPH discrepancy between the posted speed limits (and higher operating speeds) on the approach highways and the 35 MPH speed on the ramps can be considered as a contributing factor in the interchange's overall poor accident record.

Operational Deficiencies

The lack of a direct connection for through movement on I-295, significant weaving problems, deficient connecting ramps, and high volumes of traffic all result in operational deficiencies (or congestion) within and near the interchange. The operational deficiencies on I-295, I-76, and Route 42, particularly the queuing of traffic and poor Levels of Service (LOS) that cause excessive delays, impact not only regional traffic and commuters using the highways, but local arterials and neighborhood streets as well. Excessive delays at the interchange result in highway traffic exiting onto surrounding local arterials, thereby further adding to congestion in the region. The diverted traffic, in turn, causes congestion on local roads, compromises traffic and pedestrian safety, increases noise levels, and lowers air quality in the community, which disproportionately tax the capacity and life of local roadways.

The effective operation of any roadway network, be it highway, local arterial, or street intersection, is measured by the LOS categories ranging from A to F. LOS A represents the most favorable operating conditions with little or no delay. LOS F is the worst operating condition, occurring when demand volume exceeds the capacity of the roadway resulting in severe congestion. Specific sections of the interchange that experience a poor LOS (LOS E or F) are highlighted in Table 1. Of the eight ramps studied in detail, five operate at LOS E or worse for at least one of the two peak hours (AM and PM).

In addition, a weaving condition exists on I-76/Route 42 between Ramp E and Ramp A. Traffic on Ramp E wishing to proceed north on I-76 must weave with traffic from northbound Route 42 proceeding north on I-295. Due to the volumes of traffic involved in this section of the interchange (specifically the high volume of traffic from Ramp E proceeding to Ramp A), this section of the roadway experiences failure. It should be noted that the traffic exiting Ramp E and

Table 1 – Existing Level of Service

Roadway/Ramp	Peak Hour Level of Service	
	AM	PM
I-295 - Northbound		
South of Interchange	D	C
North of Interchange	D	**E**
I-295 - Southbound		
South of Interchange	**E**	**E**
North of Interchange	C	C
I-76 - Northbound		
South of Interchange	n/a[1]	n/a[1]
North of Interchange	**E**	C
Express Lanes	D	B
I-76 - Southbound		
South of Interchange	n/a[1]	n/a[1]
North of Interchange	C	**E**
Route 42 - Northbound		
South of Interchange	D	C
North of Interchange	n/a[1]	n/a[1]
Route 42 - Southbound		
South of Interchange	B	D
North of Interchange	n/a[1]	n/a[1]
Ramp A	**F**	**F**
Ramp B	**E**	B
Ramp C	**F**	**F**
Ramp D	B	C
Ramp E	**E**	**E**
Ramp F	**E**	**E**
Ramp G	B	C
Ramp H	C	B

[1]Section of roadway does not exist (see Figure 1).

proceeding on Ramp A is "through" traffic that could be expected to stay on mainline I-295 if a mainline section of the highway were available.

2.3.3 Goals and Objectives

A set of project goals and objectives has been developed based on the project's purpose and needs described above, findings from previous studies, and goals developed during the partnering meetings on December 11-12, 2001. The goals and objectives are a compendium of

statements made by the NJDOT, Federal Highway Administration (FHWA), agencies, local elected officials, residents, and other stakeholders in the project. As such, the goals and objectives are wide-ranging and represent different levels of priority for each stakeholder.

While the project may not be able to satisfy all goals and objectives listed herein, the preferred alternative seeks to address as many as possible. The project's goals and objectives are as follows:

- Improve safety by constructing a roadway system that meets interstate standards for geometric design.
- Provide a direct connection for through-traffic on I-295 with a design speed consistent with that of the interchange's approach roadways.
- Reduce congestion on local arterials such as Route 168 and US 130 and decrease commuter traffic on neighborhood streets, thereby improving local traffic mobility, pedestrian safety, and the level of service on I-295. In addition, noise levels would decrease and air quality would improve.
- Enhance regional economic development by increasing overall mobility. In addition, the improved roadway network conforms to State and local development plans.
- Reduce the financial burden on State and local police and emergency services by decreasing the number of vehicle accidents.
- Avoid, minimize, or mitigate environmental and cultural resource impacts.
- Preserve the quality of life of communities by minimizing relocations and acquisitions of private and public property.
- Enhance opportunities for other modes of transportation, including bicycle and pedestrian, within the project area.
- Provide opportunities for intermodal use within the project area.

2.4 Description of Alternatives

The following section provides a description of the alternatives selected for further study. The alternatives were developed through a collaborative effort between stakeholder groups and were

based on the objectives set forth in the project Purpose and Need statement. Graphics illustrating each alternative follow the narrative.

2.4.1 Alternative D

Alternative D, shown in Figure 3, begins in the vicinity of the Grenloch Secondary Railroad Bridge over I-295. Mainline I-295 shifts slightly south and elevates to a third level viaduct over Browning Road and Route 42 and a second level viaduct over Ramp C. The roadway meets existing I-295 pavement north of the Creek Road overpass. The I-295 Alternative D alignment crosses I-76/Route 42 at a skew through an unused area of New St. Mary's Cemetery.

Vehicles on northbound Route 42, whose destination is I-295 northbound, exit on Ramp A. This ramp configuration, in conjunction with the new I-295 mainline alignment, eliminates the current substandard weaving condition with Ramp E at this location. Ramp A crosses under Ramp E and then crosses over Route 42 northbound before joining the elevated I-295 northbound alignment just north of Browning Road.

Ramp B provides the movement from southbound I-295 to northbound I-76. Ramp C provides the movement from southbound I-295 to southbound I-76/Route 42. Ramp B and Ramp C exit I-295 from the right. Ramp B follows a similar alignment to its existing one to meet I-76 northbound. Ramp C splits from Ramp B and crosses under Ramp D, I-76, Browning Road, and I-295 to connect with Route 42 north of the Creek Road Bridge.

Ramp D is the move from I-76 southbound to I-295 northbound. Ramp D exits I-76 in much the same way that it does now. The Ramp D alignment crosses over I-76, over Ramp C, and under I-295 before merging with I-295 northbound south of Bell Road.

Northbound I-295 traffic heading north to I-76 uses Ramp E, which follows essentially the same alignment as it does now.

Southbound I-76 traffic heading to I-295 southbound uses Ramp F. Ramp F diverts from I-76 from the right (existing exit is from the left), and then passes under Browning Road. Ramp F first

runs parallel to Ramp C and then runs adjacent to I-295 southbound. Ramp F rises from a depressed section at Browning Road to an elevated section as it ties into I-295 southbound prior to Essex Avenue.

A summary of design features of this alternative are:

- Northbound and Southbound I-295 are side-by-side
- I-295 crosses over Route 42/I-76 on a viaduct on a skew
- I-295 on viaduct over Ramp C and Browning Road
- Ramp D on viaduct over I-76/Route 42, Ramp C and under I-295
- Two lane ramps except for Ramp F
- Removes express/local lanes on I-76 Westbound
- I-295 posted speed limit: 55 mph (design speed: 60 mph)
- Ramp speed limits: 40 mph (design speed: 45 mph)

2.4.2 Alternative D1

Alternative D1, shown in Figure 4, is almost identical to Alternative D. The primary difference is the configuration of Ramps B and C. Ramp C exits I-295 southbound from the tangent section of I-295 southbound. Ramp B exits from the right approximately 1,000 feet later. Ramp B is on a new alignment south of its present location, but ties into I-76 at a similar location. Ramp C generally follows (within 150 feet±) the existing Ramp C alignment (Al Jo's curve) and passes under I-76 and Ramp F before merging with Route 42 southbound. The substandard radius on the existing Ramp C is replaced with a larger radius. Ramp D follows the same alignment as in Alternative D.

A summary of design features of this alternative are:

- Northbound and Southbound I-295 are side-by-side
- I-295 crosses over Route 42/I-76 on a viaduct on a skew
- I-295 on viaduct over Ramp C and Browning Road
- Ramp D on viaduct over I-76/Route 42 and under I-295

- Two lane ramps except for Ramp F
- Removes express/local lanes on I-76 Westbound
- I-295 posted speed limit: 55 mph (design speed: 60 mph)
- Ramp speed limits: 40 mph (design speed: 45 mph)

2.4.3 Alternative G2

Alternative G2, shown in Figure 5, also begins in the vicinity of the Grenloch Secondary Railroad Bridge over I-295. The southbound and northbound lanes of I-295 align over top of each other as an over-and-under viaduct and shift south. The I-295 viaduct alignment is elevated to cross over all of the ramps as well as I-76 and Browning Road. I-295 crosses over I-76 on a skewed alignment and then diverges and lowers in elevation to meet the existing I-295 pavement following the same alignment as in Alternative D to a point just north of the Creek Road Bridge. I-295 southbound is a fourth level viaduct and northbound is a third level viaduct at the Route 42 and Browning Road crossings. I-295 southbound passes over Bell Road, whereas I-295 northbound passes under Bell Road.

Vehicles on Route 42, whose destination is I-295 northbound, exit on Ramp A. Ramp A crosses under Ramp E and then crosses over Route 42 northbound before joining the elevated I-295 northbound alignment just north of Browning Road, similar to Alternative D.

Ramp B provides the movement from southbound I-295 to northbound I-76. Ramp C provides the movement from southbound I-295 to southbound Route 42. Ramps B and C exit I-295 from the right. Ramp B follows a similar alignment to its existing alignment to meet I-76 northbound. Ramp C crosses under Ramp D, I-76, Browning Road, and I-295 to connect with Route 42 north of the Creek Road Bridge.

Ramp D is the move from I-76 southbound to I-295 northbound. Ramp D exits I-76 in much the same way that it does now. The Ramp D alignment crosses over I-76, over Ramp C, and under I-295 before merging with I-295 northbound south of Bell Road.

Northbound I-295 traffic heading north on I-76 uses Ramp E, which follows essentially the same alignment as it does now.

Southbound I-76 traffic heading to I-295 southbound uses Ramp F. Ramp F diverts from I-76 from the right (existing exit is from the left) and then passes under Browning Road. Ramp F first runs parallel to Ramp C and then runs adjacent to I-295 southbound. Ramp F rises from a depressed section at Browning Road to an elevated structure as it ties into I-295 southbound prior to Essex Avenue.

A summary of design features of this alternative are:

- Southbound I-295 placed above Northbound I-295 using a double-decker configuration
- I-295 crosses over Route 42/I-76 on a viaduct on a skew
- I-295 on viaduct over Ramp C and Browning Road
- I-295 on viaduct over Ramp D
- Ramp D on viaduct over I-76/Route 42 and Ramp C
- Two lane ramps except for Ramp F
- Remove express/local lanes on I-76 Westbound
- I-295 posted speed limit: 55 mph (design speed: 60 mph)
- Ramp speed limits: 40 mph (design speed: 45 mph)

2.4.4 Alternative H1

Alternative H1, shown in Figure 6, is almost identical to Alternative G2. The primary difference is the configuration of Ramps B and C. Ramps B and C exit from I-295 from the right. Ramp C generally follows (within 150 feet±) the existing Ramp C alignment (Al Jo's curve) and passes under I-76 and Ramp F before merging with Route 42 southbound. The substandard radius on the existing Ramp C is replaced with a larger radius. Ramp B splits from Ramp C to meet I-76 northbound.

A summary of design features of this alternative are:

- Southbound I-295 placed above Northbound I-295 using a double-decker configuration
- I-295 crosses over Route 42/I-76 on a viaduct on a skew
- I-295 on viaduct over Ramp C and Browning Road
- I -295 on viaduct over Ramp D
- Ramp D on viaduct over I-76/Route 42
- Two lane ramps except for Ramp F
- Removes express/local lanes on I-76 Westbound
- I-295 posted speed limit: 55 mph (design speed: 60 mph)
- Ramp speed limits: 40 mph (design speed: 45 mph)

2.4.5 Alternative K

Alternative K makes I-295 a continuous direct-through alignment in the form of a tunnel beneath I-76/Route 42, as shown in Figure 7. Alternative K begins in the vicinity of the Grenloch Secondary Railroad Bridge over I-295. Mainline I-295 shifts slightly south and begins to descend at a 3.5%± grade close to New St. Mary's Cemetery. The road reaches a depth of 60 feet in the northwestern corner of New St. Mary's Cemetery, and a depth of 35 feet below the I-76/Route 42 pavement. The roadway begins to ascend at a 4% grade beside the baseball fields and is at grade to meet the I-295 pavement north of the Creek Road overpass.

Vehicles on northbound Route 42, whose destination is I-295 northbound, exit on Ramp A, which would be separated from but parallel with Route 42. This ramp configuration, in conjunction with the new I-295 mainline alignment, eliminates the current substandard weaving condition with Ramp E at this location. Ramp A then crosses under Ramp E before joining the depressed I-295 alignment north of Browning Road.

Ramp B provides the movement from southbound I-295 to northbound I-76. Ramp C provides the movement from southbound I-295 to southbound Route 42. Ramp C exits I-295 from the right and Ramp B exits from the right approximately 1,000 feet further. Ramp B follows a

similar path but to the south of its existing location to meet I-76 northbound. Ramp C crosses over Ramps B and D and I-76. Then Ramp C passes over Browning Road and I-295 to connect with Route 42 north of the Creek Road Bridge.

Ramp D is the move from I-76 southbound to I-295 northbound. Ramp D exits I-76 in much the same way that it does now. The Ramp D alignment crosses over I-76, under Ramp C, and over I-295 before merging with I-295 northbound south of Bell Road.

Northbound I-295 traffic heading north on I-76 uses Ramp E, which follows essentially the same alignment as it does now.

Southbound I-76 traffic heading to I-295 southbound uses Ramp F. Ramp F diverts from I-76 from the right (existing exit is from the left) and then passes under Browning Road. Ramp F first runs parallel to Ramp C and then runs adjacent to I-295 southbound. Ramp F rises from a depressed section at Browning Road to tie into I-295 southbound prior to Essex Avenue.

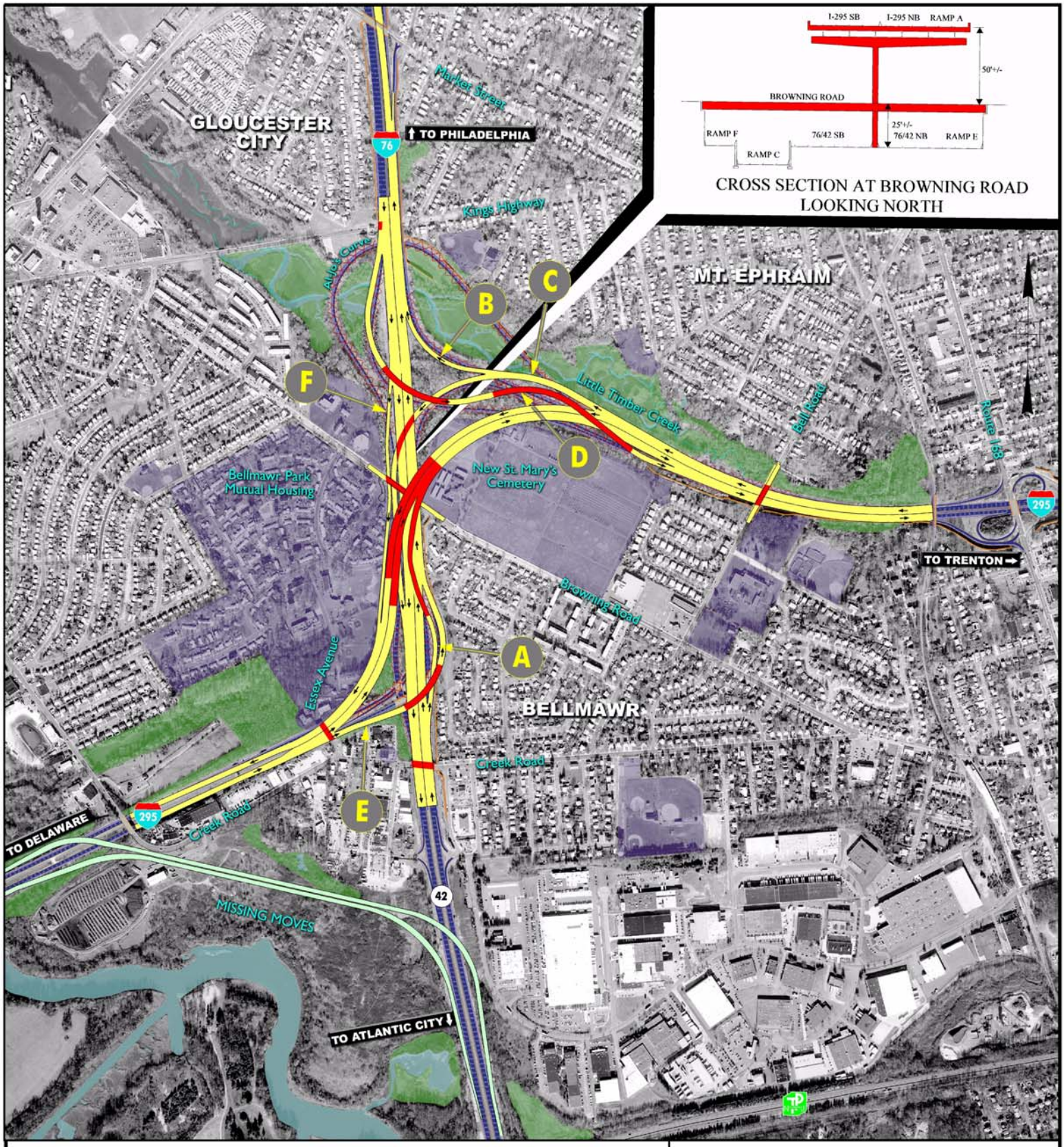
A summary of design features of this alternative are:

- Northbound and Southbound I-295 are side-by-side
- Mainline I-295 is a tunnel under I-76/Route 42 on a skew
- Ramp C is on a viaduct over Ramps B and D and I-76/Route 42
- Ramps are two lane except for Ramp F
- Removes express/local lanes on I-76 Westbound
- I-295 posted speed limit: 55 mph, (design speed: 60 mph)
- Ramp speed limits: 40 mph, (design speed: 45 mph)

Three local bridges are impacted by each of the alternatives. The Bell Road, Browning Road, and Creek Road bridges will be raised to provide proper vertical clearance and lengthened to accommodate the wider typical section of I-295 or I-76/Route 42. In addition, King's Highway will be lowered by approximately one foot under each alternative and Alternative K may require Essex Avenue to be lowered by approximately two feet.

2.4.6 No Build Alternative

This alternative proposes no changes to the existing interchange. Impacts to the project area will be evaluated in the same way as the other proposed alternatives, with the assessment of current conditions projected to the design year serving as the impact assessment for the no-build alternative. The no-build alternative serves as the benchmark to measure the costs and benefits of each build alternative evaluated.

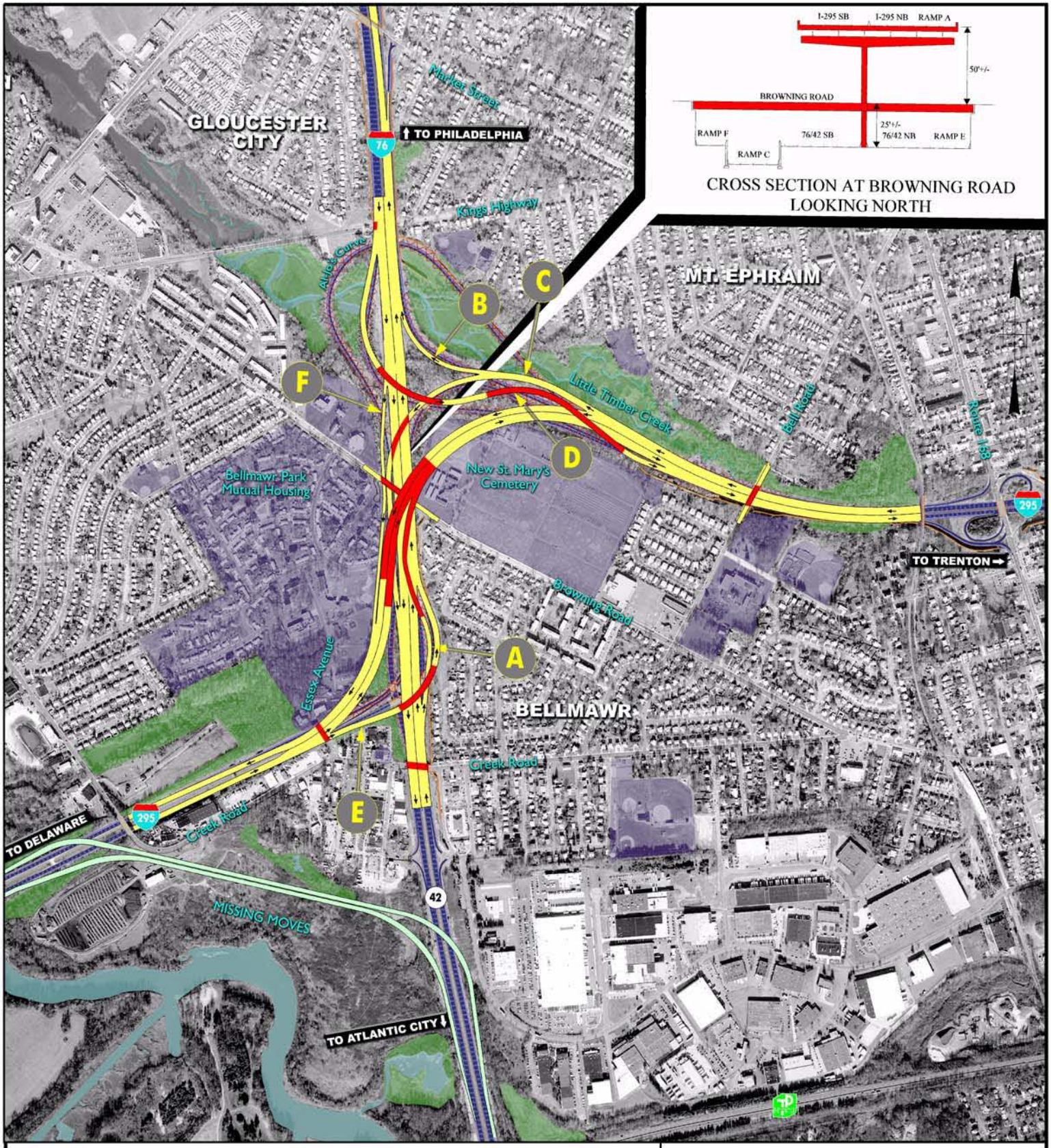


NEW JERSEY DEPARTMENT OF TRANSPORTATION

I-295 / I-76/ ROUTE 42
Direct Connection
Camden County

Figure 3
Alternative D

Dewberry-Goodkind, Inc.

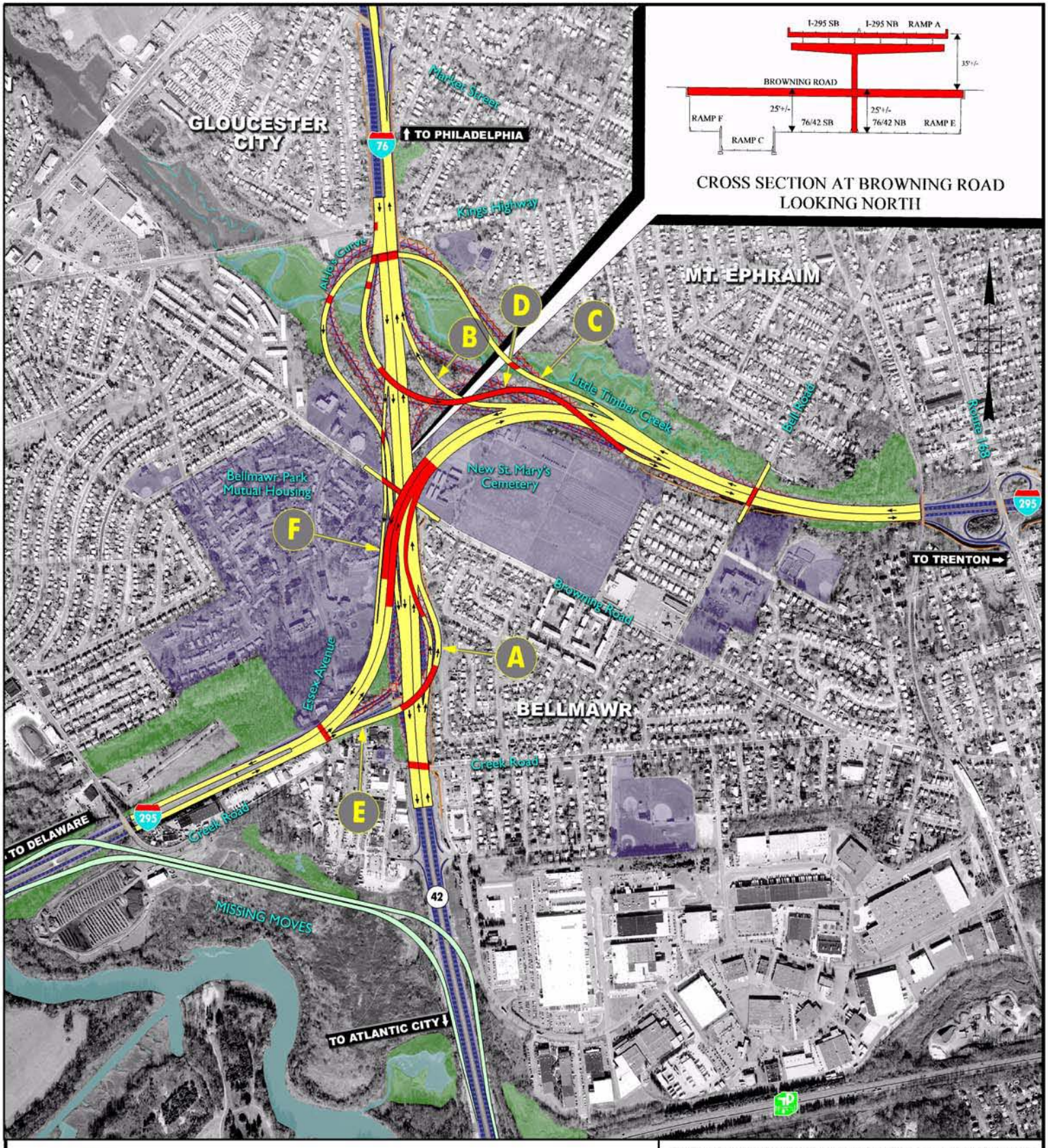


NEW JERSEY DEPARTMENT OF TRANSPORTATION

I-295 / I-76/ ROUTE 42
Direct Connection
Camden County

Figure 4
Alternative D

Dewberry-Goodkind, Inc.



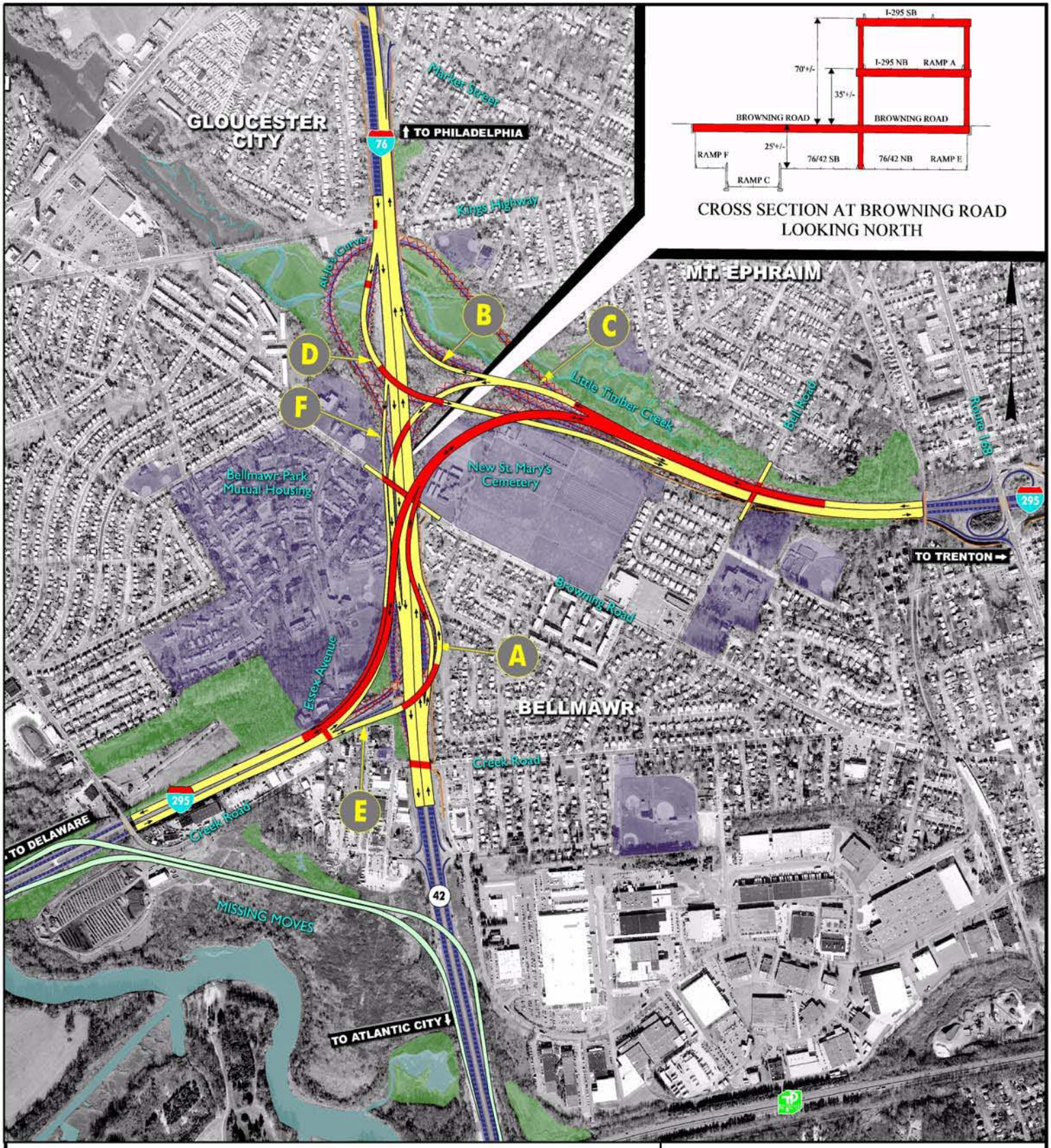
NEW JERSEY DEPARTMENT OF TRANSPORTATION

I-295 / I-76/ ROUTE 42
Direct Connection
Camden County

Figure 5

Alternative D1

Dewberry-Goodkind, Inc.

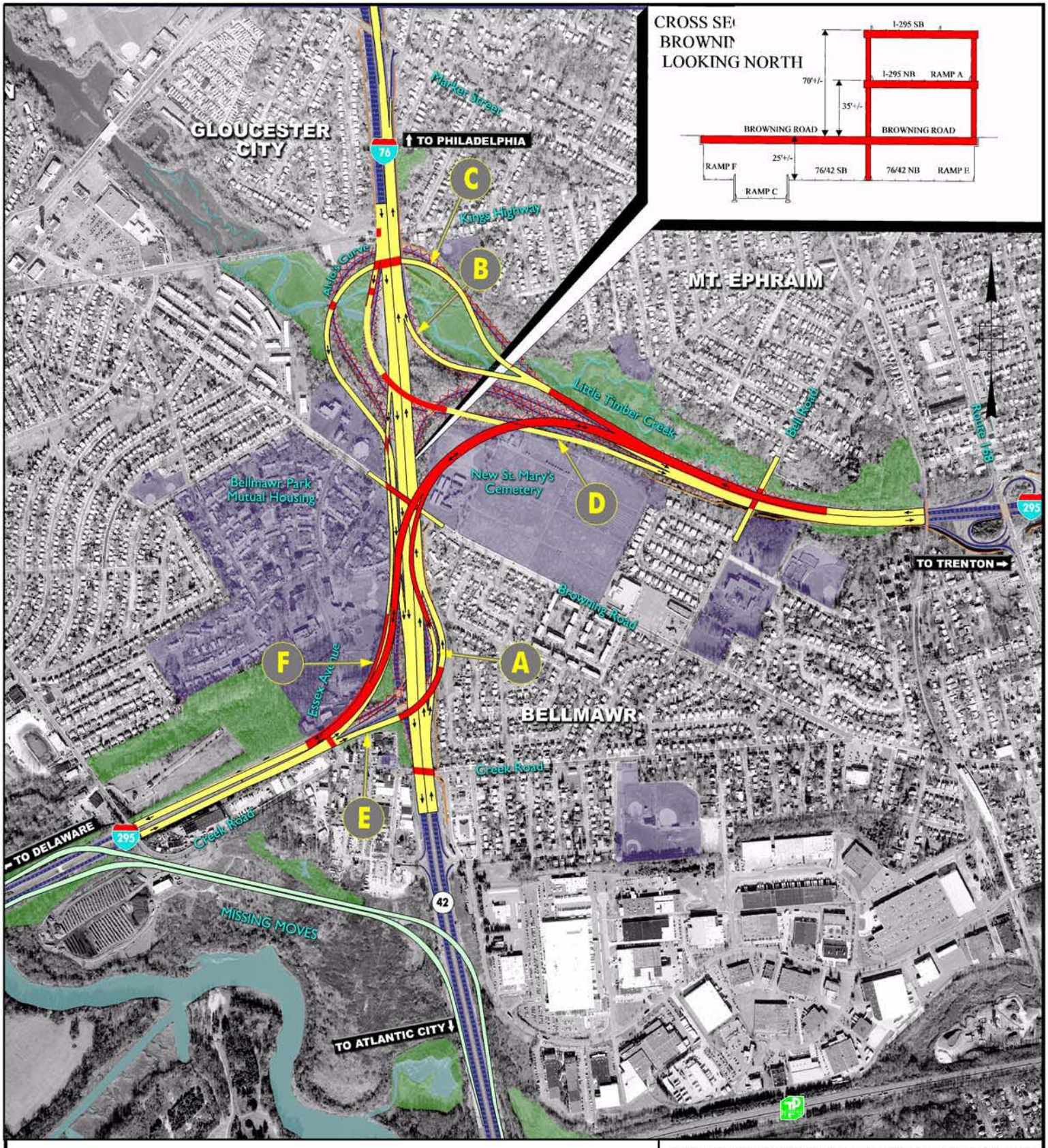


NEW JERSEY DEPARTMENT OF TRANSPORTATION

I-295 / I-76/ ROUTE 42
Direct Connection
Camden County

Figure 6
Alternative G2

Dewberry-Goodkind, Inc.



A - Ramp Designation

- Roadway
- Bridge
- Ramps for Missing Moves
- Existing Waterways
- Wetlands
- Roadway to be Removed

0 600 1,200 2,400 Feet

NEW JERSEY DEPARTMENT OF TRANSPORTATION

I-295 / I-76/ ROUTE 42
Direct Connection
Camden County

Figure 7
Alternative H1

Dewberry-Goodkind, Inc.

3.0 Methodology

3.0 METHODOLOGY

3.1 Definition of the Area of Potential Effects

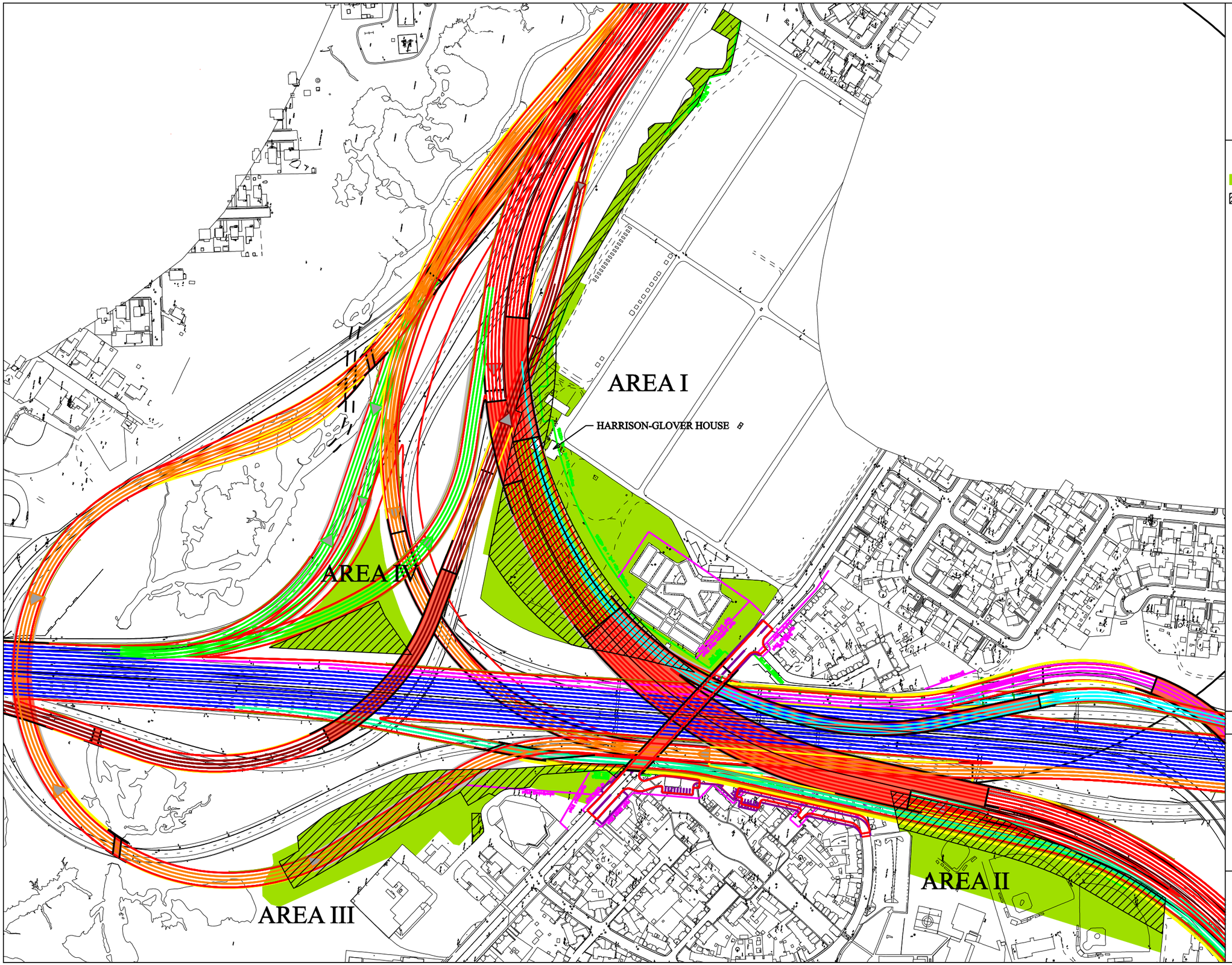
The APE is defined as "the geographic area within which an undertaking may cause changes in the character of or use of historic properties, if any such properties exist" (36 CFR Part 800: Protection of Historic Properties 1986, revised 2004). The proposed archaeological APE associated with this project has been defined as the area within which the proposed improvements to the I-295/I-76/Route 42 Interchange may directly or indirectly cause changes in the character or use of identified National Register-listed or eligible resources, if any such properties exist. The proposed archaeological APE for the project is limited to the areas of ground disturbance (Figure 8).

3.2 National Register of Historic Places Eligibility Criteria

The primary goal of the archaeological investigation is the identification of known or previously unknown, significant or potentially significant archaeological resources. Determinations of significance or potential significance are based on the National Register of Historic Places criteria of historic and/or archaeological significance. Potentially significant historic properties include districts, buildings, structures, objects, or sites that are at least 50 years old and meet at least one National Register criterion. Criteria used in the evaluation process are specified in the Code of Federal Regulations, Title 36, Part 60, National Register of Historic Places (36 CFR 60.4). To be eligible for inclusion in the National Register of Historic Places, a historic property(s) must possess the quality of significance in American History, architecture, archeology, engineering, and culture [that] 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



N

PROJECT NORTH

Legend

- Archaeological Potential
- Archaeological Area of Potential Effects (APE) Based on Alternative Footprints

0 150 300 600 Feet

New Jersey Department of Transportation

I-295 / I-76 / Route 42 Direct Connection Camden County

FIGURE 8

Archaeological Area of Potential Effects (APE)

(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 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 physical characteristics and historic significance of the overall property are examined when conducting National Register evaluations. While a property in its entirety may be considered eligible based on Criteria A, B, C, and/or D, specific data is also required for individual components therein based on date, function, history, physical characteristics, and other information. Resources that do not significantly relate to the overall property may contribute if they independently meet the National Register criteria.

A contributing building, site, structure, or object adds to the historic architectural qualities, historic associations, or archaeological values for which a property is significant because: a) it was present during the period of significance, and possesses historic integrity reflecting its character at that time or is capable of yielding important information about the period or b) it independently meets the National Register criteria. A noncontributing building, site, structure, or object does not add to the historic architectural qualities, historic associations, or archaeological values for which a property is significant because: a) it was not present during the period of significance; b) due to alterations, disturbances, additions, or other changes, it no longer possesses historic integrity reflecting its character at that time or is incapable of yielding important information about the period; or c) it does not independently meet the National Register criteria.

3.3 Existing Data Review

Research was conducted at several state and local repositories including National Register files, survey reports, survey forms, and maps related to the New Jersey Register of Historic Places and the National Register of Historic Places at the NJHPO. The New Jersey State Museum in Trenton was also consulted for unpublished information related to prehistoric and historic archaeological sites in the area in and surrounding the APE. In order to provide contextual

information, histories and historic maps of the project area and property-specific tax records were examined. Repositories visited include the New Jersey State Library and the New Jersey State Archives in Trenton; the Bellmawr Borough Tax Assessor's Office in Bellmawr; the Camden County Historical Society and the Camden County Clerk's Office in Camden; the David C. Munn Collection in Gloucester City; the Mount Ephraim Borough Tax Assessor's Office in Mount Ephraim; and the Paul W. Schopp Library and Archives in Riverton.

3.4 Archaeological Investigation

One goal of the archaeological survey is to assess the sensitivity of the APE to archaeological deposits. The assessment of archaeological sensitivity is based on two allied concepts: the *potential* for archaeological sites to exist or have been formed in a given area and the *sensitivity* of that area for intact cultural resources. In areas where no sites are documented, the potential presence of prehistoric resources is based primarily on environmental setting (i.e., topography, proximity to water, and soil quality). The potential presence of historic-period activities that may have resulted in archaeological resources is determined through documentary research. In addition, the potential for prehistoric or historic cultural resources to exist in a given area is measured on an ordinal scale of low, medium, or high.

For the purposes of this survey, sensitivity is defined as a measure of probability that *intact* cultural resources (prehistoric or historic) exist within the archaeological APE. Sensitivity is derived by measuring the potential presence of prehistoric resources against known modifications of naturally occurring landscapes (i.e., human or natural transformational processes) that may have destroyed (or be in the process of destroying) the archaeological value of those resources. When measuring the potential for cultural resources, sensitivity is also ranked on an ordinal scale as low, medium, or high. A hypothetical illustration of the relation between these two measures would be a property located in a certain environmental setting, such as ridge overlooking a stream, which is assessed as having a high probability for prehistoric cultural resources. This assessment is based on the knowledge that archaeological sites are frequently found in those settings. Although a high probability exists, the property may have a low sensitivity to prehistoric resources because modern activities specific to that property (e.g.,

grading and filling) have destroyed the original context of the cultural resources beyond the possibility of any meaningful reconstruction by the archaeologist.

3.4.1 Measuring Prehistoric Archaeological Site Probability

The criteria used to evaluate the probability that prehistoric archaeological sites may be present in a given APE are twofold. The first criterion is whether any prehistoric sites have been documented within the APE. This is minimally ascertained through a review of archaeological site files archived at the New Jersey State Museum, but may include other sources, such as oral informants and published or unpublished documents. If a prehistoric archaeological site has been documented in or adjacent to the APE, the APE is said to have a high probability of containing prehistoric cultural resources. The second criterion is to establish the potential of the APE to contain undocumented prehistoric materials. The potential of the APE to contain undocumented prehistoric archaeological deposits is determined through background research. Background research involves using previous surveys of cultural resources, published site reports and regional syntheses, and settlement pattern (or predictive) models to derive an understanding of the prehistory of the region in which the APE is located.

Predictive models for undocumented prehistoric site locations are generated from the analysis of the non-random distribution pattern of documented sites across the landscape. Environmental and topographic variables are typically used for predicting prehistoric site locations: these variables are discussed in several sources pertinent to the current investigation (Kraft and Chacko 1978; Stewart 1987; Custer 1984). In general terms, archaeological sites are predicted in areas of slightly elevated, well-drained soils in relatively close proximity to water sources. This empirical association of prehistoric sites with well-drained soils and water appears to be true of all time periods, but has been explicitly linked to the Archaic period settlements in and around the Delaware River Valley (Custer 1984:40; Kinsey 1972:346-47; Kraft and Chacko 1978:47). Regionally, village sites were also located at the intersection of prehistoric transportation routes and at the mouths of mountain gaps (Philhower 1925:33-35; Kardas and Larrabee 1981:12).

The pattern of prehistoric site settlement is compared to geomorphologic variables to generate empirical generalizations associating prehistoric sites with the physiographic settings in which

they are found. Predictive models will thereby make predictive statements on the location of undocumented prehistoric sites by the strength of association of known sites with physiographic variables such as topography, hydrology, and pedology. Comparing the topographic, hydrologic, and pedologic settings in the APE with those discussed in pertinent settlement pattern studies can aid the assessment of the potential for undocumented prehistoric sites within a given APE. The potential for undocumented prehistoric cultural resources is ranked on an ordinal scale as low, medium, or high.

3.4.2 Measuring Historic Archaeological Site Probability

The physiographic variables used to model prehistoric site locations are less useful in predicting the presence of historic sites. Instead of using physiographic variables, analyses of primary and secondary historic sources and historic cartographic materials provide a much more useful method for predicting the presence of historic cultural resources, often with great accuracy. The use of text and cartographic documents usually permits a presence or absence evaluation for historic sites, rather than the ordinal scaling of probabilities (i.e., low, medium, high) typically used for predicting prehistoric sites.

To determine the presence or absence of historic cultural resources within a given APE, a variety of cartographic references are consulted. Large-scale historic maps are utilized to determine the potential presence of early (i.e., pre-industrial) historic materials. Small-scale atlases, topographic maps, and insurance maps can be used for more detailed analyses of streetscapes that begin in the third quarter of the nineteenth century.

3.4.3 Measuring Prehistoric or Historic Archaeological Site Sensitivity

The project APE is located in an area that was subjected to enormous development during the end of the nineteenth century and the first three-quarters of the twentieth century. Not only did the development likely destroy many prehistoric and historic archaeological sites, it often modified the landscape to an extent that complicates the evaluation of where intact prehistoric (or historic) archaeological sites may be found. Furthermore, the potential presence of prehistoric resources in densely populated urban or suburban areas must be measured against known

modifications of naturally occurring landscapes. The environment and land surfaces of today are not those of the prehistoric past. Therefore, an assessment of the overall sensitivity of an APE to undocumented prehistoric sites must evaluate the disruptive effects of historic activity in settings that exhibit the potential for prehistoric sites.

The potential presence of historic cultural resources within an APE must also be weighed against ground moving activities that may destroy the contextual integrity of the site. As with prehistoric cultural resources, the sensitivity for historic period cultural resources involves ascertaining the probable location of potentially significant historic sites and comparing those locations with areas of documented ground disturbance. Overall sensitivity to historic sites is a measure of the potential for intact cultural resources to be present within the APE.

Several sources of information may be consulted for a given area to determine the overall sensitivity to intact prehistoric or historic archaeological resources. A site reconnaissance of the APE is the first step in determining the extent to which the landscape has been altered since the prehistoric or historic past. Visual inspection of the APE is necessary for establishing the existing conditions within the APE and evaluating the possibility that the area has been comprehensively disturbed by construction or other activities. Historic maps, photographs, and any other source(s) of information detailing subsurface utilities in or adjacent to the APE should also be reviewed to determine the extent to which the APE has been disturbed.

When assessing archaeological sensitivity, it should be kept in mind that the advent of the internal combustion engine not only liberated the potential for growth almost any place accessible by road but also affected how that growth would be physically accomplished. Not only did the internal combustion engine lead to the development of cars, it also helped produce bulldozers, backhoes, and other large, earth-moving equipment that can transform the landscape rapidly. This is an important fact for the archaeologist to bear in mind when considering the sensitivity for intact cultural resources in an area that has been subject to modern development. Whereas older forms of development may have simply built on top of previously existing archaeological sites, modern construction techniques typically call for topsoil stripping, soil stockpiling, and later re-contouring of the land with bulldozers over extensive areas prior to

building. The potential for archaeological sites (historic or prehistoric) to remain at least partially intact after these operations is considered slight.

Recommendations for Phase IB testing are typically based on the overall sensitivity, not probability, of the APE to either prehistoric or historic archaeological resources. The combination of background research, site reconnaissance, and the resulting sensitivity assessment ideally provides sufficient information to determine not only whether archaeological testing is recommended, but also what cultural resources are expected to be found in the APE and what testing strategy or strategies should be employed to find them.

3.4.4 Field Investigations

An initial field view of the proposed APE was conducted in July 2002. The objectives of the pedestrian survey were to document existing conditions and assess the potential for intact archaeological resources within the archaeological APE. A visual inspection of the project APE revealed landscaping activities and modern structures associated with mid- to late-twentieth-century households, as well as the presence of buried utilities, such as sewer lines, gas mains, water lines, and storm drains. Small pockets of wooded, undeveloped land were present in the northeast and southwest corners of the New Saint Mary's Cemetery, the median infield at the intersection of I-295/I-76/Route 42, the eastern boundary of the little league field, and the northeastern boundary of the Annunciation B.V.M. Church property.

Identification-level (Phase I) archaeological field testing was conducted May 26 to 28, June 3 to 17, and August 23 to 26, 2004, and August 8 to 12 and 15 to 16, 2005. The purpose of this field testing was to ascertain the presence or absence of archaeological deposits in the proposed APE. Based on the reconnaissance survey of the proposed archaeological APE, four separate sections of ground within the APE were determined to be archaeologically sensitive and requiring an archaeological survey. For the purposes of the project, the four areas were given numerical designations (Area I, Area II, Area III, and Area IV) (Figure 8).

A test grid was imposed over each testable area of the proposed archaeological APE. Shovel test pits (STPs) measuring 0.5-meters in diameter were placed at 15.2-meter intervals within each

area. STPs located in close proximity to buried utilities, or in areas subjected to severe landscaping and erosion, were not excavated. All excavations were limited to the confines of the proposed APE.

Phase II investigations of four prehistoric sites, recorded as 28-Ca-105, the Annunciation Church Prehistoric Site (Area III); 28-Ca-110, the Harrison-Glover Prehistoric Site 1 (Area I); 28-Ca-107, the Harrison-Glover Prehistoric Site 2 (Area I); 28-Ca-106, the Harrison-Glover Prehistoric Site 3 (Area I); and a concentration of historic artifacts in the yard area to the north and west of the Harrison-Glover House (Area I), were conducted May 4 to 6, May 9 to 12, August 16 to 18, August 23 to 27, and August 30 to September 1, 2005. Table 2 provides a breakdown of the testing methodology for each site and the date of excavation.

Table 2. Testing Methodology for Phase II Evaluation by Site.

Archaeological Site/Resource	**Area**	**Excavation Type, Number**	**Date of excavation**
Annunciation B.V.M. Church Prehistoric Site (28-Ca-105)	III	4, 1.5-meter-square test units	May 4-5 and May 9, 2005, August 30-Sept 1, 2005
Harrison-Glover Prehistoric Site 1 (28-Ca-110)	I	2, 1.0-meter-square test units	August 26-27, 2005
Harrison-Glover Prehistoric Site 2 (28-Ca-107)	I	3, 1.5-meter-square test units	May 6, 2005, August 16-18, 2005
Harrison-Glover Prehistoric Site 3 (28-Ca-106)	I	2, 1.5-meter-square test units	August 23-27, 2005
Yard area to the north and west of The Harrison-Glover House	I	5, 9.1-meter-long by 1.5-meter-wide trenches and 1, 3.0-meter-long by 1.5-meter-wide trench	May 10-12, 2005

A total of nine 0.5-meter-square (5.0-ft-sq) test units and two 1.0-meter-square (10.8-ft-sq) test units were utilized for the Phase II investigation. In addition, five, 9.1-meter-long (30.0-ft) by 1.5-meter-wide (5.0-ft) trenches and one, 3.0-meter-long (10.0-ft) by 1.5-meter-wide (5.0-ft) trench were excavated in the north and west yard areas of the Harrison-Glover House. Each test unit was placed on the grid established during the Phase I survey. Test trenches were placed to expose historic artifact concentrations and potential cultural soil horizons identified in the Phase I survey and did not necessarily conform to the grid.

Soils in each STP were excavated according to identifiable horizons. All STPs were excavated 15.0 centimeters or deeper into culturally sterile, Pleistocene deposits. In test units, excavations were conducted at 10.0-centimeter levels within each respective soil horizon. All soils were screened through 0.64-centimeter wire mesh in order to ensure uniform recovery of artifacts regardless of age, cultural affiliation, or soil stratum. Each soil stratum was excavated and screened separately. Artifacts were collected and provenienced by stratigraphic layer. All artifacts were bagged and removed to the A.D. Marble and Company laboratory in Conshohocken, Pennsylvania, for cataloging and analysis.

Test trenches were mechanically stripped of all modern overlying fill deposits to expose underlying historic fill horizons. An exploratory 0.8-meter-wide trench was hand-excavated across the width of the trench bottom to sample the historic deposits. Soils within the exploratory trench were excavated by natural horizons into sterile subsoil and screened following the methodology stated for STPs and test units. In the event that no historic fill horizons were observed, the trenches were excavated 20.0 centimeters into Pleistocene deposits.

Soil profile information, including measurements, soil texture, and color, was recorded on standardized forms. The location of all test excavations were recorded on scaled base maps. All excavations were backfilled upon completion. Any cultural features or land modifications were also plotted on base maps. Photographs in both color slide and black and white print film were taken of each area as needed. Digital photos were also taken. A complete listing of all excavations can be found in Appendix B.

At the completion of the test excavations, an archaeological base map was created illustrating the locations of test excavations, standing structures, proposed APE limits, and ground disturbances within the APE.

All artifacts recovered during the course of the archaeological survey were cataloged using standard typologies and terminology for the Mid-Atlantic Region. Artifacts of recent derivation determined to be unassociated with an identified historic site were cataloged and discarded, with special notation within the catalog list. All recovered prehistoric artifacts were cataloged using

standard typologies for the region and analyzed for chronological and functional attributes. Recovered historic period material was cataloged using a variant of Stanley South's functional classification scheme and analyzed for chronological attributes (South 1977). The functional categories enable artifact material to be sorted and analyzed by use and allows comparison of the assemblage for identification of possible activity areas within the site. All artifacts were classified by functional class and materials as per current historical material culture studies. Glass color and decorative treatment were also noted when present. A complete listing of all artifacts recovered can be found in Appendix C.

4.0 Summary of Findings/Existing Conditions

4.0 SUMMARY OF FINDINGS/EXISTING CONDITIONS

4.1 Prehistoric Cultural Context

4.1.1 Paleoenvironments and Human Adaptation

The Inner Coastal Plain was not glaciated for the most part, but was affected by Pleistocene glaciation and late Pleistocene/Holocene environmental reaction to glacial ablation. Environmental change during the Holocene coincides with the generally accepted dates for the emergence of humans in the northeast. The evolution of prehistoric human societies should be examined within the context of the natural environments to which they had to adapt.

4.1.2 Late Wisconsin (18 to 10 ka)[1]

The maximum southern extent of the Wisconsin glaciation is marked by the Bangor terminal moraine deposited during the Tazewell Interglacial (ca. 65 to 50 ka.) at the limits of the Laurentide ice sheet. The Bangor moraine extends as far south as Perth Amboy, north of the Raritan River (Wolfe 1977:144). The deposition of these glacial deposits suggests that the majority of New Jersey, including the Inner Coastal Plain, remained ice-free during the last glaciation.

During the height of glaciation, ca. 18 ka, upland vegetation patterning in unglaciated sections did not resemble today's environment in eastern North America. It consisted of mostly tundra vegetation such as sedges, mosses and lichens. As temperatures began to rise and the ice shield receded, parkland and deciduous forest began to take hold of the landscape, creating an assortment of micro-environs comprised of tundra and mixed forests (Marshall 1982:17). Tundra *Pinus* spp. (pine) and some deciduous trees lived on the coastal plain at this time, and probably existed within the APE (Jacobson et al. 1987:280-81). During initial deglaciation, 14 to 12 ka, changes to the vegetation cover occurred. Treeless tundra continued to persist at the ice margins, but *Picea* sp. (spruce) and other boreal species extended eastward into recently deglaciated sections of southern New England (ibid.:81). Spruce pollen dating to this period has been found

[1] ka = thousand of years before present.

in sufficiently small quantities to infer that it did not form closed-canopy communities (Davis 1983:166). These vegetation conditions seem likely to have existed within the Inner Coastal Plain region, and more specifically, in the APE. The Atlantic Coast was as much as 127.8 kilometers (80.0 mi) east of its current location during this period (ibid.).

The period between 12 and 10 ka was marked by significant changes in forest vegetation. The periglacial band of sedges and spruce mostly disappeared from the eastern United States during this 2,000-year period. They were replaced with greater forest cover, including fir and deciduous species. Within the eastern United States, the distribution of pine experienced a major shift from a north-to-south coastal plain orientation to an east-to-west band along the southern ice front (Jacobson et al. 1987:280) and became a major component of the floral community in southern New England (Davis 1983:169). Regionally, broad-leaf species such as *Betula* spp. (birch), *Alnus* spp. (alder), and pine also increased. Locally, spruce was replaced by pine and *Quercus* spp. (oak) between 12 and 10 ka (Averill 1980:175).

Estimates vary widely regarding the extent of sea level regression during the Wisconsin glaciation, with 10 ka being the earliest accepted date (Bloom 1983b:42). Regardless, there is little debate that a broad expanse of the continental shelf along the Outer Coastal Plain was exposed during maximum glaciation and into the Late Wisconsin. Along the Inner Coastal Plain and the interior of the Outer Coastal Plain prior to 10 ka, the ancestral Delaware Bay was mostly a tidal river, and by 10 ka lowlands flanking the ancestral channel of the Delaware River were flooded, which formed pocketed tidal wetlands (Fletcher, Knebel, and Kraft 1990:283).

Most researchers agree that human adaptation to these changing environmental conditions involved mobile, kin-related bands of hunter/gatherers with restricted movements related to exploitation of the environment. However, there is some debate over the relative economic importance of hunting versus gathering activities. Based on information derived from the Shawnee-Minisink Site, McNett (1986) has suggested that these hunter/gatherers may have relied on a broad base of plant and animal resources, and that megafauna played a minor role in their subsistence program. Gardner (1978) has also suggested that site location is closely linked to the availability of high-quality lithic raw materials.

Most researchers (Cleland 1976; Stoltman and Baerreis 1983:254; Custer 1989; Custer and Wallace 1982:151) hold to the more traditional view that hunting played a significant role in the resource base. It is evident from a review of documented Paleoindian sites in New Jersey that riverine settings played a significant role in site location. Mason noted that over 50 percent of all uncontrolled Paleoindian projectile point finds came from within 16.0 kilometers (10.0 mi) of the Delaware River and an additional 25 percent from along its principal tributaries (Mason 1959). Paleoindian activity in New Jersey is represented only by a few well documented sites, including the Zierdt Site, the Plenge Site, the Port Mobil Site, and the Turkey Swamp Site. The greatest evidence for Paleoindian occupation comes from isolated surface finds of fluted points (Marshall 1982:10). While no major Paleoindian sites have been located in Camden County, one isolated fluted point was recovered from within the county (Chesler 1982:26). This suggests a presence of Paleoindian activity within the county.

4.1.3 Early Holocene (10 to 8 ka)

As mentioned above, estimates of sea level at the Pleistocene/Holocene interface vary widely, from as much as 120.0 ± 60.0 meters (393.7 ± 196.8 ft) (Daly, in Bloom 1983b:218) to as little as 40.0 ± 10.0 meters (131.2 ± 32.8 ft) (Bloom 1983a:42) below the present sea level. The deviation about the mean in both these estimates (50 percent and 25 percent, respectively) is perhaps the best measure of the degree of uncertainty about these figures. The early Holocene marks the beginning of marine transgression, a process which continued for 8,000 years.

Rapid changes in upland vegetation patterns continued during this time. A band boreal forest established itself across southern Canada, and a mixed forest began to appear in the eastern United States, reducing the area of open grasslands. Oak species, which had begun to migrate northward from the southern Atlantic Coast and Gulf of Mexico around 12 ka began to be a common element in southern New England by 9 ka (Davis 1983:169). Pine, birch, and alder also remained common. *Tsuga* sp. (hemlock) also began to invade the area at this time, expanding out of the eastern Great Lakes into the northeast (Jacobson et al. 1987:280).

The generally accepted date for the extinction of megafauna from North America is 12 to 10 ka. Various models have been proposed to explain this event and they generally fall into two camps: those favoring environmental change, and those favoring human predation as the primary causal factor (Semeken 1983:184). The resulting Holocene vertebrate community has been characterized as "pauperate" or "impoverished" (Semeken 1983:192) in comparison to the late Pleistocene faunal community. The reduction in vertebrate species diversity, together with rapid changes in the floral community at the beginning of the Holocene, must have necessitated significant changes in human adaptation to the physical environment.

4.1.4 Mid-Holocene (8 to 2 ka)

Sea levels rose continuously during this period as the Laurentide ice sheet completely abated. The rate of marine transgression has been calculated from tidal estuary formations. Between 7 and 3 ka, the submergence rate had been continuous at 0.2 meter (0.6 ft) per century (Bloom and Stuiver 1963, 1964). Significantly, the rate of submergence exceeded the rate of sedimentation. Therefore, coastal areas and river estuaries were open water until about 3 ka and lined with muddy banks or freshwater peat bogs (Redfield and Rubin 1962; Bloom and Stuiver 1964; Bloom 1983a:44). The term "fresh-water peat" is slightly misleading, as the species that make up this association are not truly freshwater, but tolerant of brackish water: *Sphagnum* (sphagnum moss), *Typha* (cattail), and *Cyperaceae* (sedges). The relatively fast-moving, cold river waters would not have produced significant estuarine faunal communities (Ogden 1977:26; Stoltman and Baerreis 1983:254).

The configuration of eastern North American vegetation began to develop its modern appearance during this period (Jacobson et al. 1987:282). Oak species continued to expand. Other deciduous species migrated individually into the northeast from the south or west. *Ulmus* sp. (elm), *Cayra* sp. (hickory), *Fraxinus* sp. (ash), *Ostrya virginiana* (ironwood), *Carpinus caroliniana* (American hornbeam), and *A. saccharum* (sugar maple) became increasingly common during the earlier phase of this period. Hemlock reached its maximum between 8 and 6 ka and began a precipitous decline throughout its range at 4.8 ka (Davis 1983:177). The factors responsible for this decline are unknown. Various successional species replaced it, such as birch, alder, and *Fagus* sp. (beech), and became more common in northeastern forests during the later phase of this period.

Castanea sp. (chestnut) began to appear in northeastern forests around the end of this period, ca. 2 ka.

Changes in the prevailing environment to more moderate conditions occurred simultaneously with a generalization of human foraging patterns. The "Broad Spectrum Revolution" began during the Early Archaic. With an expansion of the food base, plant gathering and processing played an increasingly important role in the subsistence system. The spread of various nut-bearing tree species out of the south at this time may have facilitated this transition. The Archaic period is also defined by an abrupt change in projectile point morphology and it is unclear whether the transition from Paleoindian to Archaic adaptations was purely indigenous or was accompanied by in-migration.

Similarities between Archaic projectile point types in the Mid-Atlantic region and those from the southeast have been noted (Coe 1964), and one of the few Early Archaic sites to be excavated archaeologically in New Jersey (Harry's Farm Site) produced a Kirk-stemmed projectile point, morphologically similar to earlier points found in the southeast (Bertland et al. 1975:18). The expansion of social groups out of the southeast and into a warmer, moister Mid-Atlantic region is possible (Kraft 1982:65) at the time when many southern plant and animal species also expanded their geographic distribution as far north as southern New Jersey after the Wisconsin glaciation (Boyd 1991).

The continued broadening of the subsistence system during the Middle Archaic is reflected in a generalization of the tool kit to include grinding stones, mortars, and pestles (Kinsey 1972). Increased sedentism is also indicated by an emerging settlement pattern that included large base camps located along major drainage systems. This is evident by several sites located near the APE along the Big and Little Timber creeks drainage floodplains. These sites, 36-Ca-32 and 36-Ca-33, show evidence of Late Archaic occupation, including a variety of stone tools and ceramics. Small procurement camps are also found in upland areas, possibly indicating the presence of social fusion/fission mechanisms, with small kin groups leaving larger base camps for seasonal exploitation of resources in other environmental niches.

4.1.5 Late Holocene (2 to 0 ka)

Significant changes in coastal morphology took place around 3 ka, just prior to the late Holocene. At 3 ka, the rate of coastal submergence subsided and was exceeded by the rate of sedimentation. Extensive intertidal mud flats developed along coastal margins, sometimes so quickly that freshwater sedge communities once found at the water's edge were buried by silt and mud (Bloom and Stuiver 1964). These mud flats were quickly colonized by salt marsh species, and, by 2 ka, muddy estuaries had become high grass meadows or the classic "New England type" of tidal salt marsh described by Davis (1910). Salt marsh formations, dominated by *Spartina patens* and *Distichlis spicata* (salt grasses) and *Scirpus olneyi* ("three square"), build quickly, at the rate of 2.0 to 6.0 millimeters (0.1 to 0.2 in) per year (Harrison and Bloom 1977). These salt marsh grasses transgressed landward and eventually covered many coastal areas that formerly sustained freshwater sedges.

Estuarine ecosystems are characterized as relatively homogeneous environments poor in species but high in biomass (Barnes 1974:12). Estuarine faunal community structure is dominated by microfauna and meiofauna, which are detritus feeders that subsist on the sediments deposited on mud flats. This substrate also supports large populations of mollusca and a diverse assemblage of predators (invertebrates, fish, and birds) that subsist on the detritus-feeding microfauna. Estuarine faunal species tend to be distributed in mosaics, with single species dominating specific areas in great numbers.

Much of the New Jersey Coastal Plain during the late Holocene was characterized by oak-hickory forests, which were comparable to modern, mixed, warm and moist upland forests (Robichaud and Buell 1973:208). In upland areas, hemlock re-emerged about 2 ka and gradually replaced the pioneer species such as alder, which had taken its place 3,000 years earlier. The expansion of boreal elements (e.g., larch, spruce, hemlock) around the Hackensack River corresponds to regional trends and is linked to the end of the hypsithermal and the onset of cooler and/or drier climatic conditions (Davis 1983:178). These boreal communities, described for the Hackensack River, probably existed along the Inner and Outer Coastal Plains as well.

Beginning around 3 to 2 ka, the end of the Archaic period is marked by population growth and increased sedentism. Within the eastern woodlands, evidence for permanent housing began to appear at this time (Griffin 1978:231), and the Transitional period (or Terminal Archaic) is marked, among other things, by the introduction of steatite bowls and steatite tempered ceramics. It seems clear that the use of heavy soapstone bowls reflected a more sedentary existence (Tuck 1978:38).

Custer (1984) interprets these changes as adaptive in the face of an environment changing from mesic (warm, moist) to xeric (warm, dry) conditions between 3,000 and 1,000 B.C. Custer (ibid.:37) emphasizes that the effect of these changes on biotic communities was to create changes in micro-environmental resource distribution rather than on net resource availability. The terminal Late Archaic and Transitional periods have been interpreted as an adaptation to changing resource procurement systems, with new emphasis on anadromous fish along major river systems in the Mid-Atlantic region (Stoltman and Baerreis 1983). The floodplain environs of the Delaware River, the Big and Little Timber creeks, as well as marshes in the vicinity, would have been ecologically attractive at this time, providing a variety of edible flora species. Inland waterways, such as the Big and Little Timber creeks, probably became tidal during the Late Archaic, judging by sea level rise observed for the lower portions of the Delaware River (Kraft and Chacko 1978:47). Tidal streams and marshes would have supported a greater diversity of species and the biological carrying capacity would have increased (Stewart 1987:28). This, coupled with the increase of edible plant species, would make the settlement of the Big and Little Timber Creek Watershed desirable at this time.

Custer (1984:40) followed Kinsey (1972:346-47) in interpreting the appearance of broadspear projectile points as morphological adaptations to a fishing industry, and whereas Kinsey postulates their use as fishing spear points, Custer interprets them as knives used for preparing weirs, nets, and other implements used for fishing. During the Late Archaic freshwater shellfish from inland waterways such as the Delaware River were probably gathered, but due to the fragility of the shells, evidence of their consumption is scarce (Kraft 2001:130). However, the significance of marine or estuarine gathering during this period has been questioned (Snow

1979). Evidence for exploitation of shellfish in New Jersey has been dated to the Early and Middle Woodland periods (Williams and Thomas 1982:124-125).

The Woodland period is marked by increased sedentism and a gradual shift from generalized foraging to the exploitation of native seeds and grasses to the use of tropical domesticates (maize, beans, squash) by the Late Woodland period. Although there is no direct evidence in the region to date, fire may have been used by this time to maintain open parklands and grass/forest ecotones attractive to many faunal species exploited by Native Americans and for swidden clearings for plant cultivation. This practice is well-documented in the northeast during the Contact period (Day 1953; Niering and Goodwin 1962; Wacker 1968).

A settlement pattern of seasonal fusion/fission is thought to have persisted through the Middle Woodland period in the Mid-Atlantic region (Kraft 1986:101). Within the Inner Coastal Plain, a pattern of seasonal population expansion/reduction along river drainages has been proposed for the Late Archaic/Early Woodland period (Mounier and Martin 1992a, 1992b). While numerous Middle Woodland habitation sites may be found within the New Jersey Inner-Coastal Plain (Williams and Thomas 1982:115), few Early or Middle Woodland period sites have been located along the upper Delaware River (Kinsey 1972:361-69).

4.1.6 Historic Settlement Horizon (ca. A.D. 1600)

Euroamerican expansion into the eastern United States is clearly evident in the palynological record (Heusser 1963:25-26; Brugam 1978; Davis 1983:178-79). As a biotic event, land clearing and the introduction of western agricultural practices in the seventeenth and eighteenth centuries are marked by a decrease in primary forest species and a concomitant increase in grasses and perennial herbaceous species, particularly ragweed. Pioneer successional species (e.g., birch and red maple) were frequently represented in later historic-era contexts after agricultural fields were abandoned. Contact period, Native American archaeological sites can be difficult to recognize, as their archaeological signature is often limited to the presence of European-manufactured goods in an otherwise Late Woodland period manifestation. No Contact period sites are documented in the area of the current project.

4.2 Documented Archaeological Sites and Previous Cultural Resources Surveys

No prehistoric archaeological sites have been recorded within the project APE. Multiple cultural resources surveys have been conducted in the area, some that have overlapped into the current APE. More than half of these surveys produced negative results for undocumented and undisturbed prehistoric or historic archaeological resources (Grossman-Bailey and Heuser 2003; Gimigliano et al. 1980; Heite and Heite 1986; The Cultural Resource Group Louis Berger & Associates, Inc. 1983; Kardas and Larrabee 1984, 1986; Kern and Claggett 1979; Pennington and Schopp 1998; Cultural Resource Consulting Group [CRCG] 2000; Howson 1996; Wilson n.d.; Maleolem Pipnie Incorporated 1997).

A number of previously conducted cultural resource surveys within a 2.4-kilometer (1.5-mi) radius of the project APE did record sites (Crist et al. 1996; Thomas et al. 1985; Hunter Research 1996; Hunter et al. 1999; Zmoda et al. 1985; Kingsley and Benedict 1992; Mounier 1985, 1991; Posten 1979). Two investigations documented prehistoric archaeological resources in close proximity to the current APE. In 1974, Jack McCormick & Associates, Inc., identified two prehistoric sites located along the banks of the Big Timber Creek south of the current APE. One site, referenced as A38, was located at the intersection of I-295 and Creek Road. The second site, referenced as A37, was situated along Creek Road, 0.5 kilometers (0.3 mi) northwest of I-295. Both sites were listed as obliterated (Gimigliano et al. 1980). In 1996, Hunter Research conducted a survey for a portion of I-295 between the Walt Whitman Bridge and Route 73. Site 28-Ca-92 was identified on the northern side of I-295 on a knoll overlooking Little Timber Creek, 1.4 kilometers (0.9 mi) from the Route 168/I-295 interchange. The site consisted of a prehistoric occupation with stone tools and ceramics dating to the Late Archaic/Early Woodland (Hunter Research 1996; Hunter et al. 1999).

Non-systematic archaeological site surveys conducted during the first half of the twentieth century and information provided by avocational archaeologists provide the only site location available for the I-295/I-76/Route 42 interchange area. Although these sources have provided us with the greatest amount of information on prehistoric sites in the region, the quality of that information is generally limited by site location and possibly a list of artifacts recovered from surface collection. An examination of the Skinner and Schrabisch (1913) survey revealed

multiple sites within the drainages of Big and Little Timber creeks. However, none of the sites were in close proximity to the project APE. Examination of Dorothy Cross' (1941) Indian Site Survey of the 1930s, also identified multiple sites along the Big and Little Timber creeks drainages. Two sites identified adjacent to the project APE, 28-Ca-32 and 28-Ca-33, contained ceramic and flakes, but no cultural affiliation was ascribed to the finds (Cross 1941:239).

4.3 Historic Cultural Context

Early Delaware Valley History

Henry Hudson was the first European explorer credited with the discovery of the Delaware Bay in 1609 (Pomfret 1956:4). The Dutch retained Hudson, an Englishman, to explore the New World and stake a claim for territory in the name of Holland. Other Dutch explorers soon followed, causing "the opportunistic Amsterdam and Hoorn merchants" to form the New Netherland Company in 1614 (Weslager 1961:44). In 1616, Cornelis Hendricksen explored the Delaware River using his yacht ONRUST. Cornelis Jacobsen May also sailed in American waters contemporaneous to Hendricksen. May returned in 1620 to make further explorations and obtain trade goods from the natives. His explorations of Delaware waters caused the southern tip of New Jersey to be named in his honor, Cape May (ibid.:43-48). His reports of the lands found provided the impetus for finalizing the charter for the West India Company in 1621. Weslager indicates the power this company held when he wrote:

> Cornelis Jacobsen May returned to Holland in the fall of 1620 with tales of "new and fruitful lands" he had discovered, and he was soon engaged by the West India Company to take a party of colonists to New Netherland. Chartered on June 3, 1621, the Company was given a monopoly for twenty-four years to trade in certain specified foreign waters…. The Company was also delegated power to make alliances with native rulers, appoint governors and other officers, administer justice, and lay down colonies. (ibid.:48)

May departed Holland in March 1624 on the NEW NETHERLAND with a company of 30 families, mostly Walloons, to establish a colony. His first landfall in America was the mouth of the Hudson River. During the same year, May sailed south to Delaware Bay and continued up the river to Matiniconck (Burlington) Island, where he oversaw the construction of an outpost to house the Walloons and their families (ibid.:63-81). Upon discharging his passengers, Cornelis

May returned to Holland in October 1624 (ibid.:58). Within two years, the Walloons abandoned this island stronghold when Peter Minuit ordered all New Netherland colonists to converge at Manhattan and strengthen the colony there (ibid.:74-75).

The founders established the West India Company to promote commerce in the Dutch New World. With the withdrawal of the Walloons from Burlington Island in 1626, Holland lost its ability to trade effectively with the natives on the Delaware River. Responding to this problem, Isaack de Rasière, first secretary of the New Netherland province, wrote to Holland in September 1626, asking:

> [W]hether it would not be advisable to erect a small fort on the South River. This, according to my judgment, is not only advisable, but necessary for the following reasons: First, to keep possession of the river, in order that others may not precede us there and erect a fort themselves.
>
> Secondly, because, having a fort there, one could control all the trade in the river. Thirdly, because the native say that they are afraid to hunt in winter, being constantly harassed by war with the Minquaes, whereas if a fort were there, an effort could be made to reconcile them (ibid.:58-59).

Evidently approval was swift in coming, for workers completed the trading post called Fort Nassau, constructed on a small rise at the extreme southerly end of today's Gloucester City, before the end of 1626 (ibid.:122). Regarding the fort's location, Isaac Mickle, writing in his seminal 1845 work, *Reminiscences of Old Gloucester County*, stated, "We are told it was at Gloucester Point, and that, from the elevation of the land and the narrowness of the river, is certainly the most likely place in the vicinity…" (1845[1968]:4). After completing Fort Nassau, the Dutch occupied it continually only during the winter hunting season. Weslager states, "Instead of maintaining permanent employees there, it was less expensive for the Company to send sloops from Manhattan at designated times to meet the Indians when they returned from hunting and were ready to barter their winter haul" (1961:122). Reportedly, only one vessel was used during this period for Delaware River trade (ibid.) (Figure 9).

By 1638, Dutch control of the Delaware River had greatly diminished due to the arrival of the Swedes, led by former Dutch Governor of New Netherland Peter Minuit, who transformed the Zuydt (South or Delaware) River portion of New Netherlands into New Sweden, or Nya Sverige.

Figure 9
Undated Anonymous Map Showing Dutch Occupation in the Vicinity of Fort Nassau

I-295 / I-76 / Route 42 Direct Connection
Camden County, New Jersey

Map Document X:\Graphics\Projects\P-593A\Fig9_AnonymousMap.ai

Source: Undated, Anonymous Map.

Under Swedish control, the boundaries of New Sweden were enlarged from the Schuylkill River to the falls or rocks at today's Trenton. During the 1640s, English interlopers from New Haven attempted two separate settlements,one on the Schuylkill River and one near today's Salem, New Jersey, but each time Dutch and Swede forces drove off the invaders (Weslager 1961:12; Hoffecker et al. 1995:73). The Swedes forced the English from the Schuylkill in 1642. In 1643, Johan Printz arrived as the new governor of New Sweden, succeeding Peter Minuit. An experienced military leader, Printz assessed the weak Dutch presence on the Delaware and proceeded to erect Fort Elfsborgh near today's Salem, New Jersey, to control all access to the river (Figure 10).

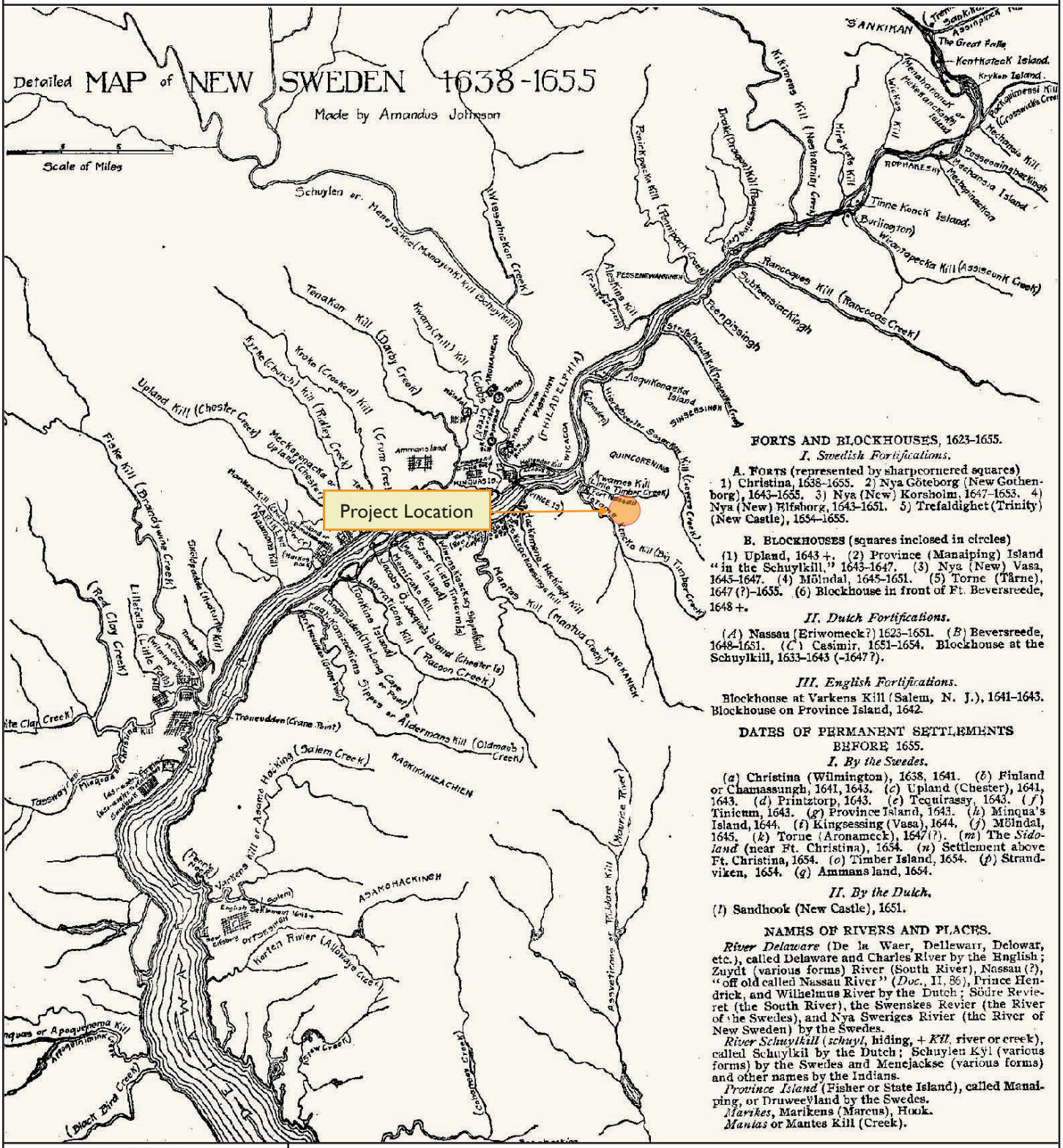
Competition in the fur trade between the Swedes and Dutch heated up when the Swedes constructed a series of three trading posts or forts on the Delaware's western shore: Nya Korsholm, on Province Island at the Schuylkill-Delaware River confluence; Vasa or Wasa, up the Schuylkill River at Kingsessing; and a blockhouse called Molndall, erected on Cobbs Creek. All of these sites are located in Pennsylvania. At the latter location, known to the indigenous people as Kakarikonk, Printz also erected a water-powered mill. Through these trading centers, the Swedes intended to obtain beaver pelts from the Minquas before they ever reached the Delaware River and crossed the river to the Dutch traders (ibid.:141-142). In April 1648, reacting to the almost total fur trade usurpation by the Swedes, the Dutch erected the palisaded Fort Beeversreede on the Schuylkill in Passyunk, on the opposite shore from the Swedish outposts (ibid.:146-147). The Swedes countered by placing a new fortified trading post directly in front of Beeversreede, blocking Dutch access to its own facility (ibid.:150). Finally, the Dutch gave up on its dealings with the Swedes and acquired land from the Native Americans in today's Delaware State, dismantled forts Nassau and Beeversreede and sailed down river to erect Fort Casimir in 1651 (ibid.:152-158).

The Dutch and the Swedes vied over the territory until the Dutch once again gained control of the Delaware River in 1655 (ibid.:12). Swedish influence and settlers remained in the area; however, they settled in the area called Wicaco, centered around Old Swedes Church in Philadelphia. They also settled along many of the small tributary streams to the Delaware River in Pennsylvania and New Jersey on land that the natives granted them (Weigley et al. 1982:3-4).

Figure 10
1915 Johnson Map of New Sweden, 1638-1655

I-295 / I-76 / Route 42 Direct Connection

Camden County, New Jersey



Map Document X: Graphics\Projects\P-593A\Historic Maps\Fig10_1915JohnsonMap.ai

Both the Dutch and the Swedes lost their control of the region by 1664, when England took New Netherland, thereby "Making England masters of the Delaware" (Cunningham 1953:196). The Dutch temporarily regained control of this territory in August 1673; however, six months later, Holland finally and forever surrendered all claims to their Delaware River lands to the English under the Treaty of Westminster (Weslager 1961:13).

The English Take Control

In 1664, after winning the Delaware River from the Dutch, James, the Duke of York, gifted the land that comprises New Jersey to Lord Berkeley and Sir George Carteret. The name "New Jersey" was derived from Carteret's governorship of the Isle of Jersey in 1649, a location he successfully defended for the Royalists (Prowell 1886:22). The English wasted no time in developing settlements along the eastern shore of the Delaware River. By February 1665 to 1666, New Jersey Governor Philip Carteret wrote from New York to "Mr. W$^{m.}$ Jones and the rest of the undertakers of the Plantation upon Delaware bay or River" (Whitehead 1880:51-54). No further records have been found regarding this "plantation," and it is unknown whether settlement actually occurred. However, the proposed plan does demonstrate an English determination to quickly establish farms and communities within its new territory won from the Dutch. As stated above, in July 1673 the Dutch reclaimed New York, but by February 1674, the Dutch surrendered all of its land in finality to the English under the Treaty of Ghent. With the territory back in British control, King Charles II issued a new patent to his brother, the Duke of York. James, in turn, executed a new deed of conveyance to Carteret (Prowell 1886:23).

With the Dutch governmental presence permanently removed from the territory, English settlers began arriving along the Delaware River seven years prior to William Penn establishing Pennsylvania. These English settlers occupied settlements taken from the Dutch, Finns, and Swedes, beginning with John Fenwick's colony in Salem, New Jersey, during 1675 to 1676. Fenwick, acting as a partner of Edward Byllynge, a bankrupt London merchant and brewmaster, acquired title to one-half of New Jersey from Lord Berkeley in 1674 under Berkeley's original deed of 1664. Byllynge's creditors protested Fenwick's acquisition of this large expanse of land, suspecting that Byllynge paid for it with money that rightfully belonged to them. Most of the creditors were members of the Society of Friends or Quakers, so to resolve the disagreement,

they collectively prevailed upon William Penn, Gawen Laurie, and Nicholas Lucas to act as mediators in deference to formal court action. After due consideration and some rancorous negotiations, Penn granted one-tenth of the one-half of New Jersey to Fenwick in a tripartite deed and viewed him as a partner or tenant in common in the yet undivided land. However, Fenwick, always desirous of establishing his own colony, wasted no time gathering a band of settlers to settle Salem, Fenwick's Colony. The group of "adventurers" sailed for the New World in June 1675, an action that incensed Penn, Laurie, and Lucas, as Fenwick had signed an agreement to participate in the division of the entire landmass, receiving one-tenth of the each 10,000.0-acre block. Instead, Fenwick chose to take his land in one block, selling 148,000.0 acres to 50 investors and settlers (Pomfret 1956:62-75).

In August 1676, William Penn dispatched James Wasse, a London surgeon, to New Jersey with the West Jersey Concessions and Agreements in his possession. Penn also designated Wasse to negotiate with John Fenwick concerning land title issues and his disregard of the signed agreement. William Penn and company deputized Richard Hartshorne and Richard Guy to go with Wasse as agents. A document outlining the duties of the agents accompanied Wasse from England. The first two paragraphs describe how to deal with Fenwick and his settlers, as did various other sections in the instructions. The document directed Wasse to met with Fenwick and as many of his followers as possible and inform them that the title to their land might be unfounded. Fenwick's continuing capricious actions finally led to his arrest and imprisonment in New York under Governor Andros. He returned to Salem under probation in October 1677 and continued to create problems for Penn and the other trustees (Whitehead 1880:220-224; Pomfret 1956:76-79).

British Settlement of Lands Above Fenwick's Colony

Dealing with the Fenwick problem was not Wasse's only assignment. In an effort to leapfrog around the issues in Salem, paragraph three of the commissioning document orders Wasse to locate land for a town:

> …thereupon some Creek or bay in some halthy Ground find out a Place fitt to make a Setlment for a Towne and then goe to the Indians and agree wth Them for a Track of

> Land about the said place of Tuenty or Therty myles long more or less as yee see met, and as broad as yow see meet…. (Dunn and Dunn 1981:412).

In paragraph four, it appears Penn commissions Wasse to acquire a site for a second town:

> …Then Lay out four—or five Thousand Akers for a Towne and if Agustine will undertake to doe it reasonably lett him doe it for He is the fittest Man and if He think he cannot Survey soe much being in the winter time then let him lay out the less for a Towne at present If it be but two Thousand Akers and let him devide it in a hundred parts…. (ibid.).

As illustrated on a map published in London by Robert Thornton and Robert Greene, it appears that Wasse carried out his commission with great success (Figure 11). Based on Thornton and Greene's map, initial settlers who arrived on the Delaware from London were slated to settle at Wasse's Bethlem Town within Bethlem Township, aka Arwames, an old aboriginal name for what would become Gloucestertown. Historian Samuel Smith writes, "To begin a settlement there, [Thomas] Olive sent up servants to cut hay for cattle he had bought…" (Smith 1765 [1877]:98). Those who emigrated from Yorkshire were designated to develop their community at the Falls of the Delaware, the present site of Trenton, where Wasse had set aside a 5,000.0-acre reserve. When the Yorkshire pioneers realized the distance that separated the two settlements, they wrote to the London transplants and proposed settling a previously unplanned community together in 1677 with the proprietary boundary line running right down the middle of High Street, the main east-west street in the proposed City of Burlington (ibid.). When the London settlers abandoned Arwames and most of the Yorkshire pioneers left the falls and relocated to Burlington, Wasse's proposed and surveyed settlements quietly evaporated and they remain missing in much of the historical documentary record.

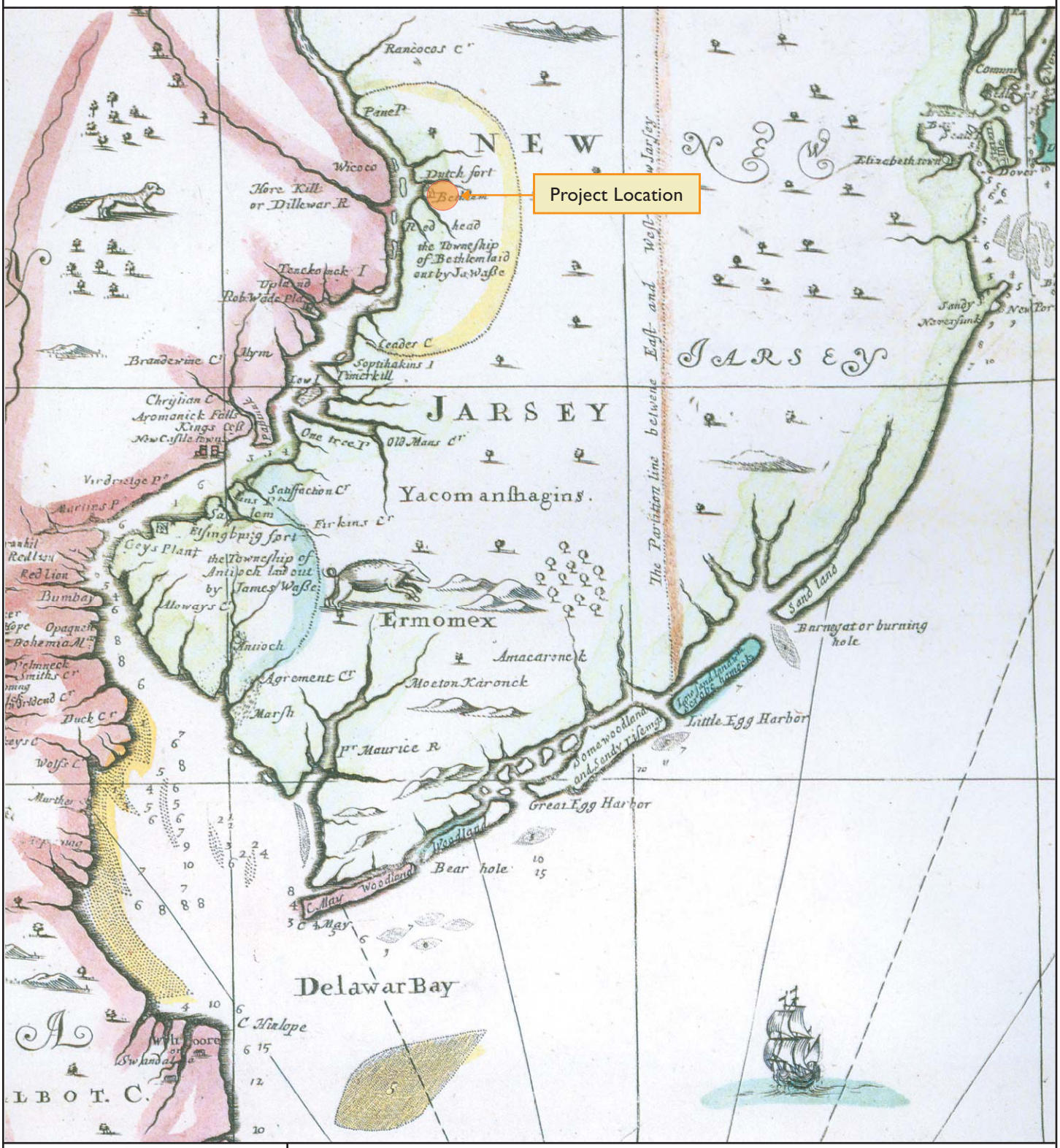
Following Burlington, the next English settlement along the Delaware River occurred in 1682 when the Newton Colony began on the main branch of Newton Creek in what, today, is West Collingswood, Camden County. The Quakers who came to settle Newton emigrated from Ireland, hence the so-called "Third Tenth" of Proprietary lands became known as the "Irish Tenth" (Smith 1765[1877]:150-152; Prowell 1886:29-30) (Figure 12). The English superimposed their own location names over pre-existing ones (e.g., Gloucester). The Swedes acted as interpreters for the English Quakers when they purchased land in Gloucester County

Figure 11

Circa 1678 Thornton & Greene Map Showing Bethlem Town

I-295 / I-76 / Route 42 Direct Connection

Camden County, New Jersey



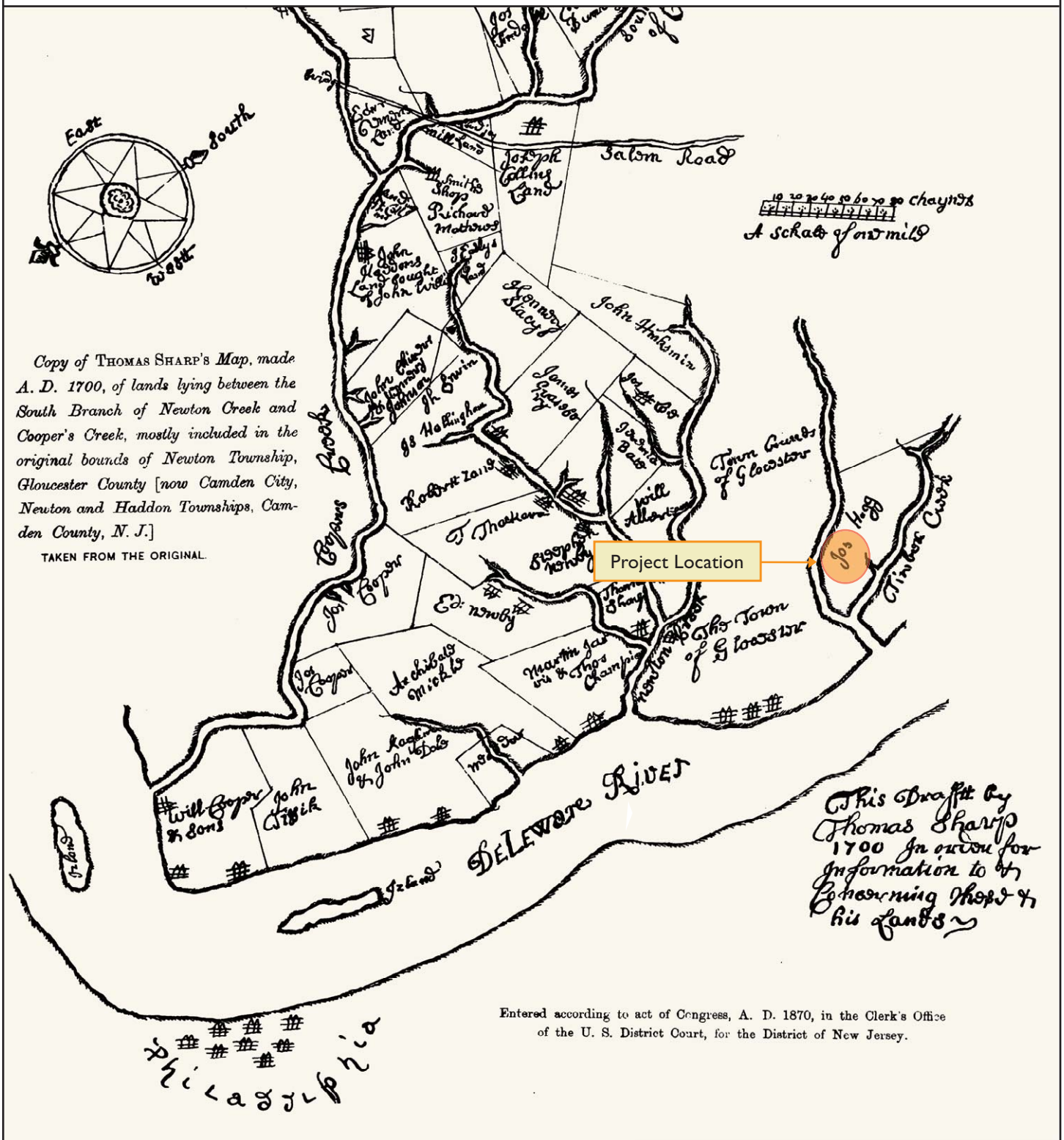
Map Document X: Graphics\Projects\P-593A\Archaeology\Fig11_1678Thorton&GreenMap.ai

Source: Circa 1678 Thornton & Greene Map.

Figure 12
1700 Sharp Map Showing the Newton Colony

I-295 / I-76 / Route 42 Direct Connection

Camden County, New Jersey



Not to Scale

Project Location

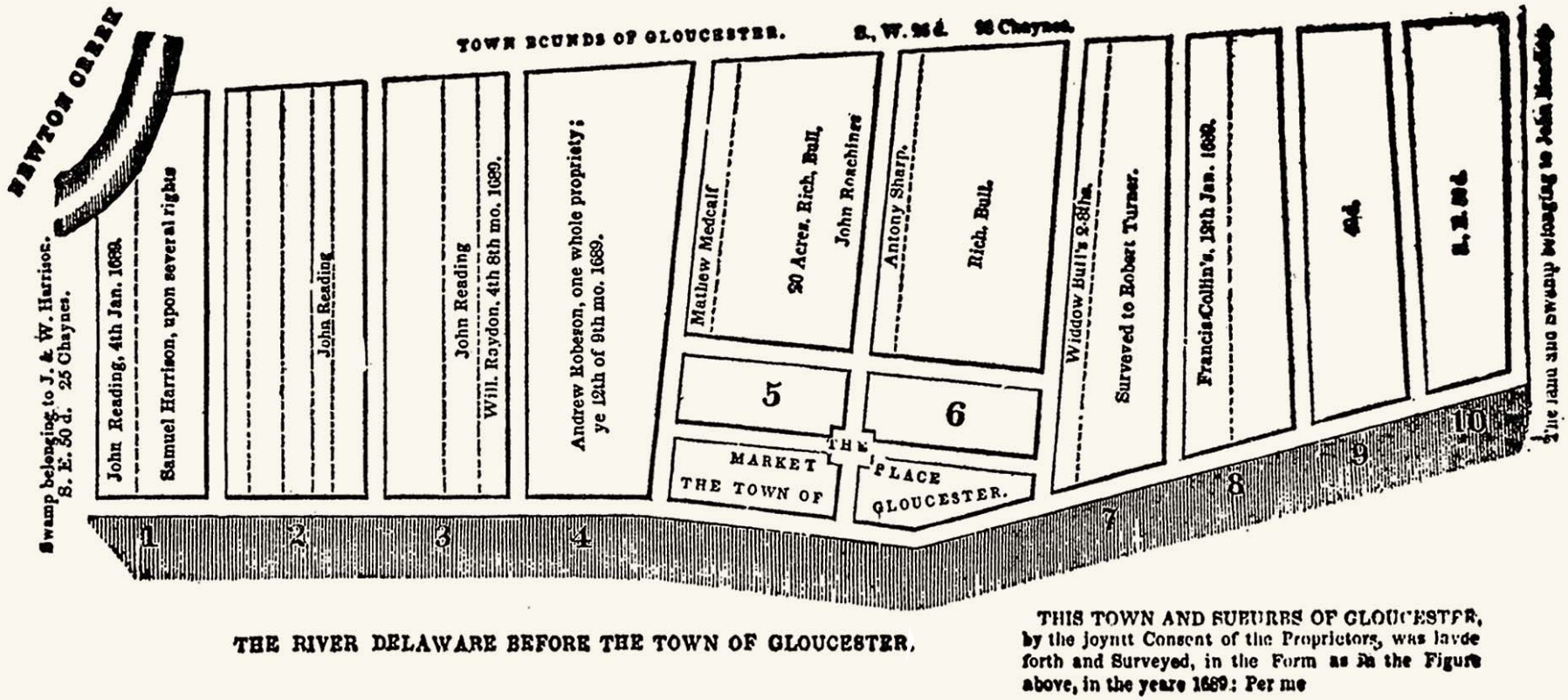
Map Document X: Graphics\Projects\P-593A\Archaeology\Fig12_1700SharpMap.ai

from the aborigines. The natives welcomed the new purchasers, for they had previously sold most of the land to the Dutch and the Swedes. Reportedly, in 1681, William Penn "seriously considered the present site of Paulsboro as the place where he might build the center of his vast holdings" (Cunningham 1953:197). William Penn initially showed great interest in this large English colony, but later decided the land was too low and turned his attention to the higher banks on the Delaware River's western shore, where he founded Philadelphia (ibid.).

As a result of the London émigrés joining with their fellow countrymen from Yorkshire to create Burlington, settlement at what would become Gloucestertown did not actually occur until 1684 and the inhabitants did not apply the name "Gloucester" to the town or the county until 1687. Most sources indicate that Gloucester was laid out in 1677, at least on paper, which coincides with Wasse's preliminary survey work and the arrival of the London settlers (Smith 1765[1877]:496; Mickle 1845[1968]:45-51). As laid out, Gloucestertown consisted of town lots, lands within the town bounds, and the surrounding land outside of town (Figure 13). Prominent early surnames in the Gloucestertown area include Hugg and Harrison. Both families acquired vast tracts of land through purchases in the early years of settlement and retained their holdings within each family for successive generations (Clement 1877:283-291; Prowell 1886:584).

The Hugg Family

In April 1677, Robert Turner, Robert Zane, Thomas Thackara, William Bates, and Joseph Sleigh, all Quakers and residents of Ireland, purchased one whole share of proprietary (one-tenth of West Jersey) from Edward Byllynge and his trustees. These proprietors chose to locate their settlement in the third tenth, located between Pennsauken and Big Timber Creek, today's Camden County, which became known early as the Irish Tenth (Prowell 1886:30). This group of Quakers had originally fled from England to Ireland to escape religious persecution, but nonetheless they soon became known as Irish Quakers. During 1681, the group arranged to sail to West Jersey on board YE OWNERS ADVENTURE, arriving at John Fenwick's Salem Colony late in 1681, where they spent the winter. The following spring, the settlers moved north along the Delaware River until they arrived at the mouth of Newton Creek. Moving up the stream, the Quakers chose a site on the north shore of the rivulet and founded Newton Colony (Leap 1981:6).



THE RIVER DELAWARE BEFORE THE TOWN OF GLOUCESTER.

THIS TOWN AND SUBURBS OF GLOUCESTER, by the joynt Consent of the Proprietors, was lavde forth and Surveyed, in the Form as in the Figure above, in the yeare 1689: Per me

Not to Scale

Figure 13
1845 Mickle Map Showing Early Layout of Gloucestertown

I-295 / I-76 / Route 42 Direct Connection

Camden County, New Jersey

Map Document X: Graphics\Projects\P-593A\Archaeology\Fig13_1845MickleMap.ai

As part of his proprietary holding, Newton colonist Robert Zane took up 500.0 acres of land in the fork between Little Timber and Big Timber creeks, and then sold the same land to newly arrived John Hugg, the emigrant, in 1683, recorded in February 1686 (Clement 1877:284; West Jersey Colonial Deeds B:103; Surveyor General's Office [SGO] Survey Book, 55). This transaction represents John Hugg's first land purchase in the New World and his plantation extended more than a mile up Big Timber and Little Timber Creek (Clement 1877:284-285). He continued adding to his property holdings until he possessed more than 1,300.0 acres (SGO Survey Book H:261). Eventually, the Hugg family possessed all the land between Big and Little Timber creeks for a distance of 3.0 miles up both streams (Prowell 1886:704). With this designated distance (3.0 miles) interpolated using a modern U.S. Geological Survey (USGS) quad map, the Hugg property extended along Little Timber Creek from its confluence with Big Timber Creek all the way to the Grenloch Branch railroad right-of-way situated about halfway between Bell Road and the Black Horse Pike (Route 168). A dwelling stood near the confluence of the two streams. John Hugg established a landing on Big Timber Creek, which quickly became a place of public and commercial intercourse. John Hugg remained tenured at his farm until his death in 1706 (SGO H:261; New Jersey Wills 6H).

In his will, John devised the homestead plantation to his sons, John, Jr., and Elias, who had already attained adulthood when John, Sr., arrived in America. They located on lands close to their father's plantation. When John, Sr., died in 1706, he devised his plantation to his two sons to be equally divided between them, with the "lane" (the Irish Road or Sandy Lane; now known as Browning Road) serving as the division line. The Big Timber Creek side of the farm went to John, Jr., while the lands fronting on Little Timber Creek descended to Elias (SGO H:261; New Jersey Wills 6H). The Harrison-Glover house was eventually constructed on land located within Elias's portion of the plantation. There is no available information related to the dwelling that stood at the homestead during the Huggs' ownership (near the confluence of the two creeks), nor is there direct evidence that Elias's property consisted of any portion of the dwelling now known as the Harrison-Glover House during his ownership. At his father's old homestead, Elias maintained a store for the watermen who navigated Big Timber Creek in flatboats and scows. Whiskey and tobacco dominated the store's sales, and many unseemly events occurred here as

the rough and tumble clientele waited for the wind and tide to change (Clement 1877:289-290). Secondary genealogical sources indicate that Elias's birth occurred in 1668 and that he married Margaret Collins, daughter of pioneer settler Francis Collins, sometime prior to 1695 (Hugg Family Genealogy website 2003; Clement 1877:76). Elias and Margaret's children included three daughters: Sarah, Mary, and Rebecca; and a son, John. Margaret died in 1723, perhaps in childbirth with John or Rebecca (New Jersey Wills 6H; West Jersey Colonial Deeds EF:145).

Article 18 of the proprietary memorandum that established Gloucestertown directed that a road be laid out from High or Market Street in Gloucester to an intersection with the Salem Road in today's Laurel Springs even before the surveying of lots in town. Settlers completed this road in 1686 (Prowell 1886:585; Leap 1981:23-24). It evidently fell into great disrepair, for in December 1712, Richard Bull and Thomas Sharp, two of the Highway Commissioners for Gloucester County, received petitions for an official road between the head of Timber Creek and Gloucestertown (Stewart 1917:15-16). Stewart writes:

> Commonly called the Irish Roade, the thoroughfare began at "…Porter's Mill [near the head of navigation on Big Timber Creek—present-day Laurel Springs] and from thence falling into the Old Roade that went to Burlington and along the same over Sheeyanees Run from thence to other [Otter] branch and thence over the hills to Beaver Branch by John Huggs land thence to the brick kills [kilns] upon Elias Huggs land and from thence upon a straight course to the little Bridge [bridge over Little Timber Creek] and thence along the Kings Roade to Gloucester…." (ibid.)

The blazing of this road followed, in part, the lane leading to Hugg's plantation and now known as Browning Lane, changing the already extant Hugg's Lane into one course of an official public road. Little is known about the brick kilns located on Elias's land, other than the fact that one of his brother's sons, Gabriel Hugg, was a bricklayer, and a 1984 Gloucester City archaeological report lists a wide array of ceramics, including redware, raising the concept that the brick kilns may have also been used for primitive pottery production (New Jersey Wills 205H; MAAR Associates, Inc. 1984:II-34).

Elias Hugg retained all of his inherited property for 35 years before he and his son, John, finally disposed of the Little Timber Creek side of the old Hugg plantation during January 1741, selling it to Bristol, Pennsylvania, merchant, William Buckley (West Jersey Colonial Deeds EF:145). It

is unclear why Buckley purchased the property other than perhaps as an investment. It seems certain that Buckley did not reside on the property, as he had a solid record of serving Bristol Borough in Pennsylvania as a burgess between 1742 and 1758 (Battle 1887:434). The sale proceeds amounted to £100, and the deed described the property as:

> …a Certain Massuage Plantation or Tract of Land thereunto belonging situate in Gloucester County aforesaid Bounded Northward with little Timber Creek and on the other Sides with the Land late of John Hugg deceased, brother of the said Elias and Lands of some other person or persons It being the moyaty of the Land late of John Hugg y^{e} father of y^{e} S^{d} Elias which he devised until him by his last Will and Testament of the Twentieth day of December in the year 1706 and containing be Estimation four hundred Acres…. (West Jersey Colonial Deeds EF:145).

It seems unusual and perhaps significant that Elias Hugg's son John is listed as a party of this transaction, since Elias alone held the property through his father's will. At some point subsequent to Elias's moving into his deceased father's house after 1706, Elias's son, John, became of age and may have resided there until he and his father sold the plantation to Buckley. Elias included his son in the transaction presumably because John was the *de facto* possessor of the house and farm.

William Buckley received less than the estimated 400.0 acres in Elias's share of his father's plantation because the Huggs sold 100.0 acres to John Jones, 30.0 acres to William Crowes, and 12.0 acres to Enoch Allison (West Jersey Colonial Deeds EF:246). After the sale, Elias Hugg reportedly relocated across the Delaware River and took up residence in Philadelphia, ending Hugg tenure on the land (Hugg Family Genealogy website 2003).

The Harrison Family

The Harrison family of Gloucestertown began its West Jersey experience with Samuel Harrison, a mariner, and his wife, Sarah. Children of this union included Samuel, Joseph, and William, along with at least two daughters who married a Clement and a Hinchman respectively (Harrison Family Genealogy website 2004). Samuel the mariner died intestate sometime during the month of February 1703 or 1704. The courts granted Sarah, Samuel's wife, letters of administration for the estate on March 1, 1703 or 1704 (Nelson 1901:213-214). Subsequent to becoming Samuel

Harrison's widow, Sarah Harrison married Richard Bull of Gloucestertown, son of Thomas Bull. She outlived her second husband and the courts granted her administration of Richard's intestate estate in November 1723. Richard's brother, Thomas (Jr.), assented to her administration (Nelson 1901:72). She retained much of Richard's land after his death and passed it on to her Harrison children through her will, dated January 6, 1742, and probated August 20, 1744. William Harrison, the son of Samuel the mariner and Sarah Harrison Bull, established a plantation between Little Timber Creek and King's Highway (which did not include the property that would later include the Harrison-Glover house) after receiving the land through his mother's will, which read in part, "Son, William Harrison, to have the rest of lands, meadows and buildings" (Honeyman 1918:74).

At some point following his mother's death and being devised land according to her will, he erected a milldam above the tide on Little Timber Creek and constructed a gristmill. The dam was certainly extant by November 1760, when the colonial legislature passed an act that permitted a dam to be erected, thereby preventing tidal flow and allowing landowners adjacent to the creek to cultivate meadowlands. The act in part reads:

> Be it enacted by the Governor, Council and General Assembly, and it is hereby Enacted by the Authority of the same, That from and after the Publication hereof, the said Bank, Dam, and all other Water-Works already erected, or that shall or may at any Time or Times hereafter, be found necessary to be erected, for the more effectual preventing the Tide from overflowing the Meadow lying on the aforesaid Creek, shall be erected, supported and maintained at the equal Expence [*sic*] of all the Owners and Possessors of the same, in Proportion to the Quantity of Meadow that each of the said Owners or possessors now or hereafter may hold on the said Creek, between the aforesaid Dam, and a Dam called **William Harrison's** Dam, near the Head of the aforesaid Creek (Bush 1982:56 [underlining and bolding added for emphasis]).

This portion of the act indicates that Harrison's milldam had already been constructed. At some point after he built this mill, William Harrison relocated to Greenwich Township, Gloucester County, where he established a new plantation and constructed another gristmill along with a sawmill. Sometime prior to November 1, 1762, William Harrison died and devised to his son William (Jr.) the "plantation where I formerly lived, and where he now lives, to him and his heirs…" (New Jersey Wills 795H). The plantation included the gristmill.

In November 1776, William Harrison Jr. heard the call of his revolutionary countrymen and mortgaged his land and gristmill to raise a company of New Jersey militia. According to the written testimony of his grandson, Philadelphia locomotive builder Joseph Harrison, William clothed and armed the men who served in his company. The mortgage that Harrison presented to mortgagee Joseph Fox had a term of three years and a penalty of twice the document's face value. However, with Harrison constantly on the go with military action, he greatly neglected his personal affairs. The mortgage due date in 1779 came and went with no payment. Fox died, and the executors of his estate foreclosed on the mortgage in September 1783, as reflected in the sheriff's advertisement. Placed in the *Independent Gazetteer*, published in Philadelphia, the sheriff's advertisement read:

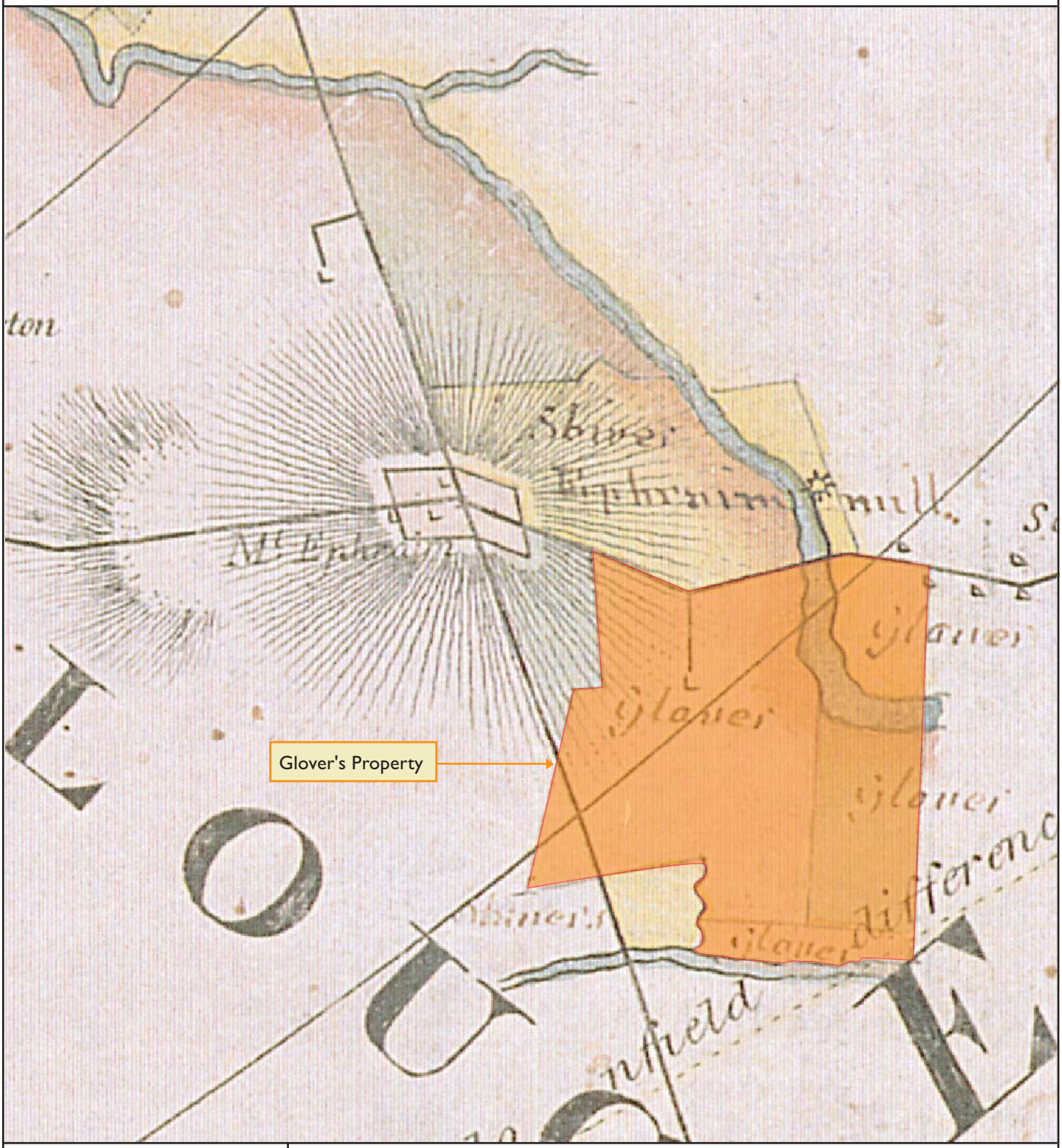
> Thomas Denny, Sheriff of Gloucester County, adv. For sale a tract of land within the bounds of the town of Gloucester, the property of William Harrison seized at the suit of William Smith, the executors of Joseph Fox, deceased, Thomas Leaman and others. It is bounded by lands of Samuel Hugg Esq., Daniel Smith, John Glover, Jacob Albertson, lands late of Joseph Harrison, deceased, and others. It lies on the main branch of Little Timber Creek, which runs through the tract, and contains 613 acres and three-quarters, being divided as follows: a plantation of 155 acres and three-quarters with a brick house; a plantation adjoining containing 287 acres and one quarter with a brick house; a plantation of 70 acres and three quarters with a frame house and a grist mill built with stone; and three tenements adjoining the latter of 35 acres each. To view the premises and to see a map of the whole, apply to Mr. William Eldridge living on the first mentioned farm. Sale will be by vendue on 22^{d} September at the house of William Hugg, innkeeper, in the town of Gloucester (Wilson 1988:417-418).

No buyers came forward at the time of the sale, but in April 1784, William Eldridge purchased the 155.0-acre tract where he resided at the time of the sale (Gloucester County Deeds C:424). Ephraim Tomlinson acquired the larger 287.0-acre plantation, located on the south side of Little Timber Creek in April 1785 (Gloucester County Deeds L:504). A review of extant tax ratable lists revealed no tax was levied for the mill in 1790, indicating that no one was leasing or operating the mill. However, in prior tax years, including 1773, 1780, 1781, 1782, 1783, 1784, 1786 and 1788, William Harrison paid a tax for owning or operating a gristmill (New Jersey Tax Ratables). Harrison continued to operate and pay taxes on the mill because it did not sell at the sheriff's sale.

In August 1792, William Eldridge finally purchased the gristmill and 76 acres of land from Sheriff Joseph Ellis, ending William Harrison's tenure at the mill (Gloucester County Deeds K:473). It appears that Eldridge leased out the mill to a number of operators, based on the tax ratable lists available between 1791 and 1802 (New Jersey Tax Ratables). Meanwhile, at some point subsequent to his purchase of the gristmill, Eldridge constructed a fulling mill on the south side of Little Timber Creek, opposite the gristmill. He used the same millpond and dam and probably excavated only a new millrace for the fulling mill (Clement, Maps and Draughts, Vol. 6:81). Based on an inference in the road return for what today is the Black Horse Pike, it appears Eldridge constructed the fulling mill prior to 1795 (Gloucester County Road Return, Book A:190). In March 1805, Eldridge sold the gristmill and possibly the fulling mill to Abraham Fenimore, along with 115.0 acres on both sides of Little Timber Creek, with a right to enlarge the millpond by overflowing other Eldridge land (Gloucester County Deeds I:267). Fenimore retained the mills and millpond for three years before selling the complex, along with 46.0 acres of land, to John T. Glover in March 1808 (ibid. Y:441). Since Glover already owned a fulling mill he had inherited from his father, located on Kings Run in Haddon Heights, he reportedly discontinued operations at the former Eldridge fulling mill (Boyer 1962:44). Although it is unknown when the gristmill ceased operations, it is probable this occurred simultaneously with the fulling mill discontinuance, thereby allowing the millpond to be drained and the cessation of maintenance on the milldam. It is unclear when Glover drained the millpond, but it appears that the John Hills's 1808 map, *A Plan of the City of Philadelphia and Environs*, corrected through December 1814, shows only a stream flowing under what, today, is the Black Horse Pike and the map does not indicate a millpond (Hills 1808/1814) (Figure 14). Based on a recent visual observation, Conrail's Grenloch Industrial Track (formerly the Camden County Railroad) apparently uses a small section of the milldam on the Mount Ephraim side of Little Timber Creek for its right-of-way, but the remainder of the dam is gone.

Another part of William Harrison's property that the sheriff advertised was the former Elias and John Hugg plantation, which would become known as the Harrison-Glover plantation. As documented above, after purchasing the farmstead from the Huggs during January 1741, William Buckley retained the property for ten years before selling it to Samuel Harrison, William Harrison Jr.'s uncle, in November 1751 for £300, making himself a tidy £200 profit (West Jersey

Figure 14
1808 Hills Map Showing John T. Glover's Property
I-295 / I-76 / Route 42 Direct Connection
Camden County, New Jersey



Map Document: X: Graphics\Projects\P-593A\Fig14_1808HillsMap.ai

Colonial Deeds O:103). It is uncertain why the value of the property tripled during Buckley's ownership; however, it is possible that he made improvements to the farmstead. Samuel Harrison and his wife Abigail held the plantation until December 1756, when they sold it to Samuel's brother, Joseph Harrison, for a mere 5 shillings and "…the kind love and natural affection which they have to bear unto the said Joseph Harrison…" (West Jersey Colonial Deeds N:475). In 1759, Joseph Harrison and William Hugg applied to the West Jersey Proprietors for a resurvey of the original John Hugg Plantation as it was devised to John and Elias Hugg in 1706. The resurvey verified the chain of title for the property, the boundary lines, and the acreage contained within those boundaries. The written record of the resurvey reveals small parcels that were added to and subtracted from the plantation over the years. The deputy surveyors also confirmed that the land contained an overplus of 31 acres and 11 perches or 31.069 acres, which Joseph Harrison dealt with by subtracting the same amount from another untitled proprietary land grant given to him in November 1755 (SGO Survey Book H:261).

Joseph Harrison retained ownership of this plantation until his death in November 1761. In his will, written during the same month and year as his death, he left the property to his two daughters, Mary and Rebecca, to be equally divided between them when they reached their majority age. Apparently Joseph's wife predeceased him. He directed his brother Samuel to provide care for the two girls until they reach maturity and, as a reward, Joseph granted his brother the right to "…possess my Little Place untill [*sic*] my Daughter Rebecca arrives to age (which lies on y^{e} Little Creek)…" (New Jersey Wills 747H). It is unknown who rented Joseph Harrison's "Little Plantation" after Joseph's death. However, acting in his role of possessor and caretaker of the Little Plantation, in 1764 Samuel presumably contracted for the construction of the extant 1764 section of the dwelling now known as the Harrison-Glover House.

Rebecca Harrison, Joseph's daughter, was born in February 1757. In January 1780, after reaching her majority, she married Robert Blackwell, an Episcopal minister from Philadelphia (Wallace Papers, Vol. 4). Her sister Mary married Israel Morris, Jr., in May 1774, but died before reaching her majority (Gloucester County Deeds H:492). Unfortunately, Rebecca met a similar fate as her sister, dying quite young, in February 1782, two days after giving birth to Rebecca Harrison Blackwell (Wallace Papers, Vol. 4). As a result of her death, Robert Blackwell

gained title to Rebecca's father's former lands. Blackwell continued his ownership of Joseph Harrison's homestead as a rental property. In July 1800, he advertised the property for rent and indicated in the advertisement that John Burrough resided there (*Pennsylvania Gazette* 16 July 1800). Five years later, Blackwell and his daughter and their respective spouses sold the former Joseph Harrison homestead to Benjamin B. Cooper and John Gill for $6,600 (Gloucester County Deeds H:492).

At some point in time, William Harrison Jr., owner of the adjacent gristmill and plantation located easterly along Little Timber Creek, acquired the "Little Plantation" from either Samuel or Rebecca. If Samuel served as the seller, he fulfilled his role as guardian for an underage Rebecca during the sale; but if not, then this sale occurred sometime after Rebecca reached a majority but probably before she married Robert Blackwell. No probated will granted the property to William, and the deed for his acquisition is unrecorded and evidently nonexistent today, as a thorough search for the document at numerous repositories has proven futile. However, it is documented that William Harrison held the property in 1782 when the Gloucester County sheriff received a writ from the New Jersey Supreme Court to attach all of William's property after a number of creditors successfully won suits against Harrison for unpaid indebtedness.

The sale occurred at the time and place stated in the advertisement, but Sheriff Denny did not draft two deeds of sale for a portion of Harrison's property until April 1784. One deed acknowledged Samuel Hugg's purchase of a 35.0-acre tenement parcel for £126 (Gloucester County Deeds D:182). The second deed transferred title of the 155.8-acre plantation to William Eldridge in exchange for a winning bid of £935. The Hugg and Eldridge bids represent the only two successful partial purchases of William Harrison's land, so Sheriff Denny scheduled a second Sheriff's Sale, which occurred March 26, 1785, presumably at Hugg's Tavern (Gloucester County Deeds L:504). Ephraim Tomlinson placed the winning bid of £960 for the 287.3-acre plantation described in the advertisement (above) as possessing a brick house. Denny drafted the deed for this sale during April 1785 and Ephraim Tomlinson became the titleholder for Joseph Harrison's former "Little Plantation" (ibid.). Of the three remaining parcels—two 35.0-acre tenement lots and the 70.8-acre plantation containing a gristmill and a frame house—

only a deed for the gristmill property could be located; William Eldridge acquired this tract in August 1792 (Gloucester County Deeds K:473).

Ephraim Tomlinson retained the former "Little Plantation" property and used it as his homestead farm. He died sometime prior to March 22, 1810, the date his heirs proved Ephraim's will, drafted during November 1808. In his will, Tomlinson divided his plantation, the former Elias Hugg property, into two pieces, with the upper portion devised to his grandson Warner Tomlinson and the lower section, including the Harrison-Glover House, to his other grandson, Joseph Tomlinson, both sons of Ephraim's deceased son, Joseph Tomlinson. Ephraim's estate inventory value exceeded $6,300, indicating Tomlinson was a man of some wealth during his lifetime (New Jersey Wills 2790H). Joseph Tomlinson presumably worked and resided on the plantation his grandfather devised to him. His tenure ended in October 1835, when he sold the property, containing 119.7 acres, to Chalkley Glover, a resident of Deptford Township, probably as an investment and rental property (Gloucester County Deeds N3-484). Chalkley Glover died intestate sometime during late 1873 or early in 1874; his daughter, Sarah, applied for an estate administration bond in January 1874 (Camden County Estate Index). Since Sarah applied to the Camden County Surrogate's Office for the Estate Administration Bond, it may indicate that Chalkley lived at the "Little Plantation" at the time of his death.

Sarah Glover and her brother Theodore retained the "Little Plantation" for another 40 years. In January 1914, the siblings struck an agreement with John G. Scofield, a resident of Centre Township, to purchase their late father's former property, including the Harrison-Glover House (Camden County Deeds 383:621). The agreement dictated a series of payments to be made monthly. Finally, in August 1918, Theodore and Sarah issued a deed of purchase for the land and house; Scofield paid $15,000 to them (Camden County Deeds 434:168). At this point in time, Theodore Glover and his sister, Sarah B. Glover, resided in Deptford Township, Gloucester County, perhaps in their father's old house. Three years later, during August 1921, Scofield sold 63.0 acres of the former Chalkley Glover farm and the old Harrison-Glover House to Saint Mary's Roman Catholic Church of Gloucester City for $41,300 (Camden County Deeds 490:599). Today, the former Harrison-Glover House continues to serve as the cemetery's offices, as it did when the burial ground first opened in 1923 (Giglio 1987:233).

Initial Transportation Developments

The region's waterways provided the earliest transportation routes for settlers entering the region and for exporting farm and forest products to market, primarily in Philadelphia. All forms of boats plied the Delaware River, Pennsauken Creek, Cooper's Creek, Newton Creek, and Big Timber Creek, carrying people and goods to and from the dispersed farmsteads and towns in the county's interior. The first important roads established in the area included the Salem Road (1681), connecting Salem with Burlington; the Irish Road (1696); and the Gloucester-Egg Harbor Road (1698), connecting the county with communities on the New Jersey coast. Early roads served as the first engines of change, as stated in Cushing & Sheppard:

> Here, as in other regions, roads were constructed to supply the immediate apparent wants of the people at the time, rather than to meet possible or even probable future exigencies, and when once these highways were established, their influence in directing the subsequent development of the region was potent (1883:112).

Some of the early roads followed existing Indian trails, just wide enough for one man to walk. Over time, these trails or paths were widened to permit the passage of mounted horses, and eventually, horse-drawn wheeled vehicles. As early as 1704, the colonial New Jersey General Assembly passed laws concerning roads and highways (Bush 1977:23-26). During the eighteenth and early nineteenth centuries, little maintenance occurred on roads. Even the principal thoroughfares were often unfit for travel. Local taxpayers provided all the funds used to construct or maintain roads, sometimes placing a huge burden on the citizenry (Parsons 1928:201).

Highway users would often complain bitterly about road conditions. Early roads in the project area include the Irish Road, described above, and a later version of the Salem Road, aka the King's Highway. The New Jersey Colonial Assembly first authorized the Salem Road in 1681 and its first surveyed route took the road from Burlington out to the east and over the Rancocas Creek at Eayrestown. The roadway passed through present-day Mount Laurel Township and into Old Gloucester County, where it forded the South Branch of Cooper's Creek at Uxbridge. Surveyors then took the road down a route approximating current Warwick Road and on down to a crossing at Upton, near present-day Chews Landing. With the establishment of Hollinshead

Ferry in 1689 between Willingboro and current-day Moorestown Township, the route changed to more closely follow today's route, allowing the roadway to pass through settlements like Colestown and Haddonfield. At some point in time during the early eighteenth century, yet another rerouting occurred using the Irish Road, which allowed the Salem Road to gain access to the bridges over the Little and Big Timber creeks. Finally, a new route appeared between Haddonfield and Gloucester via Mount Ephraim (Fox n.d.). According to an undated manuscript map in the collection of the Gloucester County Historical Society drafted by twentieth-century South Jersey road historian Harry Marvin, this new route between Haddonfield and Gloucester first appeared on the landscape in 1748, although no road return has been found for it (Gloucester County Historical Society n.d.:Map J-12). It is unclear where Marvin derived his date. The Haddonfield-Gloucester Road does appear on the 1778 road map as part of the route that the Hessians took on their march to attack the fort at Red Bank, described below. Today's King's Highway route is just slightly north of the eighteenth-century roadway.

The Pre-Revolutionary Period

Permanent and sizeable settlement of Gloucester County occurred after the English possessed West Jersey. Agriculturists took up the best land for raising crops and propagating livestock. With Philadelphia's birth and rapid rise in prominence, it became the primary marketplace for Gloucester County agrarian production. The Quaker City's demand for quality mutton led South Jersey farmers to produce a superior grade of sheep. Carl Woodward, writing in his history of New Jersey agriculture, stated, "It is doubtful if in the eighteenth century the mutton of Gloucester, Burlington, and Salem Counties could be equaled anywhere in the colonies nor could it be greatly surpassed in England" (as quoted in Wacker and Clemens 1995:193). As farming intensified in Gloucester County, population grew. Below is a table that provides an indication of county population growth between 1726 and the American Revolution. The numbers include both male and female white and black inhabitants:

Table 3. Gloucester County's Pre-Revolutionary Population.

Year	Population
1726	2,229
1738	3,267
1745	3,506
1772	8,752

Source: Wacker 1975:413-415

Samuel Smith described Gloucester County in his 1765 history of New Jersey by writing:

> Its situation opposite and contiguous to Philadelphia, gives great opportunities to make the most of the productions of the county at that market; tho' their uplands as to the general are poor, the meadows are good and improve fast : they raise beef, pork, mutton, butter, cheese, &c. (1765 [1877]:496-497)

Although primarily settled by Quakers, Gloucester County freeholders maintained a population of slaves and servants. In 1751, tax enumerators tallied 161 slaves and servants within the county and that number rose to 173 by 1769 (Wacker and Clemens 1995:101). Gradual emancipation took place among Gloucester County's tidewater planters. The Hugg family provided their former slaves with a small amount of land in the sand hills located at the extreme east end of their holdings (southeast of the Black Horse Pike/Browning Road intersection) around the year 1800, which grew into the "considerable black" settlement of Guineatown (Boyer 1933:10).

Revolutionary War Activity

As America entered the second year of its rebellion against the Crown, the British sailed south from New York. General William Howe and his army landed on the shores of the Chesapeake Bay at Elkton, Maryland, after rejecting a more dangerous landing on the lower Delaware River. The army marched north toward Philadelphia, initiating the Battle of Brandywine along the way. Meanwhile, sailors of the Pennsylvania Navy prepared themselves for the upcoming river battle. The river bottom already bristled with clusters of *chevaux-de-frise*, iron-tipped wooden spears anchored in stone cribs, ready to impale any British vessel which dared to sail up the Delaware. Only a handful of colonial river pilots knew the safe passage route through these river obstacles. American laborers worked on the New Jersey side to finish defensive forts at Billingsport and Red Bank, and other workers made final preparations to the fort on Mud Island (Fort Mifflin), located on the Philadelphia side of the Delaware River. First designed by British military engineer John Montressor, the Pennsylvania colonial legislature sought the construction of what would become Fort Mifflin as a defensive position for Philadelphia against Privateers. Work began on this fortification in 1772, but the workmen, lacking clear supervision, had not yet completed the facility in 1775. About the time colonial delegates signed the Declaration of Independence, American colonists gained possession of the fort (Jackson 1977:1-15; Jackson

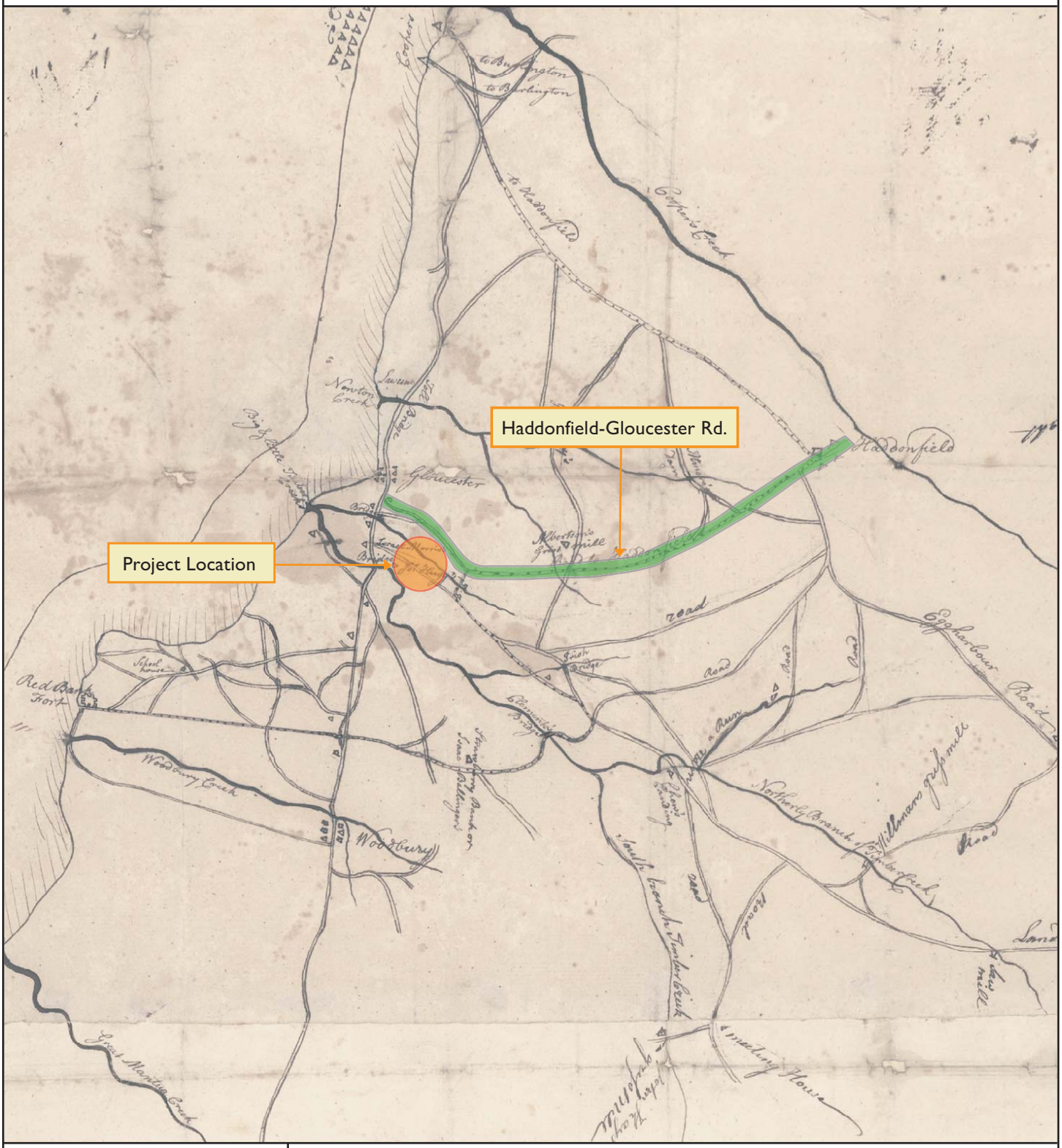
1986:1-127). After partially completing the Billingsport fortification, the continentals determined the location to be indefensible and relocated 4.0 miles upstream to concentrate on completing a much smaller fortification within the rather large Red Bank defensive position. Only a small garrison remained at Billingsport to guard the lower set of *chevaux-de-frise*. After thoroughly routing Washington's troops at the Battle of Brandywine, the British army departed from the battlefield and continued its march towards Philadelphia. On the city's outskirts, Washington launched a surprise attack at Germantown, which proved disastrous for the American troops and Howe's forces moved in to Philadelphia during the second part of October (Jackson 1977:1-15).

Upon achieving his primary objective of conquering and occupying Philadelphia, General Howe ordered his military commanders to vanquish the American troops, destroy the Pennsylvania Navy, and open the Delaware River to British shipping under the control of Howe's brother, Lord Admiral Richard Howe. Hessian mercenary officer Colonel Carl Emil Kurt von Donop requested the honor to crush the continental forces at Red Bank and capture the fort (Smith 1970:18). The Hessians crossed the Delaware River at Cooper's Ferry, located at today's Coopers Point, Camden, and marched out today's Haddon Avenue to Haddonfield where they bivouacked for the night. The next morning, October 22, 1777, the German soldiers began their march to the fort. According to an anonymous map, presumably drawn in 1777 or 1778, the Hessians moved southwest out of Haddonfield along the old King's Highway into Mount Ephraim, where they turned more southerly and crossed William Harrison, Jr.'s milldam (Anon. ca. 1778) (Figure 15). Old Gloucester County never established the shortcut across Harrison's dam between King's Highway and today's Browning Road as an official highway, but it provided a very convenient crossing point over Little Timber Creek. The Hessians originally intended to cross Big Timber Creek on the bridge between present-day Brooklawn and Westville, but an advance scout party evidently found that the Americans had rendered the bridge impassable. Hence, von Donop's army turned south off of King's Highway, crossed William Harrison, Jr.'s dam, and traveled east along Browning Road (aka the Irish Road or Sandy Lane) to its junction with the "Good and Convenient Road of 1768," whereupon the Hessians turned and traveled over that road until they reached Clement's Bridge Road, which provided the force with access to the next crossing over Big Timber Creek (Figure 16). After moving across the bridge, von Donop marched his large army of mercenaries to attack the fort, where a small and inferior force

Figure 15
Circa-1778 Anonymous Map Showing the Haddonfield-Gloucester Road

I-295 / I-76 / Route 42 Direct Connection

Camden County, New Jersey

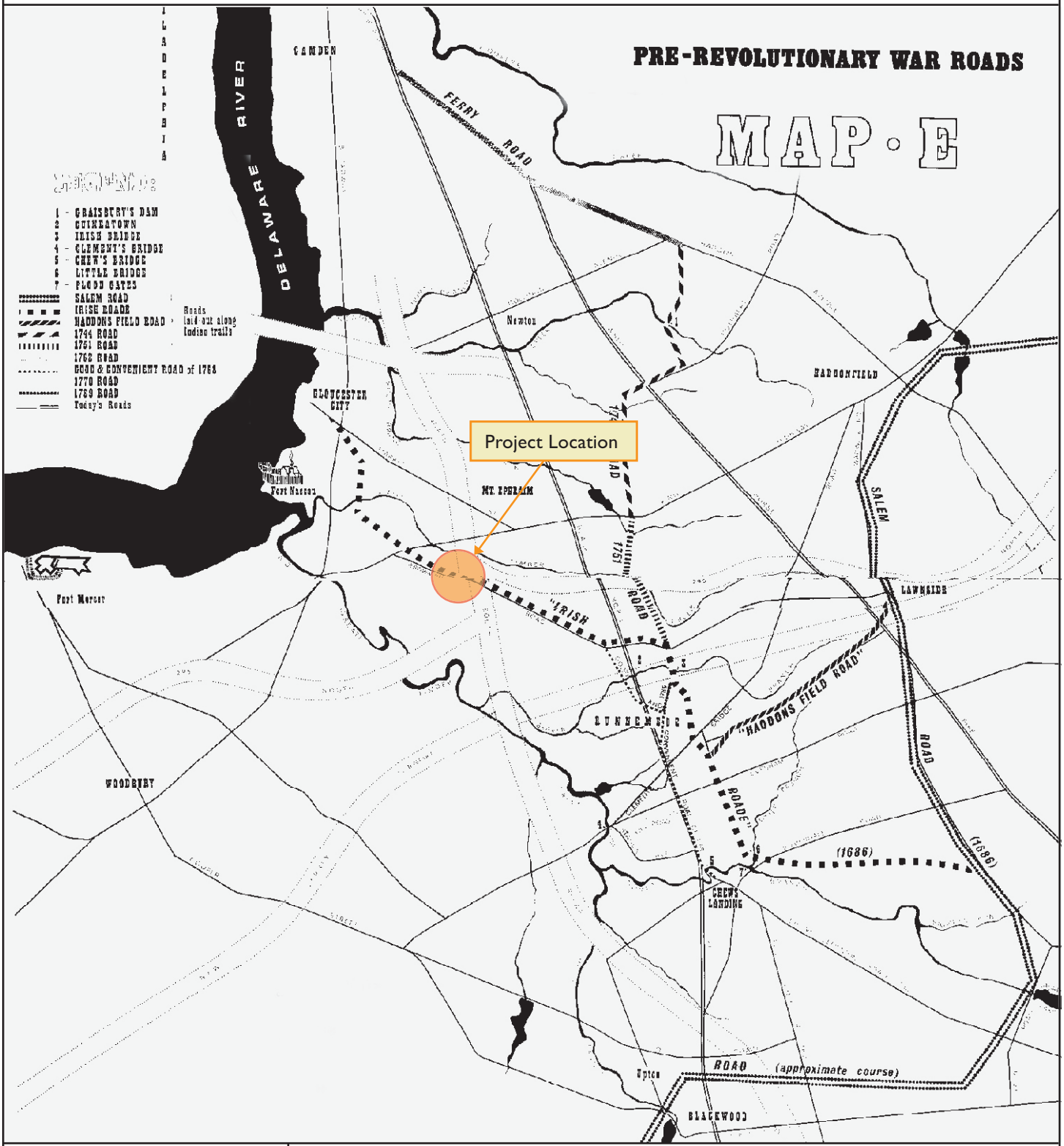


Map Document X: Graphics\Projects\P-593A\Fig15_1778AnonymousMap.ai

Figure 16
1981 Leap Map Showing Historic Roads in the Vicinity of the Project Area

I-295 / I-76 / Route 42 Direct Connection

Camden County, New Jersey



Map Document X: Graphics\Projects\P-593A\Fig16_1981LeapMap.ai

Source: 1981 Leap Map.

of Americans waited within the fortifications (Leap 1981:53-55). The Hessians suffered a resounding defeat, losing many soldiers on the battlefield, including von Donop himself. The British dispatched warships to provide artillery support for the Hessians, but in maneuvering around the shallow water in front of the fort, the 64-gun ship AUGUSTA and the sloop-of-war MERLIN ran aground, representing a great military loss to the British, since both exploded and burned. Those Hessians who survived the battle uninjured assisted the wounded and dying back to Philadelphia, staying overnight in Glendora at Ashbrook's Burial Ground, where those who had expired during the return trip were buried (Smith 1970:20-25).

During the entire British invasion period, from October 2 to November 9, Commodore John Hazelwood's Pennsylvania Navy patrolled the Delaware River. His small fleet of row galleys, floating batteries, and fire boats harassed the British naval fleet, provided protective fire for the forts, and defended the *chevaux-de-frise* from removal. The British had already established shore batteries on Carpenter and Province islands to cannonade Fort Mifflin, but von Donop's defeat at Red Bank temporarily thwarted Howe's plans for river domination. Howe ordered a large detachment of his troops stationed at the Province Island wharf to be staged for the invasion of Fort Mifflin, but withdrew the force upon the Hessian rout (Jackson 1977:15-18).

Howe became increasingly alarmed about the onset of winter and the lack of navigation on the Delaware. He knew that he must quickly eliminate Fort Mifflin as a threat to his combined naval and land forces. On November 9, 1777, Howe prepared his land batteries for saturation cannonading of the fort, particularly hammering the weak western palisade. Lord Richard Howe commanded his large warships to pound the eastern fort wall. Bombardment began on November 10 and continued for five days. The Pennsylvania Navy did what it could to harass the British, but the Americans failed to close off the fort's back channel, allowing the enemy to move floating batteries into position for additional salvos against Mifflin. The British breached the wall and continued firing, leveling the fort in places. In its harassment campaign, the Americans broke the dikes along Carpenter and Province islands, allowing waist-deep water to encompass the enemy as it loaded and reloaded its artillery. Finally, during the night of November 15, the continentals abandoned the fort and fled in the darkness to the shelter of the fort at Red Bank, setting fire to what remained of Mifflin. The Pennsylvania Navy sailed upriver in an attempt to

save its vessels, but the British destroyed virtually all of them. British shipping could, at last, reach Philadelphia and replenish the waning foodstuff of the Crown's half-starved army (Jackson 1977:19-23).

Beginning on November 18, 1777, a major British force numbering some 7,000 soldiers under the command of Lieutenant General Lord Cornwallis landed at Billingsport with the intent of capturing the fort at Red Bank. Intelligence about the landing rippled through the American military and the garrison at Red Bank prepared for evacuation by spreading gunpowder across the fort grounds. The British remained close to their initial position in Billingsport on November 19 as they assembled a wagon train for the march north towards Red Bank. The Americans abandoned the fort at Red Bank on the nineteenth, based on rumors about British troop movements, but the garrison returned the following day with wagons to take away supplies. However, on November 21, with the British closing in, the Americans, under orders from General Washington to officially abandon their position, touched off explosions at the fort as they withdrew (Smith 1970:38-40). Cornwallis and his forces descended upon the fort expecting a battle, but found it deserted and on fire. The British and Hessians completed the destruction, tearing down the walls and leveling all emplacements. On November 22, the combined forces departed from the fort and marched to Woodbury, where they began foraging for food and livestock, including horses, from farms along their route. They broke camp on the twenty-fourth and moved towards Timber Creek until the Crown's forces arrived at the bridge that the Americans had destroyed before von Donop marched to the fort at Red Bank. In one of the wagons, the British had a portable bridge fabricated from hinged copper plates that folded when not in use. Using ropes and tackle, the English military engineers placed the bridge across the creek, allowing the entire army, wagon train and foraged livestock to cross (Döhla 1913[1990]:59-60; Stewart, ed. 1937:80).

By the morning of November 25, Cornwallis had entered Gloucestertown, where he set up his headquarters in the home of American militia Colonel Joseph Ellis while Hessian pickets guarded the approaches to Gloucestertown. During almost the entire day, the Marquis de Lafayette reconnoitered the British and Hessian forces in Gloucestertown as they loaded the cattle, horses, and soldiers for transport back to Philadelphia. Lafayette's forces included ten

light horsemen, 150 riflemen from Morgan's rifles, and some militiamen, including men under Colonel Ellis, containing Captain Harrison's company, a total force of less than 300. During the late afternoon, Lafayette and his escort entered the Gloucester Road (today's King's Highway) and rode towards Gloucestertown. About 2.5 miles from Gloucestertown (about where King's Highway crosses King's Run on the border between Haddon Heights and Mount Ephraim), the Americans encountered a Hessian outpost containing 350 soldiers and several field pieces (Figure 17). Lafayette led a charge against the mercenaries, driving the Germans back more than 0.5 mile, making them run quickly to avoid being attacked. British reinforcements arrived twice, all the while the Americans, under Lafayette, drove them further back towards Gloucestertown. Only the descent of darkness prevented the Americans from pushing closer to Cornwallis and his shipments (Idzerda 1977:156-57). Lafayette's gallantry at the Battle of Gloucester directly resulted in the Continental Congress commissioning the Marquis as a Major General, and he was given command of an entire army division, a decision crucial to the war's ultimate outcome (ibid.:158-165). When the Congress ordered a ceremonial presentation sword in 1779 for Lafayette, the guard featured engraved scenes of four critical battles in which the Marquis participated, and one of these four was Gloucester (Idzerda 1979:201). During this action, William Harrison's Gloucestertown Company of the New Jersey militia engaged the enemy near Harrison's own farmland. John Zane, a member of Harrison's Company, testified that the battle:

> …was a smart skirmish on Little Timber Creek at Gloucester Town at Brick's Old Field. The Battle was between Colonel Ellis's Regiment and the British and close by Captain Harrison's farm. Captain Harrison had about that time a House in Gloucester burnt by the British for the part he took against them (National Archives and Records Administration Record Group 15).

The loss of Harrison's house is echoed in Döhla's diary, when he writes, "This same evening the sailors set fire to a house" (Döhla 1990:60). Harrison's company had gained combat experience through action in December 1776 at Petticoat Bridge (near today's Jacksonville, Burlington County) and in Mount Holly at Iron Mill Hill. In August 1777, under orders from George Washington, Harrison led his company in removing ferry boats and flats along the Delaware River after the British landed at Head of Elk to begin its Philadelphia campaign (National Archives and Records Administration Record Group 15). Not knowing the true size of the force that attacked his outer guards, Lafayette's action unnerved Cornwallis, forcing him to accelerate

Project Area (not shown on above map)

Not to Scale

Figure 17
1778 Du Chesnoy Map of the Battle of Gloucester
I-295 / I-76 / Route 42 Direct Connection
Camden County, New Jersey

Map Document X:\Graphics\Projects\P-593A\Fig17_1778DuChesnoyMap.ai

Source: 1778 DuChesnoy Map.

loading the livestock and other baggage and moving back across the river to Philadelphia. The journal of His Majesty's Armed Schooner VIPER confirms Cornwallis's sudden haste after the attack when Lieutenant Edward Pakenham wrote:

> November 1777 Red Bank SSE 1 mile
> Tuesd$^{y.}$ 25
> AM Empd. Assisting the Flat Boats bringing Troops from the Jerseys.
> Off Gloucester
> …½ p$^{t.}$ 5 Weigh'd & ran over to Gloucester to Cover the Retreat
> of our Troops from the Jerseys (Crawford 1996:595).

With Cornwallis's retreat, the British largely withdrew from New Jersey to Philadelphia for the winter, although foraging and interdiction patrols traveled fairly regularly between Salem, Haddonfield, and points north. Often these British patrols, along with American foraging units, would drive livestock and other baggage through the current project area (Stewart 1929). The Americans wintered at Valley Forge and British General Clinton relieved General Howe in Philadelphia during the spring of 1778. In a move to consolidate the British and Hessian armies back in New York, Clinton ordered the evacuation of Philadelphia and marched his forces overland through New Jersey to Sandy Hook and the waiting marine transport, fighting the Battle of Monmouth on the way (Jackson 1977:22).

The Nineteenth Century

In the opening years of the nineteenth century, the northern portion of Gloucester County (modern Camden County) still featured its original or early settlement points, i.e., Coopers Ferry or Camden, Haddonfield, Gloucestertown, Chews Landing, and Blackwood. Smaller enclaves included Colestown, Longacoming (Berlin), Blue Anchor, and Mount Ephraim. In and around the current project constraints, the Glover family had become the primary landholder in the Bellmawr-Mount Ephraim area. Farmland proliferated throughout the region with a scattering of homes across the landscape. John Hills's 1808 *A Plan of the City of Philadelphia and Environs* reveals a rather bucolic setting in the Little Timber Creek region (Figure 14). This map shows farm lines, some structures, and dates of settlement for portions of the land. Roads and even proposed roads are illustrated. In a unique presentation, Hills only drew what he had actually viewed or surveyed in person, hence, portions of streams, roads, houses, and plantations are

missing from the map. In November 1831, the former Gloucestertown Township became part of the larger Union Township. This change included today's Brooklawn, Bellmawr, and Mount Ephraim, with the latter location becoming the new township's seat of government (Prowell 1886:707).

After increasing agitation between the progressive Democrats in Camden City and the agrarian-minded Whigs living in Woodbury and lower Gloucester County, the powerful Camdenites sought and narrowly obtained a legislative act splitting Gloucester County. In March 1844, state lawmakers voted to erect Camden County out of Gloucester County, with Big Timber Creek serving as the southern boundary line between the old and the new county. A dispute arose over where to place the new county's seat of government, with both Haddonfield and Longacoming (today's Berlin) battling Camden City interests for the right and privilege of hosting the county courthouse. Even smaller settlements like Mount Ephraim, White Horse, and Chew's Landing outgunned Camden City voters in the seven-year battle over the shire town location. Finally, after voiding elections and some state-level gerrymandering, Camden City became the power base for Camden County (Dorwart 2001:48-58) (Figure 18).

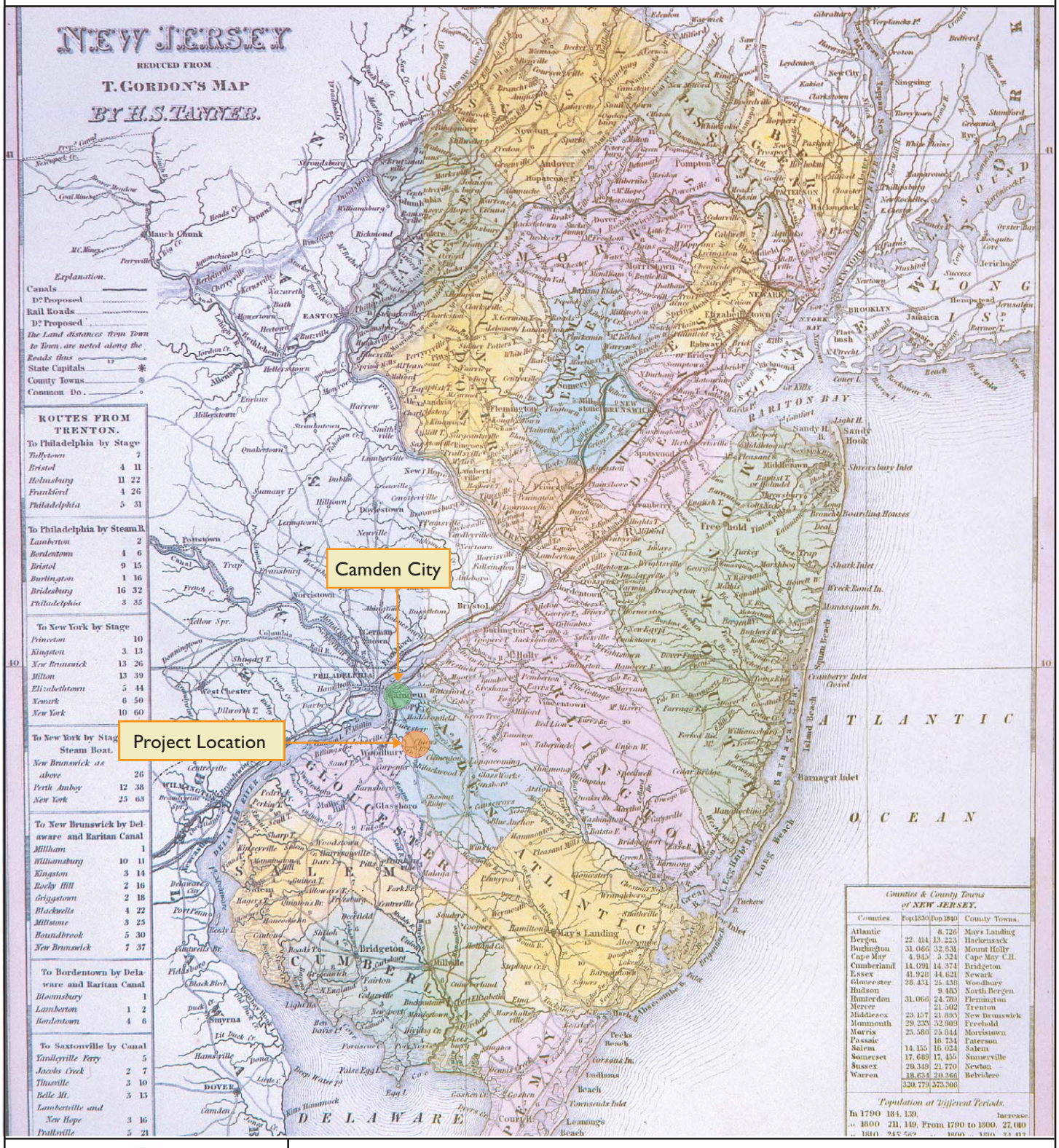
The Arrival of the Railroads

The early nineteenth century "transportation revolution" of canal, turnpike, and railroad building did not greatly affect established means of transportation in Gloucester County; it was not until the growth of railroads after the Civil War that traditional patterns of water-borne transportation were broken (Cushing & Sheppard 1883:112-114; A.G. Lichtenstein & Associates 1994:149-150). When the Camden & Amboy Railroad reached its southern terminus (Camden) in January 1835, local citizens suggested that the rails be extended farther in Gloucester County. The following year, the New Jersey state legislature chartered the Camden & Woodbury Railroad and Transportation Company. The line was completed in January 1838, and, at first, was a great success. However, the Panic of 1837 had a deleterious long-term effect on the railroad company and it soon became insolvent. Within a few years, the rail line sold off its two steam locomotives and operated its cars between Woodbury and Camden with horses. The railroad went out of business in 1846. Plans were made to revive the rail service, but it was not until the completion of the West Jersey Railroad in 1857 that rail service resumed between Camden and Woodbury.

Figure 18
Circa-1845 Tanner Map Showing Camden City as the County Seat

I-295 / I-76 / Route 42 Direct Connection

Camden County, New Jersey



Map Document X: Graphics\Projects\P-593A\Fig18_1845TannerMap.ai

Backed by the powerful Camden & Amboy Railroad, the West Jersey Railroad eventually pushed its rail service to Bridgeton, Cape May, and Atlantic City (Schopp unpublished manuscript). The proliferation of railroads throughout southern New Jersey played a significant role in the economic and population growth of the area during the second half of the nineteenth and early twentieth centuries (Figure 19).

Conrail's Grenloch Industrial Track (formerly the Camden County Railroad)

The history of the Grenloch Industrial Track can be traced to the early 1870s, when Gloucester City industrialist David S. Brown needed a method to move his textile products to the ferry service at Kaighn's Point, South Camden, and into Philadelphia. With the passage of New Jersey's General Railroad Law in April 1873, Brown and his associates gained the necessary mechanism to construct a railroad between the ferry and Gloucester City. The resulting Camden, Gloucester & Mount Ephraim Railway, incorporated in June 1873, constructed its line between the first two points in its name during the ensuing year. The company's board of directors chose to build their railroad as a 3.0-foot narrow-gauge line, the only 3.0-foot gauge common carrier in New Jersey (Cook and Coxey 1980:26). Narrow gauge railroads became very popular in the United States during the early 1870s, after an Englishman named Robert F. Fairlie published his 1872 work, *Railways or No Railways*. In this book, Fairlie advocated the economical aspects of narrow gauge railroad construction, versus the "costliness" and the "extravagance" of so-called broad (standard) gauge. He argued that curves could be sharper, grading lighter, equipment less expensive, etc., due to its diminutive size (Fairlie 1872). However, there were decided detriments to building narrow gauge lines, the most apparent being the inability to interchange freight and passenger cars with standard gauge railroads, requiring all freight to be manually transferred. The "standard" narrow gauge was 3.0 feet between the rails, while regular railroads maintained a gauge of approximately 4.0 feet, 8.5 inches. Standard gauge proponents argued that the cost savings were actually minimal and the construction of narrow gauge railroads actually represented a large step rearward in railroad engineering standards (Hilton 1990:48-74). In the end, those who argued for standard-gauge railroads won the debate, and most narrow gauge lines were either re-gauged to the standard measurement or abandoned altogether.

Figure 19
1932 West Jersey and Seashore Railroad Map Showing Southern New Jersey Railroads

I-295 / I-76 / Route 42 Direct Connection

Camden County, New Jersey

Not to Scale

Project Location

Map Document X: Graphics\Projects\P-593A\Fig19_1932RailroadMap.ai

Source: 1932 West Jersey and Seashore Railroad Map.

The Camden, Gloucester, & Mount Ephraim Railway began train service in February 1874, and the company extended its tracks to Mount Ephraim by June 1876 (Cook and Coxey 1980:28). Railroad management had begun planning to push the tracks beyond Mount Ephraim to Blackwoodtown as early as June 1874, when the directors chartered the Mount Ephraim & Blackwoodtown Railway Company (ibid.; New Jersey Secretary of State 1914:448). Residents along that portion of the line eagerly pledged their support, seeking both the ease of rail travel and the prospects of suburban development. During May 1876, the Camden, Gloucester, & Mount Ephraim Railway board obtained a second charter for the Mount Ephraim & Blackwoodtown Railway. By September of the same year, a formal groundbreaking occurred for the line to Blackwoodtown but no construction activity ensued, and in July 1877, David S. Brown died, casting a shadow of doubt over any future track extensions. Moving into the 1880s, freight shipments over the railroad shriveled and the line primarily served a growing passenger business. In September 1883, the Philadelphia & Reading Railroad (P&R) purchased the Philadelphia & Atlantic City Railway (P&AC), another narrow gauge line with a gauge of 3.0 feet, 6.0 inches between the rails built in 1877, at a Master's Sale, putting the P&R in a position to compete with the Pennsylvania Railroad (PRR) and its recently acquired Camden & Atlantic Railroad. By October 1884, the P&R had standard-gauged the P&AC Railway and sought to discontinue the line's long ferry trip from Bulson Street, Camden, to a shorter ferry service further upriver. P&R management eyed with great envy the Camden, Gloucester & Mount Ephraim Railway's exclusive franchise for service to the Kaighn's Point Ferry. The P&R purchased a controlling interest in the Camden, Gloucester, & Mount Ephraim Railway in November 1884 and standard-gauged the single-track shortline by June 1885. In logical corporate progression, the P&R Railroad moved to consolidate all of its rail lines in South Jersey to form the unified Atlantic City Railroad (Cook and Coxey 1980:28-31).

During the first half of 1887, yet another discussion arose about extending the rails beyond Mount Ephraim, this time precipitated by the firm of E.S. & F. Bateman, a farm implement manufacturer located below Blackwoodtown in the small community of Spring Mills. The Bateman firm and other people continued writing to officials in Camden and Philadelphia concerning the extension throughout 1887 and 1888. Local citizens informally organized the Camden County Railroad Company and began paying subscription money to the proposed

railroad's appointed treasurer, again hoping to subdivide their land for development. Realizing the seriousness of these citizens, senior P&R management finally agreed to construct the line. Surveying occurred in the first months of 1889, and in September 1889, the P&R formally filed incorporation papers and survey map with the New Jersey Secretary of State. Right-of-way acquisition occurred quickly and construction commenced in 1890. By the end of that year, contractors laid over 5.0 miles of a single track; the remaining 2.0 miles were completed in the spring of 1891. The first train entered Spring Mills during March, and Bateman shipped their first freight in April (Figure 20). The P&R management required a name change for the community of Spring Mills, indicating that the company already had two other stations by the name on the railroad system. Frank Bateman, CEO of Bateman Manufacturing Company, chose the name Grenloch, Scottish for Green Lake. It appears that Bateman played a role in selecting other station names for the line, since the vast majority of them had a British basis (Hagley Library: Acc. 1451). The table below provides a complete list of the station stops along the Camden County Railroad over the line's lifetime:

Table 4. Station Stops along the Camden County Railroad.

Station	Mileage from Camden Terminal
Mount Ephraim	5.02
Bellmawr (named for the Bell family)	6.09
Prospect	6.76
Third Avenue	7.20
Runnemede	7.45
Glendora	8.18
Chew's Landing	8.60
Hilltop	8.93
Blenheim (formerly Mechanicsville)	10.04
Blackwood (formerly Blackwoodtown)	10.71
Asyla (station for county poor farm)	11.82
Grenloch (formerly Spring Mills)	12.11

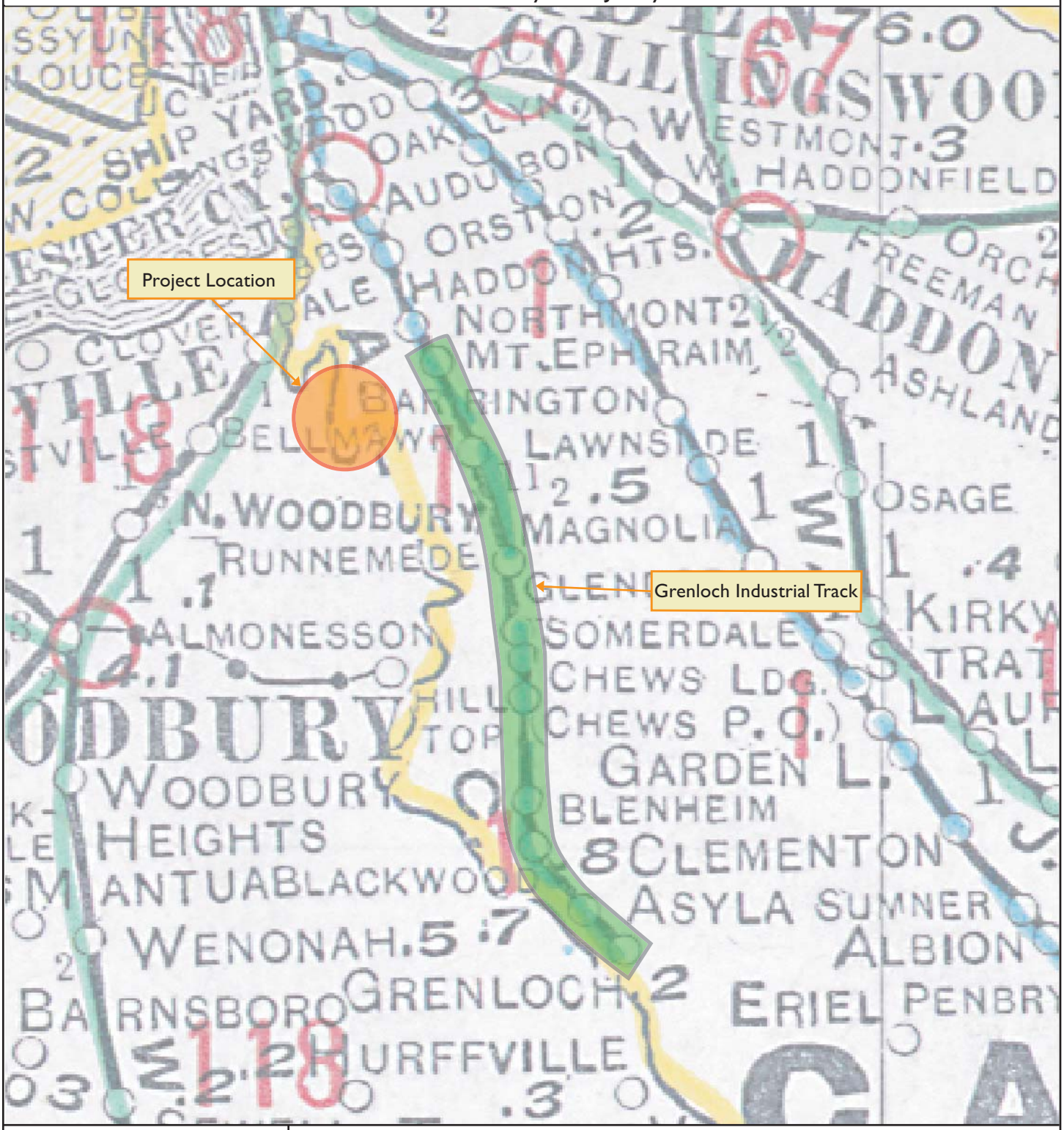
Source: Cook and Coxey 1980:165

Most of these stops represent new planned communities directly resulting from the line's construction. Enclosed stations on this list include Mount Ephraim, Bellmawr, Runnemede, Glendora, Hilltop (station building owned by a development company), Blackwood, and

Figure 20
1907 Cram Map Showing the Camden County Railroad (Currently Conrail's Grenloch Industrial Track)

I-295 / I-76 / Route 42 Direct Connection

Camden County, New Jersey



Map Document X: Graphics\Projects\P-593A\Fig20_1907CramMap.ai

Source: 1907 Cram Map.

Grenloch. At Bellmawr, the station looked more like a small, two-story house sided with board and batten. The building was two bays wide and one deep, with a small lean-to shed attached to the rear; a track maintenance foreman resided in this station and the first floor served as a waiting room and ticket office. Bellmawr's railroad facilities also featured a stub-end siding for public deliveries (Schopp, photographic collection). The railroad did not erect the Bellmawr station when the line first began operations. A caveat in the deed from Levi I. Bell for the right-of-way through his land required the railroad to "build erect construct and complete a suitable passenger and freight station or stations on the lands hereby granted at the Public Road known as Browning's Lane" and furthermore that the railroad "will and shall before May 5th A.D. one thousand eight hundred and ninety one (1891)" erect this station building (Hagley Library: Acc. 1520, Atlantic City Railroad folders). The railroad failed to act on the caveat so in 1894, Bell threatened a legal ejection action against the railroad. The P&R reacted by reluctantly requesting proposals from Camden-based contractors for building a station. The company received two bids, but considered both too high in cost. A second round of bids resulted in only one builder, John Corbett, placing a bid of $997.50 for a building on a stone foundation with a cellar, a well and pump, and a 30.0-foot station platform. The railroad accepted the proposal and Corbett completed the building in August 1894 (ibid.).

With the P&R Railroad adding still more lines to their South Jersey holdings during the 1890s, the company moved again to consolidate its holdings and incorporated yet another Atlantic City Railroad Company in June 1901, placing all lines under that corporate umbrella (Cook and Coxey 1980:75). Atlantic City Railroad operations continued through the 1920s on what was by now called the Grenloch Branch with ever-increasing deficits. The automobile and state-funded road improvements had a tremendous impact on the line's passenger traffic, and to a lesser extent, freight business (Cook and Coxey 1980:133-153). The Grenloch Branch paralleled today's Black Horse Pike. While state-funded improvements of the Black Horse Pike accelerated suburban development in the portion of Camden County that the road penetrated, it was actually the Camden County Railroad that initiated this process. In addition, the railroad provided an opportunity for Camden's urban dwellers to travel a relatively short distance for relief from summer heat, delivering them to resort areas like Blackwood's Lake Morgan or Grenloch Lake. The railroad ran daily excursion trains to these swimming and entertainment centers where small

amusement parks soon sprang up. Several of the initial developments, like Hilltop, failed during the late nineteenth century, but the railroad laid a developmental foundation that twentieth century land speculators exploited after the state completed the Black Horse Pike (Dorwart 2001:87-89).

New Jersey state officials recognized the impact of motor vehicle traffic on the railroads. But the state did not want to lose the rail service even though both the Reading and the Pennsylvania railroads had filed service discontinuance petitions many times before New Jersey's Public Utilities Commission (PUC). In addition, the state sought to eliminate as many grade crossings as possible due to the rising number of accidents between trains and automobiles. Competition between the two railroad companies led to even higher deficit spending. Finally, during 1931, the state began holding negotiations between the two rail companies to combine South Jersey rail operations, thereby eliminating duplicate trackage and grade crossings. As a result of these negotiations, the two railroads formed the Pennsylvania-Reading Seashore Lines (PRSL) in June 1933, with the PRR holding two-thirds of the corporate stock and the Reading possessing the rest. Both companies placed all of their trackage within the new company with the exception of the PRR's waterfront Camden terminal. For the routes to seaside resorts like Cape May and Wildwood, the Reading Company's Atlantic City trackage survived, while the PRR removed their duplicate trackage (Gladulich 1986:151-163). The Grenloch Branch remained in service through the formation of the Pennsylvania-Reading Seashore Lines, but in 1934, the PUC approved the PRSL's petition for discontinuing all passenger service on the branch. The last train operated in June (ibid.:170).

Freight service continued operating over the entire Grenloch Branch until 1973, when the PRSL embargoed all traffic below Bellmawr and then abandoned the section of track between Bellmawr and Grenloch (South Jersey Railroads website 2003). After the line's abandonment, someone removed the Blackwood Station from its original location; the building was subsequently moved to the Stone House Village in Washington Township, Gloucester County, where it is still situated today. Similar to Blackwood, the Grenloch Station was relocated about 100.0 yards from its original location and turned into a private dwelling. In 1968, the Pennsylvania Railroad disappeared as a corporate entity when it merged with the New York

Central to form the Penn Central Corporation. All subsidiaries and leased lines were included in this merger. By 1970, Penn Central had entered bankruptcy, although some transportation movements continued. The early to mid-1970s was not a good period to own stock in a northeastern railroad; most were in bankruptcy as freight traffic dropped precipitously and track maintenance was usually deferred (Gunnarsson 1991:165-166). However, throughout this entire period, the PRSL remained an active and separate company from Penn Central. Congress, knowing that federal action was required to save the infrastructure of these railroads passed the Regional Rail Reorganization Act of 1973 and commissioned the United States Railway Administration (USRA) to develop an overall plan. The USRA filed a preliminary plan in February 1975 detailing, after exhaustive analysis, which railroads and branch lines should be retained and which should be abandoned. Growing out of this report, the United States Congress created the Consolidated Rail Corporation, or Conrail, to assume control effective April 1, 1976, of the lines deemed worthy of continued service (USRA 1975).

Even though the PRSL, unlike Penn Central, remained a viable railroad corporation, the USRA report recommended that the trackage become part of Conrail, along with the parent companies of the PRSL, the Pennsylvania (aka Penn Central) and the Reading Railroad (ibid.). In the mid-1980s, Congress rejected a takeover bid by Norfolk Southern Railroad and ordered Conrail to "go public" by offering stock. In 1994, Norfolk Southern again tried to negotiate with Conrail for a merger. Consequently, Conrail aligned itself with CSX Corporation, and Norfolk Southern attempted a hostile takeover through stock acquisition. Conrail, Norfolk Southern and CSX finally agreed to find a compromise, which they reached in 1997. Norfolk Southern and CSX agreed to divide Conrail's main trackage between them and to share all terminal duties and facilities (Conrail history website accessed 2004). Today, the remaining trackage on the Grenloch Branch is operated by a Conrail Shared Asset Operation (CSAO). The only present customers on the line are located in Bellmawr Industrial Park.

Road Improvements

European, and particularly British, advancements in highway construction influenced Americans to desire better roads. The ideas of Telford and McAdam, two British experimenters in road construction and paving, provided reasonable alternatives (Lane 1939:143). The creation of these

improved roads came with a high price tag, well beyond the affordability of a county's taxpayer base. It required private funding to bring about substantive road improvements, and this funding took the form of nineteenth century turnpikes. Between 1801 and 1829, the legislature incorporated a total of 51 turnpike companies; however, only slightly half of these actually reached the construction phase. All but one of these finished roads was located in either the central or northern portion of the state. South Jersey continued its interest in waterborne transportation initiatives (Lane 1939:143-153). Turnpike companies offered an alternative to poor public roads. Theoretically, these private roads could be properly maintained through the tolls collected along their route. Unfortunately, turnpikes had no practical applications in Camden County until the mid-nineteenth century (Hood 1871:172-191).

Although all highway travelers in New Jersey complained bitterly about road conditions during the nineteenth century, it fell to the agricultural community, working through the State Board of Agriculture, to provide a united voice for conditional improvement to the New Jersey state legislature. Ralph Ege, Esquire, in a speech presented to the New Jersey State Road Improvement Association, stated:

> Our prosperity and general welfare as individuals and communities depend so largely upon the facilities afforded for easy and rapid communication and transportation, that the subject is engaging the attention of many of the most prominent statesmen and political economists of our day to see if some method cannot be devised that will be an improvement upon the present system, and give us much better roads at a cost that will be within reach, and not be excessive and unreasonable.
>
> This State Board of Agriculture has been wrestling with this problem for years, and has repeatedly called upon the learned scientists of our own and other States to assist in solving the problem, and they tell us to construct Macadam roads, at a cost of from five to ten thousand dollars per mile, and levy a tax to foot the bill. The problem is so easy that it should have been solved long ago (New Jersey State Board of Agriculture 1893:482).

The New Jersey State Board of Agriculture formed the New Jersey State Road Improvement Association as an adjunct in 1892. The state legislature created the state agriculture board in 1884, and its annual reports contain road reports and papers from almost the first year. The improvement association represents the pinnacle of the state agriculture board's eight year effort to influence pro-road-improvement legislation (New Jersey State Board of Agriculture

1893:16-17). The state road improvement association only existed for three years before its lobbying efforts paid off with results. In 1894, the state legislature created the position of Commissioner of Public Roads (Hasse 1914:615). Road improvement funding legislation began to be passed as early as 1891, and, reportedly, the first mile of road improved with state funds occurred in Swedesboro, Gloucester County during 1893 (A.G. Lichtenstein & Associates 1994:152). Roads would finally be of sufficient quality to encourage and expand commerce and transportation.

Local Roads

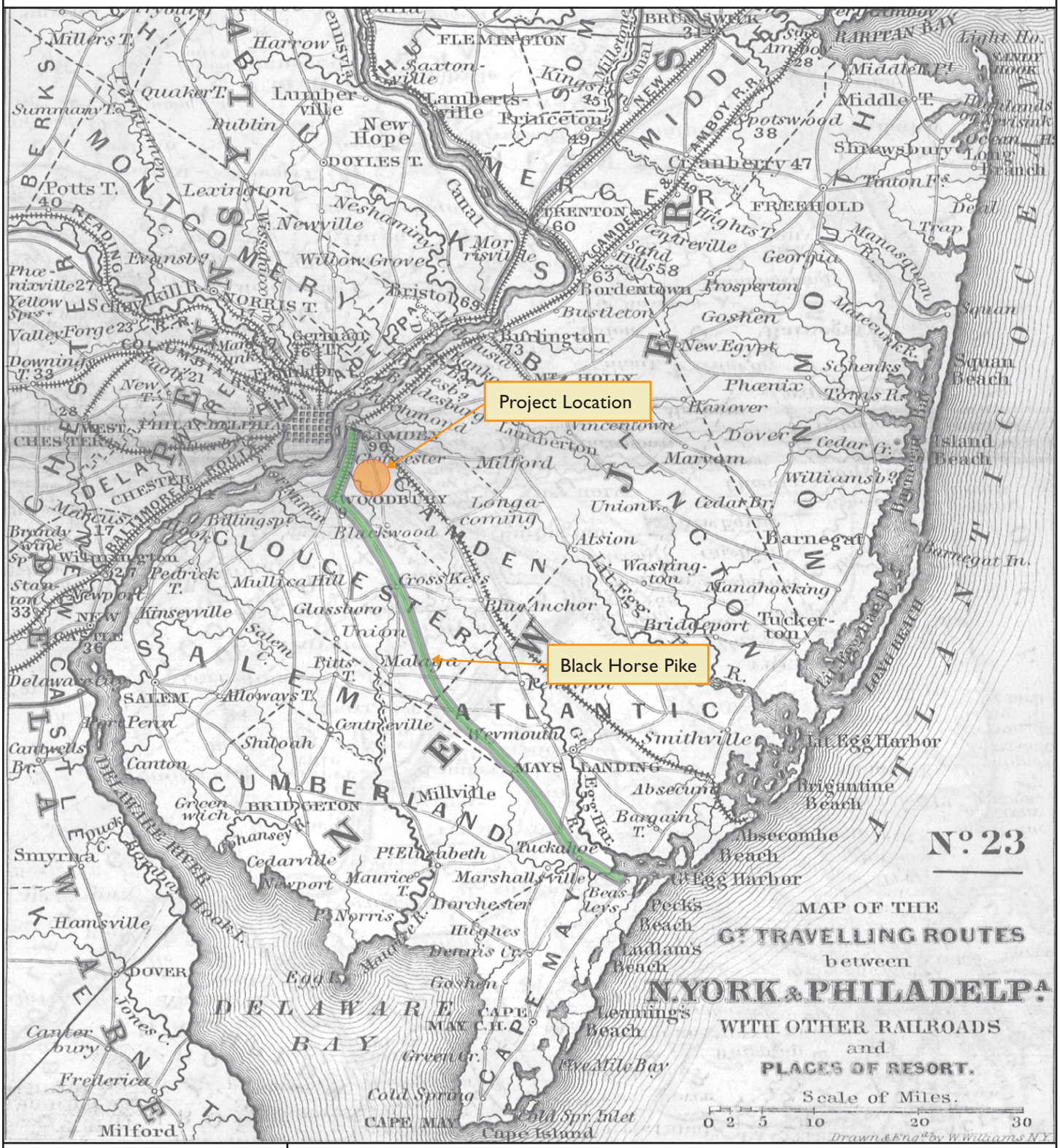
Surveyors first laid out the road currently known as the Black Horse Pike in 1795 as a straight-road replacement for the more ancient Irish Road and the old Cape Road. The latter road had its origin in an act of the 1716 Assembly, which provided that "since the road now used, 'either by Egg-Harbour or Prince Maurice-River, by reason of the many Swamps and Creeks it passeth through, is at some Seasons altogether impassable, and the said Inhabitants having found out a more convenient Road, which they desire they may have liberty to lay out and clear'" (Boyer 1967:57). This law empowered the inhabitants to lay out a new road from Cedar Swamp Bridge to Tuckahoe and then to the Town of Gloucester. The road was blazed between Maurice River and Four Mile Branch (a tributary to the South Branch of Big Timber Creek), came up through Cross Keys, passed over Stephen's Branch (origin of Bell's Lake), crossed the South Branch of Big Timber Creek at Delap's Bridge, and continued up to Blackwoodtown, where it joined with the road to this town coming down from the Delaware River (Boyer 1967:57). Primitive road improvement soon extended to Weymouth, where it joined with the White Horse Pike (Figure 21).

Local residents referred to the northern end of this road as the Newton Road, because its northern end terminated in Newton Township, Gloucester County. In 1855, the Camden County section became the Camden & Blackwoodtown Turnpike Company and the portion from Blackwoodtown south obtained a legislative incorporation as the Williamstown and Good Intent Turnpike Company in 1852 (Hood 1871:172-191). Camden County freed the roadway from its turnpike tolls by purchasing the road in 1903. But little improvement occurred under county control. In the 1920s, the state assumed control of the road and began paving the road surface all

Figure 21
1847 Williams Map Showing the Black Horse Pike

I-295 / I-76 / Route 42 Direct Connection

Camden County, New Jersey



Not to Scale

Project Location

Black Horse Pike

Map Document X: Graphics\Projects\P-593A\Fig21_1847WilliamsMap.ai

the way to Atlantic City (Leap 1981:168-170). Finally, in 1925, the roadway received the name of Black Horse Pike as a contrast to the White Horse Pike, which the former road paralleled to the south (Leap 1981:78). The state made further improvements during the 1930s, when the highway department widened the road to four lanes from the Camden County-Gloucester County line south. Today, the Black Horse Pike serves as a major thoroughfare to Route 42 (the North-South Freeway) for the many suburban developments found along its Camden and Gloucester County corridor.

Initial Suburbanization in Camden County

Camden County's first fledgling suburbanization effort occurred during the mid-nineteenth century, when communities such as Merchantville appeared. However, true growth in a suburban community requires convenient transportation modalities such as turnpikes, streetcar lines, or railroads. Although Merchantville arose along the Camden and Moorestown Turnpike when founded, the community did not receive its railroad service until 1867, at which time the Camden & Burlington County Railroad was introduced and the town began to grow at a faster pace. The Camden & Atlantic Railroad, constructed between Camden and Atlantic City, began operating in 1854. Its route went through Haddonfield and presented this colonial village with an opportunity for substantial expansion, but both Haddonfield and Merchantville are somewhat isolated incidents. The West Jersey Railroad, constructed by Camden & Amboy interests, occupied the former Camden & Woodbury Railroad right-of-way and began train service in 1857. Following the Civil War, during the period between 1870 and 1900, Camden County realized a genuine suburbanization boom as railroad and then streetcar line construction occurred throughout this time period, creating development corridors.

The Philadelphia & Atlantic City Railway, initially built as a narrow-gauge line between South Camden and Atlantic City by disgruntled Camden & Atlantic board of directors' members, wrought such suburban communities as West Collingswood, Oakland (now Oaklyn), Audubon, Orston, Haddon Heights, Barrington, Magnolia, Somerdale, Stratford, and Laurel Springs. Similarly, the developments that the Camden & Atlantic Railroad spawned included Collingswood, Westmont, West Haddonfield, Lindenwold, Berlin, and Atco. The West Jersey Railroad's only real impact on Camden County during the nineteenth century was aiding in the

growth of a reborn Gloucestertown, which became Gloucester City in 1868. The Camden branch of the Camden & Amboy Railroad produced the developments of Pavonia and North Cramer Hill in East Camden and Delair in Pennsauken Township. The Camden & Burlington County Railroad aided in Merchantville's growth, but also provided the impetus for such developments as Cramer Hill, Rosedale, and Pensauken (Spelled Pennsauken post 1892). In 1874, the Camden, Gloucester & Mount Ephraim Railway completed its line between Camden and Gloucester City. Two years later, the railroad company extended its line to Mount Ephraim with thoughts to construct the extension all the way to Blackwoodtown, although this did not happen until 1891, seven years after the P&R Railroad assumed control of the Camden, Gloucester & Mount Ephraim Railway and standard-gauged it in 1884. The extended line, known as the Camden County Railroad, generated planning for new developments in Mount Ephraim and Blackwood and laying out lots in such new suburban communities as Bellmawr, Runnemede, Glendora, Blenheim, Blackwood, and Grenloch.

Because of initial railroad extension into Mount Ephraim during 1876, James Davislaid out his plan for development during the same year (Camden County Filed Plans). Within a year of extending the rails to Grenloch in 1891, the Bell family filed the subdivision plan called Bellmawr, located on the east side of the tracks, with the Camden County Clerk (ibid.). Both of these initial developments in or near the current project area were drafted as a direct result of the railroad's construction.

Twentieth-Century Suburbanization

However, while these railroad-oriented suburban developments first began in the late nineteenth century, their maturation did not occur until the state and county purchased the turnpike roads, removed the tolls, and began improving these highways in conjunction with the rising popularity of the automobile, again creating development corridors, only this time geared to the driving public. In all cases, these improved highways paralleled the rail lines, allowing developers to expand small housing tracts and extend them between rail and highway. The table below provides information on the parallel railroads and highways:

Table 5. Parallel Railroads and Highways in Early-Twentieth-Century Camden County.

Railroad Line	Parallel Highway
Pennsylvania/Camden & Amboy	Burlington Turnpike/Route 130
Pennsylvania/Camden & Burlington County	Camden & Moorestown Turnpike (Route 537)
Pennsylvania/Camden & Atlantic	Haddon Avenue and White Horse Pike (Route 30)
Philadelphia & Reading/Philadelphia & Atlantic City	White Horse Pike (Route 30)
Philadelphia & Reading/ Camden, Gloucester & Mount Ephraim	Black Horse Pike (Route 168)
Pennsylvania/West Jersey	Broadway and Route 130

Local rail-based commuter service began a gradual decline as an increasing number of residents purchased automobiles and took to the roads. Within the current project area, developers laid out West Bellmawr during 1906, located opposite the original Bellmawr development (Camden County Filed Plans). In Mount Ephraim, the Mount Ephraim Land & Improvement Company laid out sections of its land between 1896 and 1906, followed by Tract #1 of the Halyburton Realty Company, platted in 1912. The Camden County Garden Farms Company platted their One-Acre Farms on the wedge of land between the Black Horse Pike and Bell Road in 1916. This development transcended the Mount Ephraim-Bellmawr boundary line (Little Timber Creek) into both communities (Camden County Filed Plans). The company sold four lots, located at the corner of Bell Road and Anderson Avenue in Bellmawr, to the Resurrection of Christ Polish National Catholic Church for use as a cemetery (Camden County Deeds 412:145).

Resurrection of Christ Cemetery

The City of Camden gained a sizeable Polish population beginning in the 1880s as this ethnic group migrated from Philadelphia to work in Camden's growing leather and morocco industry, oilcloth works, iron foundries, and shipyards. At first, these newcomers settled among an already present German population and worshipped at Saints Peter and Paul Roman Catholic Church, the local German-speaking congregation. As more Polish arrived, they migrated to a city neighborhood called Liberty Park and established Saint Joseph's Roman Catholic Church to serve the needs of the Polish communicants. The church incorporated in October 1892, following some occasional services held in private homes and proceeded to erect a fitting edifice (Dorwart 2001:108-109). During this time period, the United States received an unprecedented influx of Polish émigrés, which added dramatically to the membership of the American Roman Catholic

Church, making it the largest religious body in the country. Native Poles in America totaled 147,440 in 1890. Ten years later, the number more than doubled to 383,407. Friction surfaced rather quickly between the new Poles and the established church hierarchy predominated by Irishmen. Church leaders shunned the Polish due to language barriers and the Poles' desire to retain old-world customs and religious practices. In response, the Poles repeatedly made requests for their own priests and bishops only to have the church ignore their petitions. American Catholic leaders thought the Poles should become "Americanized," a stand the Polish ardently resisted (Wytrwal 1969:257-274).

As author Joseph Wytrwal states:

> The Catholic Poles in America thus found themselves in a dire predicament: to become accepted Americans, they would have to reject their Polish heritage; to become accepted Catholics in America, they would have to reject their own Catholic Polish heritage and adopt an American version of English culture together with the equally unfamiliar form of English Catholicism. The educational requirements in the United States also presented the Poles with a double threat. In the existing parochial schools, their children would forget the ancestral language; in the public schools they would have training in neither language nor religion (ibid.:261).

Faced with this paradox, three distinct groups emerged within the Polish community: many accepted becoming "Americanized" and remained true to the Roman Catholic Church; a second group deserted their faith entirely; and a third faction denounced the demands presented by the Irish Catholic prelates. After attempting the establishment of a separate Slavic diocese in certain urban centers, the third group of Poles rebelled and inaugurated independent Polish parishes. A schism began appearing in American Polish enclaves in Wisconsin, the coal regions of Pennsylvania, and Chicago, Cleveland, Buffalo, and Baltimore. Finally in 1897, the Reverend Francis Hodur organized an independent congregation. The parish maintained the Roman Catholic rites but reverted to the Polish language for all rituals. Hodur and the congregants adopted a church charter that specified joint church governance shared between the priests and the laity. Other parishes soon assumed the same charter; by September 1904, 24 parishes with over 20,000 faithful Poles in five states united to create a new denomination called the Polish National Catholic Church. At the denomination's first national synod, the attendees elected Father Hodur as church Bishop (Wytrwal 1969:257-274).

Locally in Camden, New Jersey, it appears all was well at Saint Joseph's Roman Catholic Church for its first 20 years of existence. At some point in 1912, however, a renegade group of Catholic Poles faced the same paradox as others of their ethnicity around the country and split from the local parish to form the Polish National Catholic Parish of the Resurrection of Christ. Led by Maksymillian J. Lawnicki, known locally as "Iron Mike" and the parish's first priest, a church committee proceeded to purchase land at the northwest corner of Mount Ephraim Avenue and Thurman Street from the Camden Safe Deposit & Trust Company in June 1912 (Camden County Deeds 368:112). Because the church acquired this property before becoming properly incorporated, the Camden Safe Deposit & Trust Company did not confirm the sale to the church until January 1913, after the church achieved its incorporation in July 1912 (Camden County Deeds 373:294). The congregants erected a neat brick edifice on the purchased land; the church building also acquired the moniker of "Iron Mike" due to the influence that Lawnicki held over his parish (Evans, personal communication 2003).

Presumably the congregation increased in size during the first few years of the church's existence. With no land available immediately around the sanctuary for a cemetery, Lawnicki sought other arrangements to provide for his flock's deceased loved ones. A growing Polish presence in suburban villages like Mount Ephraim and Bellmawr led Father Lawnicki and his parish faithful out into the countryside surrounding Camden. As a result, the congregation formed the "Cemetery Association of the Polish National Catholic Parish of Resurrection of Christ" and in October 1916 the new association purchased lots 70, 71, 72 and 73, each measuring 100 feet by 400 feet, from the Camden County Garden Farms Company, a local land development firm. Located at the northwest corner of Bell Road and Anderson Avenue, the combined lots provided the congregation with a ±4.0-acre cemetery (Camden County Deeds 412:145). According to a cemetery plan drawn by the Works Progress Administration (WPA) in March 1938, the cemetery has a maximum capacity of 1,088 burials (Camden County Historical Society, map 89.96.40). The plan, drawn to record veterans' graves, shows two military men buried at the time it was drafted: Leon Sochacki and Stanley Gontarski, both World War I soldiers. Gontarski died during the war in the Argonne offensive (Sheridan 1919:30). The cemetery received additional veteran burials from subsequent wars.

The congregation continued to worship at their church in Camden until its membership dwindled below viability. In August 1989, the parish closed the church and sold the building for $1.00 to the Central Diocese, Polish National Catholic Church, located in Scranton, Pennsylvania (Camden County Deeds 4393:610). Exactly five months later, the Central Diocese sold the building to the Community Baptist Church of Camden for $50,000 (Camden County Deeds 4422:634). The Baptist church was still using the edifice in 2003. Although the congregation is gone, the local parish maintains the cemetery in Bellmawr. In the 2002 tax records for Bellmawr Borough, the contact person is listed as Reverend Drabik, residing at 1111 Thurman Street, Camden, New Jersey. This is the same house that Maksymillian Lawnicki lived in during 1916, according to a Camden city directory of that time (Boyd 1916:1273). It is unknown how many burials the cemetery currently contains or when the most recent interment took place.

World War I and Beyond

America's entrance into World War I brought new, self-contained communities to house war workers in Camden County. Noreg Village rose in today's Brooklawn, constructed to house shipyard employees working at two shipbuilding facilities, the Pennsylvania and the New Jersey Shipbuilding corporations, with their shipyards located in South Gloucester. New York architect Electus Litchfield designed Yorkship Village, now Fairview, for the Emergency Fleet Corporation to house the surge of workers employed at New York Shipbuilding Corporation (Dorwart 2001:120). Originally constructed in Haddon Township, the City of Camden annexed Yorkship Village in 1918 (Snyder 1969:104). Adjoining Yorkship Village, Morgan Village housed laborers for the shipyard and Camden Forge. Following the end of World War I, developers of The Fairfield Estates, sections A and C, laid out this new neighborhood on the east side of the Black Horse Pike in what today is Haddon Heights Borough. However, at the time of its platting, The Fairfield Estates were located in Centre Township and not annexed by Haddon Heights until 1925 (Camden County Filed Plans; Snyder 1969:107, 111).

Beyond the improved highways, another galvanizing event in suburbanization was the construction of the Delaware River Bridge (today's Benjamin Franklin Bridge), completed in 1926. Suddenly, Delaware Township (present-day Cherry Hill) contained the upscale

development of Colwick. During the 1920s, Earl R. Lippincott began constructing Erlton and Haddonfield Gardens. In Audubon and more particularly in Haddon Heights, handsome and stately homes appeared along the White Horse Pike and the community's side streets. As people moved to these and other developments in Camden County, many citizens resented being part of a larger township and "municipal madness" struck and struck hard. Between 1874 and 1929, 26 communities that began as suburban developments became separate boroughs through liberal state laws.

Table 6. Camden County Boroughs Created between 1874 and 1929.

Borough	Erected From	Date
Audubon	Haddon Township	1905
Barrington	Centre Township	1917
Bellmawr	Centre Township	1926
Berlin	Berlin Township	1927
Brooklawn	Centre Township	1924
Chesilhurst	Winslow and Waterford townships	1887
Clementon	Clementon Township	1925
Collingswood	Haddon Township	1888
Gibbsboro	Voorhees Township	1924
Haddonfield	Haddon Township	1875/1894
Haddon Heights	Centre and Haddon townships	1904
Hi-Nella	Clementon Township	1929
Laurel Springs	Clementon Township	1913
Lawnside	Centre Township and Barrington	1926
Lindenwold	Clementon Township	1929
Magnolia	Clementon and Centre townships	1915
Merchantville	Stockton and Delaware townships	1874
Mount Ephraim	Centre Township	1926
Oaklyn	Haddon Township	1905
Pine Hill	Clementon Township	1929
Pine Valley	Clementon Township	1929
Runnemede	Centre Township	1926
Somerdale	Clementon Township	1929
Stratford	Clementon Township	1925
Tavistock	Centre Township	1921
Woodlynne	Haddon Township	1901

Source: Snyder 1969:103-109

In the case of Clementon and Centre townships, these two political entities lost so much land mass to borough creation that they dissolved their government and completely disappeared from the map as political entities.

Within the current project area, state-funded improvements to the Black Horse Pike during the 1920s brought a new round of development, with Bellmawr receiving Orchard Terrace, Bell Gardens, Crescent Park, Acres of Diamonds, and Bellmawr Terrace between 1923 and 1928 (Leap 1981:170; Camden County Filed Plans). Similarly, Mount Ephraim expanded with a revised version of James Davis's plan, and such developments as Buckingham Estates, the Linwood Tract, and Idora Park, were all platted between 1919 and 1927 (Camden County Filed Plans). New housing starts boomed throughout Camden County during the 1920s, but the stock market collapse of October 1929 and the ensuing Great Depression had a profound effect on suburban development. For example, Delaware Township's unemployed homeowners could not meet their mortgage obligations and lost their homes. As Jeffrey Dorwart wrote, "Few newcomers bought property in the township. Many [development] projects remained little more than concrete sidewalks wandering through weed-choked building lots" (Dorwart 2001:164). This situation was typical throughout the county. Delaware Township's government went bankrupt due to the lack of tax revenue. Facing a budgetary crisis, Camden County was forced to bring suit against the Bellmawr, Runnemede, and Laurel Springs boroughs to collect back taxes owed to county government. Meanwhile the state ordered Delaware and Voorhees townships to be placed under the control of the State Municipal Finance Commission (ibid.:131, 164). As Camden County began to gear up for war production in anticipation of America's entry into World War II, new defense housing developments revived the moribund local home construction industry, putting many unemployed citizens back to work. The federal government constructed such war worker communities as Ablett Village in East Camden, Audubon Park, Bellmawr Park, Crescent Park, and additional dwellings in Camden's Morgan Village to house war workers. Of these defense housing developments, the federal government, in concert with organized labor, constructed Audubon Park and Bellmawr Park and subsequently operated each community as innovative mutual housing corporations. Both communities continue to operate under the mutual corporation system today (ibid.:140-142).

Bellmawr Park Mutual Housing Corporation

The Great Depression of the 1930s affected Camden County in the same way as other communities across America, causing bank failures and widespread unemployment. At first, business leaders presumed that the county's diverse economy would spare its people from

dramatic effects. However, that hope was short-lived: by June 1933, the county enumerated almost 41,000 people on its relief rolls. Still, the citizenry retained steadfast faith in President Herbert Hoover's economic policies and supported him in the 1932 election. Republican leadership in Camden County, firmly entrenched since the Civil War, warned that Franklin D. Roosevelt would meddle in local affairs if elected to the presidency. However, despite the Republicans' best effort to defeat Roosevelt, he ascended to the nation's highest office with a huge vote margin and a clear mandate for change. The Roosevelt administration and its "New Deal" brought forth a wide array of governmental agencies to deal with the country's economic woes. This so-called "alphabet soup" included the National Recovery Act (NRA), the Civil Works Administration (CWA), Public Works Administration (PWA), and the Works Progress Administration (WPA). A variety of federally-funded projects put Camden County residents back to work improving the county's infrastructure and recreational facilities for the future (Dorwart 2001:129-134).

The New Deal and the power of the rising Democratic Party stimulated local labor activism in the county. Several strikes occurred, and labor unrest grew violent at times. In 1934, John Green, a worker at the New York Shipbuilding Corporation, capitalized on labor's newfound strength in the New Deal Era and organized the Industrial Union of Marine and Shipbuilding Workers of America (IUMSWA) with the help of others across the nation. Green formed the very first local of the IUMSWA at New York Shipbuilding Corporation and served the national organization as the first president, holding that position for many years. As the United States entered the final years of the Great Depression, it faced a world being ravaged by German, Italian, and Japanese military aggression. The rising global Axis threat caused American industries to retool for federal defense contracts and other preparations for war that finally ended the unprecedented decade-long financial malaise (Dorwart 2001:138-139). In Camden County, New Jersey, the two main urban centers, Camden and Gloucester City, dominated local industrial activity. The New York Shipbuilding Corporation stood ready to construct warships, its plant extending 2.0 miles along the Delaware River in South Camden and the northern tip of Gloucester. In 1938, it received the naval contract for Battleship "X" or the U.S.S. South Dakota, symbolically signaling the Great Depression's end in Camden County. Nearby, the Camden Forge manufactured many large components for the shipyard. RCA, the Radio Condenser Corporation,

and a myriad of other industrial concerns received an ever-increasing number of defensive contracts (Dorwart and Mackey 1976:261-272).

Weary and restless from its long period of unemployment, the American workforce flocked to manufacturing centers across the country, eagerly seeking the new jobs generated through the defense contracts. In Camden County, the population grew by almost 50,000 people during the years 1940 to 1944. In their 1976 county history, authors Jeffrey Dorwart and Philip Mackey wrote: "War work required vast labor reserves and thousands of laborers moved into Camden County…. This growth stimulated real estate development and house construction in both Camden City and the suburban towns" (1976:271). Housing projects for war workers appeared seemingly overnight in Camden City and county suburban townships and boroughs. A special type of housing project arose out of the collaboration between organized labor and the federal government. Referred to as the "Camden Plan," due to its direct connection with John Green, founder and president of the IUMSWA, the concept dates to September 1940, when Green testified before Congress. He indicated a dire need for defense housing but wanted the tenants to become part of the process, assigning the residents with a level of responsibility (*Courier-Post* 13 December 1941:9).

As a result of his testimony, Green won a conference with federal housing officials and together labor and federal officials hammered out the mutual housing concept. In a special insert of the *Courier-Post* newspaper dated December 13, 1941, and issued to celebrate the completion of the first mutual housing development, Audubon Village (renamed Audubon Park), Green stated:

> It would be folly to build homes for workers and then turn these over to be managed by men with real-estate minds. We want the kind of democratic management which the United States Housing Authority stands for, in which the tenants accept some of the responsibility. We want management with a social outlook. Labor wants to create a culture for itself, and can only do so when it is able to organize decent facilities in the neighborhoods where we live (*Courier-Post* 13 December 1941:9).

The United States government began the Bellmawr Park Defense Housing project by obtaining the necessary land through condemnation proceedings. In federal district court, the government sought the right of eminent domain from the Crescent Housing Corporation, Morris Lichtman,

George R. Price, and Frances Price. On September 26, 1941, the court found in favor of the United States and the government issued a Declaration of Taking on the same date, which indicated that the landowners received $60,000 for the vacant land (Camden County Deeds 936:268). However, confident that it would win the case, the WPA dispatched 50 workers on September 21 to begin "…clearing 30 acres of densely wooded land…preliminary to the construction of a 500-unit national defense housing project" (*Courier-Post* 23 September 1941:20). Workmen for a second WPA project at the site installed the utilities and constructed paved access roads, storm sewers, and concrete sidewalks and curbs. The newspaper article indicates that private contractors would undertake the actual construction work, consisting of 275 buildings, "…to house Camden shipyard workers" (ibid.).

The September 27, 1941, issue of the *Courier-Post* carried a small article that indicated that Bellmawr Borough voted to construct a new water system to accommodate the new defense housing project. The news item stated that the "…500 defense homes [are] to be built in Crescent Park section by the government and the Inganamort development" (*Courier-Post* 27 September 1941:18). The Inganamort Corporation, a New Jersey development firm, had already gained experience constructing the adjacent Crescent Park Homes. The Division of Mutual Ownership Defense Housing (DMODH) awarded the design contract for the Bellmawr Park homes to the New York architectural firm of Mayer & Whittlesey, who worked in collaboration with Camden architect Joseph Hettel (Szylvian 1996:44). In discussing the architects' design approach to the Bellmawr development, Dr. Szylvian notes in her paper:

> In an article that appeared in The Architectural Forum, the architects expressed their determination to avoid "architectural laziness" and "endless repetition." They were confident in their ability to create an architecturally stimulating community without resorting to a "jumbled" site plan and "vulgar style differences." Such an approach obviously was associated with the "speculator's interpretation of middle-class snobbishness" and an "imitation of the rich man's pre-1929 foolishness" (ibid.).

The local newspapers yielded no additional information on the Bellmawr Park development, so it is not clear whether the Day Housing Corporation partially prefabricated the buildings in Gloucester City as it did for the Audubon Park structures, although this is a likely scenario (*Courier-Post* 13 December 1941:2; Szylvian 1996:26-30). The architects involved in designing

both Audubon and Bellmawr parks had gained a considerable reputation for building in the International Style. While the buildings at these two mutual housing developments feature some International Style elements, the overall "conventional appearance" likely stems from the desire of John Green and his IUMSWA union "to provide the rank-and-file with homes that conformed to their notions of what a house should look like as much as possible" (Szylvian 1996:23).

Early in June 1942, Hurley's Department Store began advertising that they had furnished the model homes in the development and also maintained a similar display within their retail establishment. In part, the ad reads, "Your New Victory Home Completely Furnished as Low as $359.90" (*Courier-Post* 6 June 1942:2). By June 6, 1942, the press of war workers and the lack of housing had reached critical mass. Although not fully completed, the Bellmawr Park Mutual Housing Authority admitted residents on June 6, nine days ahead of the scheduled opening date. The housing authority operated under the aegis of the Federal Public Housing Administration. A total of 28 families moved in early and over 1,000 applicants filed with the authority. According to the June 18, 1942, edition of the *Courier-Post*, the government restricted Bellmawr Park exclusively to defense workers. The Bellmawr Park Mutual Housing Authority manager Mrs. Margaret Kearney stated:

> To each applicant, the plan of the authority is explained. …The plan provides a program for the ultimate mutual ownership of all homes by the residents. All residents become members of the management corporation and through it they will become the permanent owners of the whole property. This will take approximately 33 years.
>
> Through this system the residents can obtain the following advantages: Transfer from dwelling of one size to another without loss of equity, a full share of all economies effected by management, cash refunds for careful maintenance of dwelling, participation in management and operation of the property, and unrestricted enjoyment of community and recreational facilities (*Courier-Post* 18 March 1942:17).

Mr. Joseph Prestone, a New York Shipbuilding Corporation employee formerly of Philadelphia, became the first resident of Bellmawr Park, along with his wife and child. He moved into 370 Browning Lane (ibid.).

Following the end of the war, the housing authority continued to operate as an adjunct to the federal government. However, on the last day of 1952, the United States issued a quitclaim deed

to the Bellmawr Park Mutual Housing Corporation. Reciting the actual government agencies involved, the deed states in part that the United States of America acted "…by and through the Public Housing Administration, a constituent unit of the Housing and Home Finance Agency…" (Camden County Deeds 1707:437). The sale was "…subject to purchase money mortgage in the amount of $1 million bearing even date" (ibid.:440). The deed featured an appended Exhibit "A," containing a list of an "Inventory of non-Expendable Property—Project NJ-28042" (ibid.). The list included such items as 60 gas ranges, an automobile, two Cushman scooters, a pick-up truck, office equipment, chairs, cots, swing sets, jungle bards, see-saws, and picnic tables. The Bellmawr Park Mutual Housing Corporation continues to manage and operate the Bellmawr Park development today.

Post World War II Suburban Housing

Following the Second World War, Camden County would undergo its most dramatic suburban transformation, with thousands of single-family homes erected for soldiers and sailors returning home from the war. Even before hostilities ceased, the federal government rearmed World War II veterans with a new type of weapon to ensure a better future, the "G.I. Bill of Rights." Passed unanimously by the 78th Congress, President Franklin Roosevelt signed the "Servicemen's Readjustment Act of 1944 (Public Law 78-346) into law on June 22, 1944 (VA [VA] history website 2003). Congress passed this law to assist millions of men and women serving in the military to resettle into civilian life with minimal impact on the nation's economy and diminution of any associated sociological problems. Under this law, the VA offered guaranteed home loans and education benefits to veterans. According to the VA:

> Credit was viewed as one of the cornerstones of a program to aid the veteran in his/her effort to readjust to civilian life. In the opinion of the supporters of the original legislation, the Government should provide the means whereby the veteran could obtain favorable credit which would permit him/her to shelter his/her family or begin a business or farming venture. This concept arose because of the feeling that veterans, in view of their service in the Armed Forces had missed an opportunity to establish a credit rating which could be the basis of borrowing to acquire a home or to establish a business. The establishment of the loan guaranty program was an attempt to place the veteran on a par with his/her non-veteran counterpart (VA history website 2003).

As originally drafted, the home loan program featured several pronounced limitations. The VA limited its maximum guaranty to 50 percent of the total loan, but not to exceed $2,000 and

limited the length of the loans to 20 years with a maximum interest rate of four percent. Wording in the law included a type of price control, vis-à-vis, "the purchase price paid or to be paid, or the construction cost, including the value of the land, could not exceed the reasonable normal value as determined by an appraisal" (Public Law 1944:387-391). Only World War II veterans were eligible for benefits and loan applications had to be submitted within two years of service separation or the cessation of hostilities. Congress addressed these restrictions and shortcomings in the amending legislation passed in 1945 (Public Law 79-268) resulting in an almost total rewrite of loan guaranty benefit as stated in the 1944 law. The new law raised the maximum guaranty loan to $4,000 and dropped the word "normal" from the phrase "reasonable normal value." Congress also extended the loan maturity periods from 20 to 25 years and veterans now had a ten-year window to apply for a VA mortgage. In an evolution of legislative intent, the federal government transformed the home loan benefit from a goal of immediate readjustment aid to a long-range veteran benefit (VA [VA] history website 2003).

The revamped mortgage benefit spurred housing starts in the second half of the 1940s. In the years 1948 and 1949, residential construction set new, successive all-time records. But housing remained at a premium, with many urban centers still overcrowded with defense workers who relocated from rural areas to obtain industrial-based employment. By 1950, Congress was again spurred into action, passing change legislation to both the Servicemen's Readjustment Act and the National Housing Act. This Congressional effort included eight basic changes in the veteran home loan program of the Housing Act of 1950 (Public Law 81-475). Percentage, monetary, interest, and maturity rates changed as part of this landmark legislation. The law also authorized the VA to establish minimum construction standards, which strengthened the appraisal and inspection process, offering protection to the purchasing veterans (VA [VA] history website 2003). Developers and builders scrambled to design houses according to the new standards set forth by the VA, which minimally included hardwood floors, plastered walls, Youngstown-style metal kitchen cabinets, and ceramic-tiled bathrooms. In 1953, returning Korean Conflict military personnel received the same veteran benefits.

The Impact of Improved Highways and the Walt Whitman Bridge

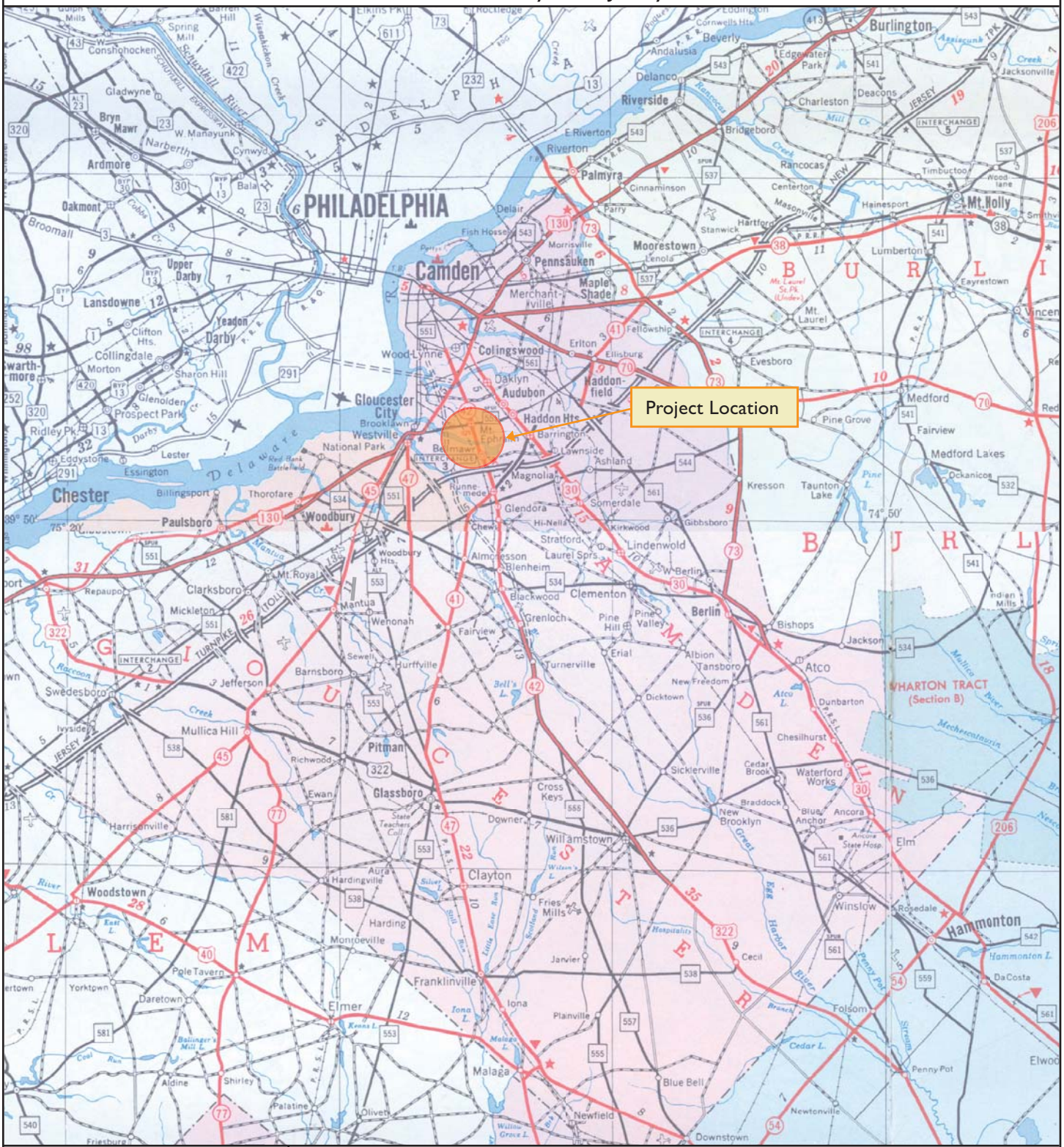
The improved roads of the late nineteenth into the early years of the twentieth century ushered in a second "transportation revolution," centered on the automobile. This new revolutionary age began in the region after 1910 and has continued unabated throughout the twentieth century. New types of road paving, such as concrete and bituminous asphalt, were introduced during the opening years of the automobile age, generating a new wave of transportation technological advances. The automobile has accelerated and intensified the process of suburbanization and commercial expansion that began with the railroad and trolley lines. The Delaware River Bridge (now the Benjamin Franklin Bridge), completed in 1926, facilitated access to southern New Jersey counties from the Philadelphia metropolitan area. Highway planning efforts of the 1930s lacked funding for actual construction due to the Great Depression. America's entry into World War II also delayed any proposed road construction. Following the war, however, New Jersey revisited the need for new limited-access highways built to modern standards. For example, the completion of the New Jersey Turnpike in 1952 made access to Camden County attractive to commuters and new or relocating industrial enterprises (Cranmer 1964:56-67) (Figure 22). In 1951, New Jersey Governor Alfred Driscoll and Pennsylvania Governor John S. Fine signed a bi-state act to create the Delaware River Port Authority (DRPA). A year later, President Harry Truman approved the new authority and, at the same ceremony, signed a congressional bill authorizing the construction of a new bridge over the Delaware River. The new authority signed bridge construction contracts in 1953 and work began. Designed to connect south Philadelphia and Gloucester City, officials named the new suspension bridge for Camden poet Walt Whitman (Andariese 1981:66-67). The span opened for passage in May 1957 and quickly eclipsed the upstream, newly-named Benjamin Franklin Bridge in total traffic carried. Walter Andariese, chronicler of the Benjamin Franklin Bridge, indicates the causality of this volume change when he writes:

> The Benjamin Franklin Bridge did not have the Walt Whitman's accessibility. Brand-new superhighways were built to the Whitman, the North-South Freeway in New Jersey from Turnersville, and an extension from the Schuylkill Expressway in Philadelphia. (The Atlantic City Expressway joined the North-South Freeway in 1964.) The new bridge created much of its future traffic. Many people living and working in Philadelphia found it desirable to live in Jersey—and to use the bridge getting to their jobs. (ibid.:69)

Figure 22
1955 New Jersey State Highway Department Map
Showing Highway Development in the Vicinity of the Project Area

I-295 / I-76 / Route 42 Direct Connection

Camden County, New Jersey



Map Document X:\Graphics\Projects\P-593A\Fig22_1955NJSTHWYMap.ai

Source: 1955 New Jersey State Highway Department Map.

Concerning the lasting impact of the bridge on Camden County's postwar development, authors Jeffrey Dorwart and Philip Mackey state in their 1976 Camden County history:

> Movement to Camden City's outlying neighbors had accompanied the opening of the first Camden-Philadelphia bridge in 1926 and the dedication of a second crossing in 1957 also introduced an era of suburban expansion. …The $85 million Walt Whitman Bridge, the seventh longest suspension bridge at the time, opened up hitherto sparsely-settled areas of Camden County, augmented population in established suburban communities, and encouraged the relocation of industry in both Camden and neighboring Gloucester Counties. Industrial parks, shopping centers, apartment units, and housing projects appeared in Barrington, Magnolia, and Bellmawr in the late fifties and early sixties. Population growth in these communities reflected economic development. Bellmawr expanded from 5213 to 11,853 residents between 1950 and 1960, and by 1970, 15,618 people lived in the borough (1976:329).

I-76, Route 42, and I-295

In 1932, the Regional Planning Federation, predecessor to the Delaware Valley Regional Planning Commission (DVRPC), proposed constructing a parkway from today's Benjamin Franklin Bridge to Atlantic City in a design similar to that of Robert Moses's. Unfortunately, the federation lacked a prominent planner who could pursue this project to completion and the planning organization accomplished little more than placing a dotted line across south Jersey. Following World War II, the New Jersey State Highway Department again proposed such a road and the announcement of a new bridge over the Delaware River added urgency to the plans. The state acquired right-of-way for the new road during the early 1950s and construction began. The original plans called for the roadway to extend from the foot of the Walt Whitman Bridge to points south. However, a planned roadway from the Benjamin Franklin Bridge to Gloucester City and a connection with Route 42 received 90-percent federal funding in 1956, so the state revised the plans for Route 42, placing its new northern terminus in Bellmawr. The federally funded 3.1-mile highway, which today carries the I-76 designator, opened for traffic on May 16, 1957, the same day the Walt Whitman Bridge opened. The first 4.3-mile segment of Route 42 opened from its terminus in Bellmawr to Route 168 in Blackwood during 1958. A year later, the remaining 3.8 miles opened, providing access to Turnersville and an eventual connection with the planned Atlantic City Expressway, which opened in 1965. In anticipation of increased traffic, the state widened Route 42 to six lanes. Eleven years after completing the Route 55 interchange with Route 42 in 1985, the state widened Route 42 between its northern terminus and the new interchange to eight lanes. Today, Route 42 carries about 85,000 vehicles daily, I-76 has a daily

traffic count of 145,000, and I-295/I-76/Route 42 interchange is traversed by 200,000 vehicles every work day (Philadelphia area highway website 2004).

Planning for Interstate Route 295 began several years before President Dwight Eisenhower signed the enabling legislation for an interstate highway system. During the late 1940s, New Jersey lawmakers authorized a four-lane, limited access highway to replace the existing Route 130 and to connect Trenton and Camden with the Delaware Memorial Bridge, under construction at the time. The state opened portions of the new U.S. Route 130 in Gloucester County in 1948 and 1954, but the new roadway did not meet the federal interstate standards drafted after Eisenhower signed the interstate legislation in 1954. Constructed in sections from the Delaware Memorial Bridge to Trenton from 1954 through 1994, today traffic count on I-295 varies depending on the section. Within the corridor between Exit 24 (Gloucester County Route 551) and Exit 29 (U.S. 30), daily vehicular traffic totals 65,000 south of Exit 26 and approximately 105,000 north of Exit 26. Construction crews built this section of 295 between 1958 and 1961 (Philadelphia area highway website 2004).

Local Postwar Residential Development

Beginning in the mid-1950s and for the ensuing ten years, Bellmawr received its final round of major subdivision developments. Builder/developers platted both Bellwood Park and Bellcroft in 1955. The following year, Bellcroft Estates and Crescent Park, Section 2, appeared on the landscape. All of these housing subdivisions developed on the west side of Black Horse Pike. Across the pike, construction began on Maple Lane during 1958. Adjacent to Anderson Avenue, Collett Court appeared in 1961 and Maloney Court the following year. Construction workers completed the small development called Bellcrest, which features small, split-level semi-detached houses that have a governmental-design appearance, in 1964. Another developer built the Countrytowne Apartments along Browning Road during the same year. In the southwestern corner of Gloucester City, the Cypress Garden subdivision developers filed plans with the county in 1953 for the new residential neighborhood across Market Street from the Sherwood Park homes, which began a year earlier. Another subdivision named Park Manor appeared along Market Street in Gloucester City during 1954 (Camden County Filed Plans).

Possessing single homes in suburban communities like Bellmawr and Mount Ephraim during the 1950s and 1960s allowed residents to continue working at the old heavy industries in Camden, Gloucester and even Philadelphia, but permitted them to retreat from urban blight, decay, crime and social unrest at quitting time by driving to their tract house "in the country." However, local deindustrialization began in the second half of the 1960s, when one of the area's leading employers, the New York Shipbuilding Corporation, closed down after auctioning off all of its equipment. Other firms followed, ceasing business entirely, or, in some cases, relocating to the southern states. The phenomena of heavy industry abandoning urban centers during the 1960s and into the 1970s gave rise to industrial parks and corporate centers in suburban locations. Esterbrook Pen Corporation, based in Camden since 1859, moved to the Cherry Hill Industrial Park in 1966 before its final relocation to Canada. Local real estate tycoon Leslie Rogers and others developed so many diversified business centers in Pennsauken Township, it caused comedians in area night clubs to quip that Pennsauken was an Indian word meaning "Industrial Park." In Bellmawr, the developers of the Interstate Industrial Park platted the first section in 1972, followed by a second section two years later (Camden County Filed Plans). Presumably, the park's name is based on the presence of the adjacent Interstate Highway Route 295.

Today, Bellmawr and Mount Ephraim are mature suburban communities with only pockets of land and some single lots remaining for development. As an indication of the availability of limited construction sites, Bellmawr Borough has recently razed the Bell House, a grand, early nineteenth-century frame farmhouse once standing near the corner of Bell Road and Browning Road, and is constructing a new senior housing project in its stead.

4.4 Summary Assessment of Archaeological Sensitivity

4.4.1 Prehistoric Archaeological Site Probability

The potential for Paleoindian or Early Archaic sites to be located within the APE is considered to be moderate. The establishment of mixed deciduous forests adjacent to the streams that became Big and Little Timber creeks would have offered a selection of natural resources ideal for temporary procurement camps. The APE also contains moderate to high probability for small,

Middle or Late Archaic camps along the banks of the Little Timber Creek, as evidenced by the presence of Site 28-Ca-92 just north of the current APE.

Beginning around 3 to 2 ka and continuing to the historic era (e.g., Terminal Archaic through Late Woodland periods), the regional geomorphology and faunal/floral communities began to take the form first observed by European traders and settlers. From a human ecological perspective, the significant environmental changes at 3 to 2 ka were: 1) a rise in sea level to almost current levels; 2) sedimentation of the drowned Delaware River Valley; and 3) a landward transgression of tidal estuary floral and faunal communities. The combination of these processes was to form a sharp ecotone between upland vegetation and faunal communities with estuarine resources. Although the importance of exploitation of marine resources *per se* has been questioned (Snow 1979), increased sedentism, noted within the northeastern woodlands from the Terminal Archaic through Woodland periods, is believed to have been underwritten in part by increased reliance on riverine resources (Custer 1984; Stoltman and Baerreis 1983). These changes in coastal morphology and resource availability may have placed a greater dependency upon locales such as the APE due to its proximity to major tidal waterways and to those areas from which riparian resources could be extracted.

It can be concluded from the above points that there is a high probability for Terminal Archaic through Woodland period prehistoric sites within the APE. The testable portions of the APE encompass flat to gently sloping landforms overlooking Little Timber Creek. These landforms would have been conducive for short and extended periods of prehistoric occupation.

Historic-era disturbances and modifications to natural landforms within the APE have significantly impacted the potential for the preservation of archaeological resources within the project APE. The construction of the I-295/I-76/Route 42 interchange disturbed a significant portion of the APE, especially potentially intact terrain bordering Little Timber Creek. Structures associated with the mausoleum complex at New Saint Mary's Cemetery, the church and school at the Church of the Annunciation property, and other urban development from Bellmawr and Mount Ephraim boroughs have encroached upon the APE as well. However, the field view of the project area identified small parcels of potentially intact ground surrounding the

I-295/I-76/Route 42 interchange within the APE. These small areas may contain undisturbed archaeological deposits associated with prehistoric occupation in the project APE. Overall sensitivity for intact prehistoric sites, therefore, is evaluated to be moderate.

4.4.2 Historic Archaeological Site Probability

Historic background research has indicated a moderate to high potential for historic archaeological resources within the APE. The project APE is situated in an area with an extensive period of historic occupation dating back to the earliest colonial establishments in Camden and Gloucester counties. In particular, the eighteenth-century Harrison-Glover House, found in the southeastern portion of the archaeological APE, was the primary residence on a large tract of land encompassing Big and Little Timber creeks. Historic documentary research suggests that the property contained a brick kiln and a landing to Little Timber Creek. The original section of the house has had several additions constructed in the eighteenth through twentieth centuries. In addition, twentieth-century urban development and the construction of the I-295/I-76/Route 42 interchange altered a significant portion of the Harrison-Glover House tract landscape. However, the yard area surrounding the Harrison-Glover House appears to be intact. Refuse deposits associated with the eighteenth through twentieth-century occupation of the Harrison-Glover House, as well as the remains of ancillary structures, such as outbuildings, stables, wells, and privies, might be present in the APE encompassing the New Saint Mary's Cemetery and the Harrison-Glover House. The remaining three testable sections of the APE exhibit moderate potential to contain historic archaeological deposits related to the late-nineteenth- and early-twentieth-century residential development in the project area. Late-nineteenth-century maps illustrate several farmsteads adjacent to the project APE, while early twentieth-century land plats document the growth of urban communities surrounding the APE. The moderate to high potential for historic archaeological resources, coupled with the potential absence of ground disturbance in the testable portions of the APE, creates a moderate to high sensitivity for historic archaeological resources within the APE.

4.4.3 Summary Assessment of Archaeological Sensitivity

Background research in the history and prehistory of the area and region, in conjunction with visual inspection, has been used to evaluate the potential for subsurface cultural resources within the APE.

Given the ecological setting of the APE, there is a moderate to high probability that temporary resource procurement camps or microband base camps from the Late Archaic through Woodland periods existed within the APE. The APE also contains moderate potential for Paleoindian and Early Archaic archaeological resources. The APE is situated adjacent to Little Timber Creek and Big Timber Creek, two established waterways that contain a variety of faunal, floral, and other natural resources sought out by the local Native Americans. While the construction of the I-295/I-76/Route 42 interchange, and to a lesser extent the surrounding twentieth-century urban development of Bellmawr and Mount Ephraim, has impacted the landscape, the APE does contain small sections of ground that may not have been affected by these activities. The segment of the APE encompassing the New Saint Mary's Cemetery has a high sensitivity for historic archaeological resources associated with the eighteenth through twentieth-century occupation of the Harrison-Glover House. The yard area surrounding the Harrison-Glover House remains intact and has high sensitivity for archaeological deposits associated with the domestic occupation of the residence, including wells, privies, middens, and the structural remains of outbuildings, including pots molds, foundations, and other subsurface features. The remaining sections of the APE exhibit moderate sensitivity for historic archaeological deposits associated with the late-nineteenth- and early-twentieth-century occupation in the project area. Based on these findings, a Phase I Archaeological Survey was recommended for the proposed APE.

4.5 Archaeological Investigation Results

For the purpose of this report, the results of the Phase I Archaeological Survey and Phase II Archaeological Evaluation have been combined into one report. The discussion of soil morphology and artifact assemblage reference data collected in both phases of the project and were combined into one synthesis to provide an overall review of the archaeological

investigation of the project APE. In the event that the discussion required differentiation between excavations conducted in the Phase I and Phase II effort, this was noted in the text.

4.5.1 New Saint Mary's Cemetery (Area I)

Area I consists of a 2.5-hectare parcel of land within the APE located on the north and west sides of the New Saint Mary's Cemetery, adjacent to the right-of-way for the I-295/I-76/Route 42 interchange (Figure 23, 24). The southern end of the Area I consists of a manmade stormwater retention basin that channels surface runoff into a drainage ditch adjacent to I-295 (Figure 23) (Plate 1). Sparse vegetation and many large piles of fill soil, spoils from grave plot excavations, are found in the central portion of Area I (Plate 2). The western, northern and woodlot containing a thick understory of briars, vines and scrub brush. The Harrison-Glover House property is situated at the eastern edge of the open stockpile site. The Harrison-Glover House, an eighteenth-century, brick, two-story, colonial house, currently serves as an office for the cemetery and falls within the APE of Area I (Plate 3). A staging area and storage for the cemetery's equipment, a dumpster for cemetery refuse, and a concrete block maintenance building are located in Area I to the east of, and adjacent to, the Harrison-Glover House.

Soils within Area I are categorized as Freehold-Downer-Urbanland Complex, Gently Sloping (FxB) and Made Land (Ma). Freehold-Downer-Urbanland Complex, Gently Sloping soils consist of Freehold and Downer soils found in urban areas, but where it was impractical to separately map each soil. FxB soils have a slope that ranges from 0 to 5 percent, and are generally of suburban residential and commercial use. The soils are naturally acidic and moderately fertile with moderate permeability and water holding capacity (Markley 1966:12-13). A narrow band of Made Land (Ma) soils is present along the northeastern limits of the project APE in Area I. Made Land consists of areas so heavily impacted by filling, excavation, and other construction activities that the original soil strata have been destroyed. In Camden County, most Made Land soils are comprised of sand and gravel underlain by clayey layers, but areas close to creeks and riverways also include dredge spoils (ibid.:19).

A 15.2-meter interval testing grid was established across Area I to facilitate archaeological testing. The north-south and east-west baseline for the grid was created following the alignment

HARRISON-GLOVER PREHISTORIC SITE 2
(28-CA-107)

SINKHOLE / EROSION

ARCHAEOLOGICALLY SENSITIVE PORTION
OF HARRISON-GLOVER YARD

PROPOSED ROW LINE / NO ACCESS

PROPOSED ROW LINE / NO ACCESS

TEMP. DEMPSON ROAD ESMT.

TEMP. SITE CRITICAL FUGE ESMT.

STORMWATER BASIN

TEMP. SLOPE MAINTENANCE ESMT.

PROPOSED ROW LINE

N

PROJECT NORTH

Legend

- Shovel Test Pit - Positive Historic / Modern
- Shovel Test Pit - Positive Prehistoric
- Shovel Test Pit - Positive Historic / Modern and Prehistoric
- Shovel Test Pit - Negative
- Area of Potential Effects (APE)
- Test Unit
- Trench
- New Grave

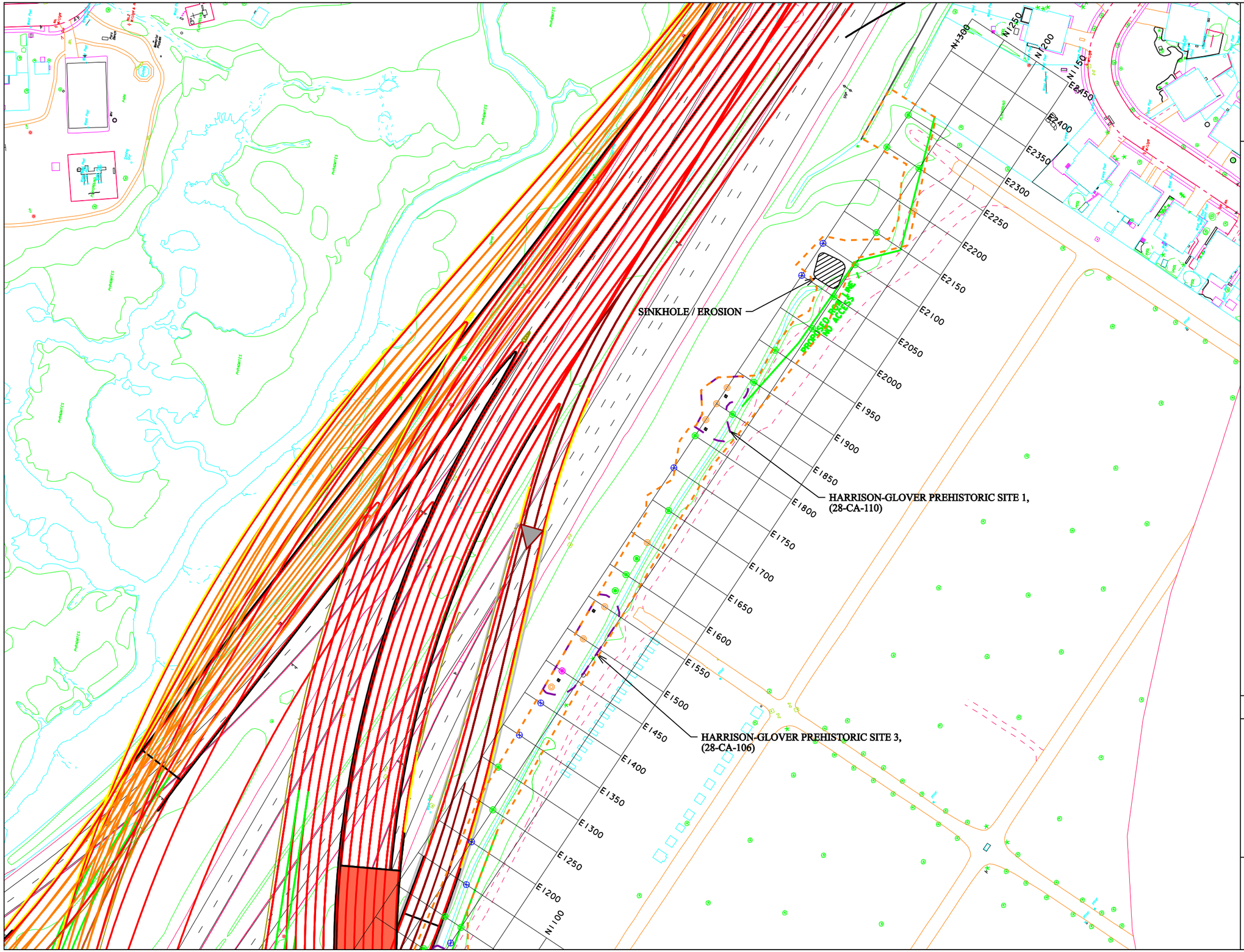
0 60 120 240
Feet

New Jersey Department of Transportation

I-295 / I-76 / Route 42 Direct Connection Camden County

FIGURE 23

Area 1 Archaeological Base Map
Western Portion of APE



N

PROJECT NORTH

Legend

- Shovel Test Pit - Positive Historic / Modern
- Shovel Test Pit - Positive Prehistoric
- Shovel Test Pit - Positive Historic / Modern and Prehistoric
- Shovel Test Pit - Negative
- Area of Potential Effects (APE)
- Test Unit
- Trench
- New Grave

0 60 120 240 Feet

New Jersey Department of Transportation

I-295 / I-76 / Route 42 Direct Connection Camden County

FIGURE 24

Area 1 Archaeological Base Map
Eastern Portion of APE

Plate 1: Stormwater retention basin in Area I. View looking south (June 2004).

Plate 2: Stockpiled soil in the center of Area I. View looking northwest (June 2004).

Plate 3: Harrison-Glover House. View looking northeast (June 2004).

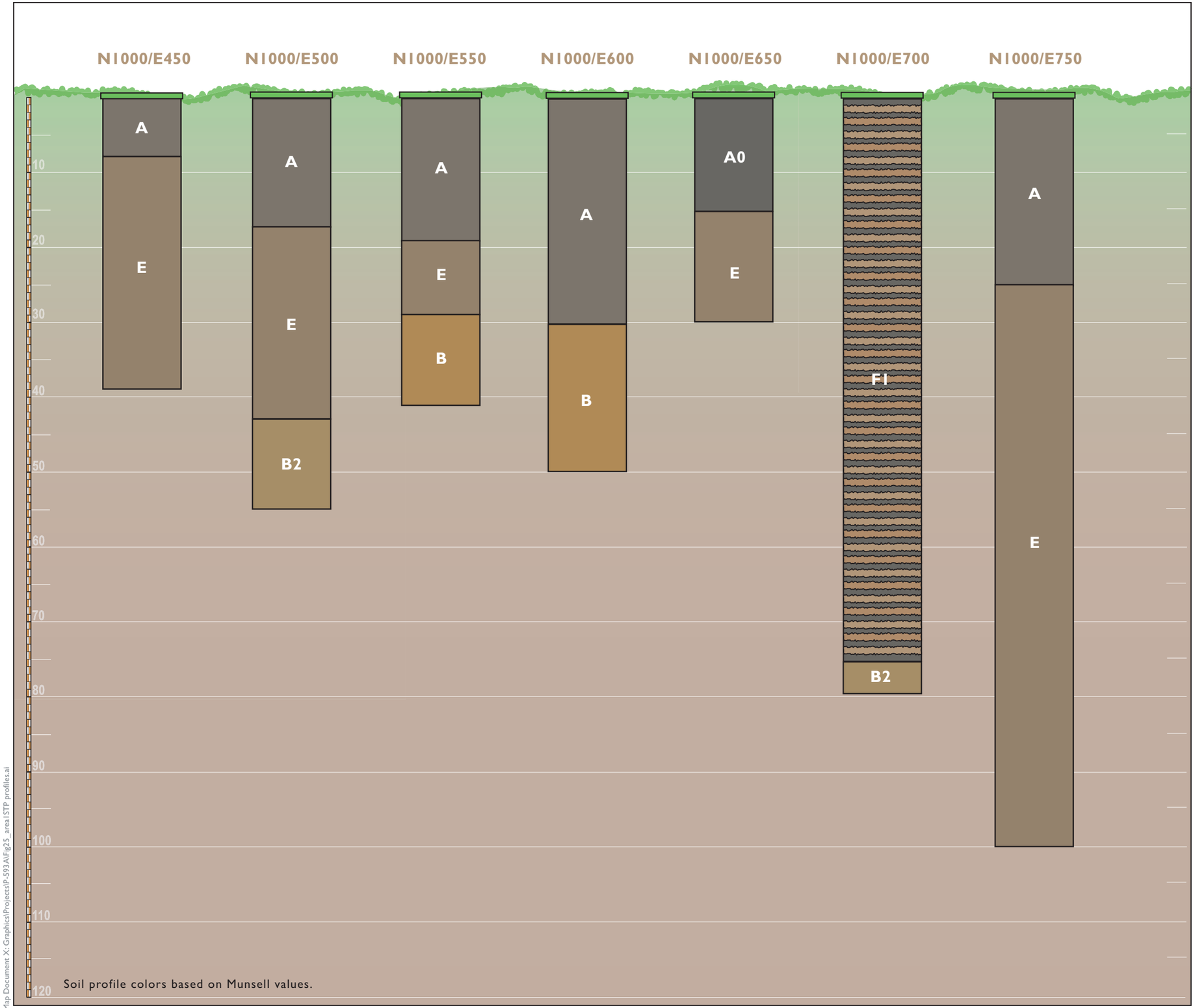
of the mausoleum sidewalks at the northern-most point in the mausoleum complex (Figure 23, 24). A datum, designated N500 E500, was established on the edge of pavement at the northern-most corner of the mausoleum complex. From this datum, a transit and 91.4-meter-long reel tape was used to lay out the grid. Survey stakes were placed at 30.5-meter intervals along the N500, E500, and E600 transects to maintain spatial reference points across the APE. Pin flags were placed at 15.2-meter intervals to delineate STP sites. All points within the grid were designated by north and east coordinates. A total of 91 STPs, 19 mechanically-excavated deep test excavations, five 1.5-meter-square test units, two 1.0-meter-square test units, and six test trenches were conducted on the grid in Area I.

Initial testing in the central portion of Area I revealed a substantial package of dark yellowish brown (10YR 4/4), yellowish brown (10YR 5/6), very dark gray (10YR 3/1), olive yellow (2.5Y 6/6), and light olive brown (2.5Y 5/6) loamy sand to silty sand fill horizons extending more than 1.0 meter below ground surface. A series of five STPs (STPs N650 E550, N700 E550, N750 E550, N800 E550, N1000 E550) were excavated along the E550 transect to determine the horizontal and vertical limits of the fill episodes across Area I. The excavation of the five STPs revealed that the substantial fill deposits encompassed an area ranging from the N500 transect to the N950 transect. Cultural items were recovered from STPs N700 E550, N750 E550, and N800 E550, but were limited to modern debris, such as bottle glass, wire nails, plastic bag fragments, foil-lined paper, and other modern items. Modern items were recovered from within the first 30.0 centimeters of the soil profile.

STP N1000 E550, located in the wooded portion of Area I, did not contain the fill deposits, but exhibited an intact soil profile consisting of very dark grayish brown to dark grayish brown (10YR 3/2-4/2) sandy loam to silty sand A-horizon from 0.0 to 19.0 centimeters below surface, a dark yellowish brown to yellowish brown (10YR 4/6-5/6) sandy loam to silty sand E-horizon from 19.0 to 29.0 centimeters below surface, and a yellowish brown to strong brown (10YR 5/8-7.5YR 5/8) sandy loam to silty clay B-horizon from 29.0 to 41.0 centimeters below surface (Figure 25) (Appendix B). The A-horizon in STP N1000 E550 produced a small sample of historic artifacts, including bottle glass (n=2), brick (n=3), coal (n=1), shell (n=1), and a sherd of whiteware (Appendix C). The B- and B2-horizons did not exhibit any artifacts.

Figure 25
Area I, N1000, Transect Soil Profiles

I-295 / I-76 / Route 42 Direct Connection
Camden County, New Jersey



0
5 cm
10 cm

Vertical Scale:
3/4" = 10 cm

Ao - (10YR 2/1) Black loam

A - (10YR 3/2-4/2) Very dark grayish-brown to dark grayish-brown sandy loam to silty sand

E - (10YR 4/4-5/6) Dark yellowish-brown to yellowish-brown sandy loam to silty sand

B - (10YR 5/8-7.5YR 5/8) Yellowish-brown to strong brown sandy loam to silty clay

B2 - (2.5Y 5/6-6/4) Light olive-brown to light yellowish-brown silty sand

F1 - (10YR 2/1 m/w 10YR 5/6 and 7.5YR 5/6) Fill; black mottled with yellowish-brown and strong brown sandy loam

Map Document X: Graphics\Projects\P-593A\Fig25_area I STP profiles.ai

In subsequent discussions with maintenance personnel from the cemetery, it was revealed that large quantities of fill were deposited throughout the central and southern portions of Area I, covering the original land surface. The original land surface was described as a boggy area that retained water and was unsuitable for human habitation or development. According to Ralph Mullica, head of the maintenance department for the cemetery, the fill was deposited as a base for the construction of the mausoleum complex. During this time, a stormwater runoff basin was constructed in the southern portion of the APE (Mullica, personal communication 2004). Fill, ranging from a depth of 1.2 to 3.4 meters below surface, was placed over intact soils. The average depth of fill was approximately 2.1 meters below surface. An inspection of the landscape between the N950 and N1000 transects confirmed this information. The terrain elevation dropped approximately 1.8 meters from the surface of the stockpile area into the wooded section. A shovel cut placed into the edge of the drop-off revealed that the soils comprising the higher landform consisted of fill noted in the STP excavations on the E550 transect (Plate 4).

A revised testing methodology was utilized to address the excavations in the section of Area I exhibiting extensive fill deposits. In August 2004, a series of trenches were mechanically excavated throughout the central portion of Area I in an attempt to locate intact buried surfaces. A backhoe was used to excavate the overlying fill and reveal the original surface of the landscape. The walls of the excavation were stepped at a rate of 1:2 to avoid potential soil slump. Once the original surface was exposed, an STP was placed at the bottom of each trench, essentially testing the underlying sub-fill soils for intact cultural remains.

A total of 19 mechanically-assisted trenches were opened within the central portion of Area I. The excavations uncovered a 6.0- to 28.0-centimeter thick black to dark grayish brown (2.5Y 2.5/1-2.5YR 4/2) sandy loam buried A-horizon. The depth of this A-horizon varied from 1.4 meters below surface in STP N650 E450 to 3.1 meters below surface in STP N850 E350 (Appendix B) (Plate 5). The buried A-horizon was underlain by a sequence of dark gray to light yellowish brown (2.5Y 4/1-6/4) sandy loam to sand B-horizons. A distinctive marshy odor emanated from these soils when exposed to air, indicating that these soils may be the natural horizons of the original boggy landscape referred to by Ralph Mullica.

Plate 4: Shovel cut placed into bank to expose fill profile. View looking south (June 2004).

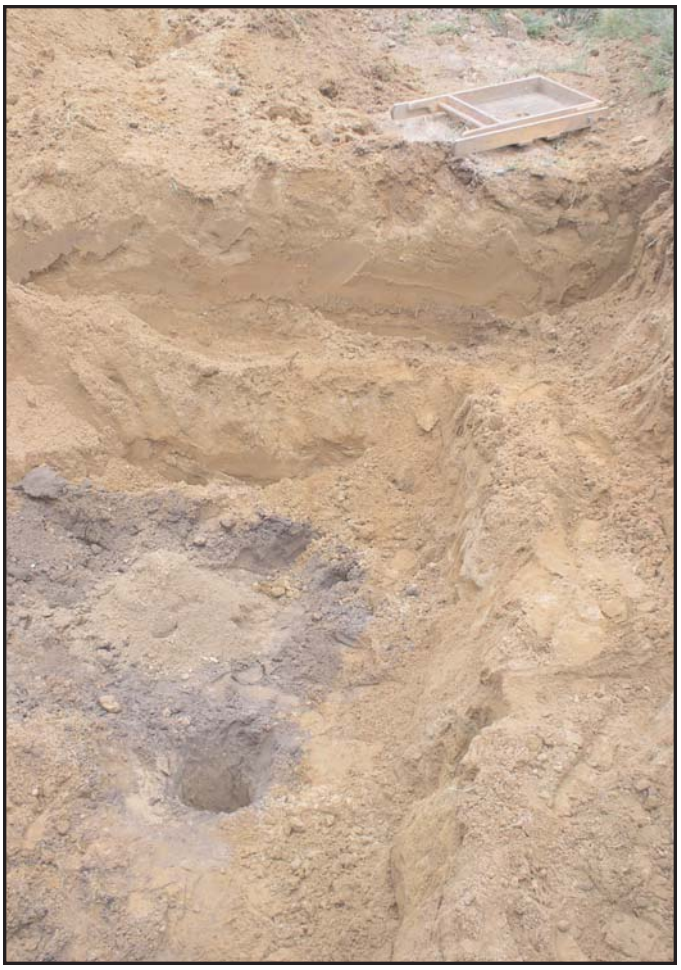


Plate 5: Mechanically-assisted deep testing in STP N800 E400 (August 2004).

A mixture of early nineteenth- through early twentieth-century historic items, consisting primarily of domestic items (ceramics and vessel glass) and architecturally related materials (nails and brick), were found in the buried A-horizon (Appendix C). One prehistoric artifact, a quartz tertiary flake, was noted in the buried A-horizon (Stratum VII) of STP N850 E450, 203.0 to 2.5 meters below surface. This quartz flake represents the only prehistoric artifact found in the mechanically-assisted excavations in Area I.

Analysis of the vertical and horizontal distribution of the buried A-horizon suggests that a wetlands and drainage channel existed in the central portion of Area I. The deepest portion of the channel extended from STP N700 E500 north to STP N850 E350. These two excavations contained deeply buried A-horizons, found at 2.1 meters and 2.9 meters below surface, respectively. The buried A-horizon bracketing this channel was noted at a shallower depth, specifically in STP N700 E400, at 1.6 meters below surface, STP N650 E450, 1.4 meters below surface, STP N900 E500, 1.5 meters below surface, and in STP N800 E600 at 1.3 meters below surface (Appendix B). While the black color and strong, marshy odor are indicators of organic materials, the buried A-horizon did not exhibit branches, leaves, grasses, or other types of solid vegetation often found in brackish or swampy settings.

Archaeological testing in the wooded ground bordering the I-295/I-76/Route 42 interchange yielded soil morphology distinct from the soils underlying the fill deposits. Excavations uncovered a 10.0- to 30.0-centimeter thick very dark grayish brown to dark grayish brown (10YR 3/2-4/2) sandy loam to silty sand A-horizon overlying a 30.0- to 43.0-centimeter thick dark yellowish brown to yellowish brown (10YR 4/4-5/6) sandy loam to silty sand E-horizon (Appendix B). A B-horizon, consisting of a yellowish brown to strong brown (10YR 5/6-7.5YR 5/8) sandy loam to silty clay, was encountered below the E-horizon. STPs N1000 E500 and N1000 E700 contained a second B-horizon, a light olive-brown to light yellowish-brown (2.5Y 5/6-6/4) silty sand, at 60.0 and 75.0 centimeters, respectively, below surface.

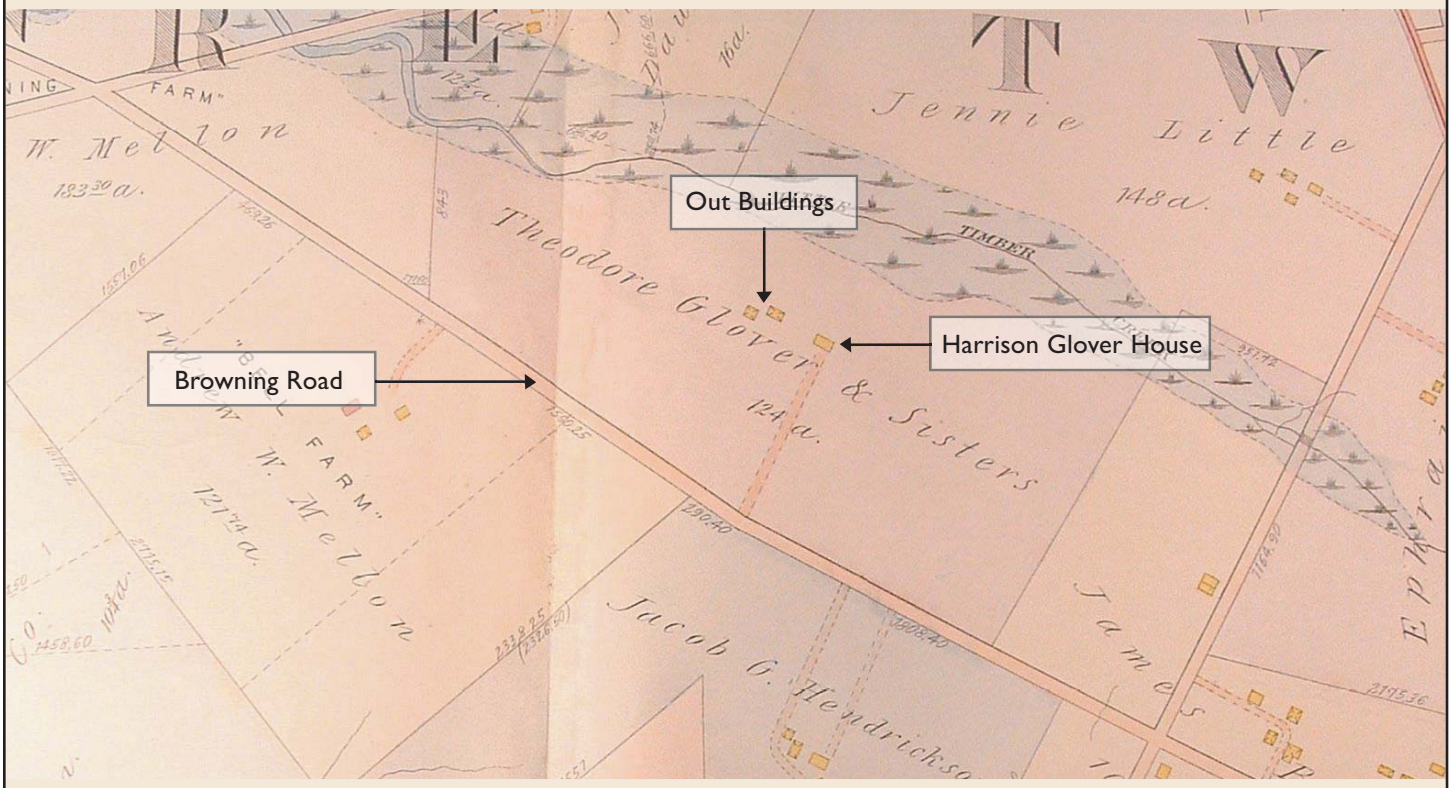
Variations in the soil profile were noted in the wooded sections, and were likely associated with cemetery activities or the construction of the I-295 roadway. A scattered area of daffodils and other bulb plants was observed in the wooded section of Area I approximately 45.7 to 61.0

meters north of the Harrison-Glover House. These plants are typically introduced into the environment through the creation of flowerbeds and other culturally-manifested landscaping features. Inspection of the flower concentration uncovered an approximately 2.4- by 1.8-meter rectangular depression in the ground (Plate 6). Two STPs were excavated in the depression. STP N1053 E595 was excavated on the wall of the depression, while STP N1054 E590 was placed in the center of the depression. STP N1053 E595 exhibited a 16.0-centimeter thick dark brown (10YR 3/3) silty sand A-horizon overlying a yellowish brown (10YR 5/6) silty sand E-horizon, typical of the test excavations conducted in the wooded section. STP N1054 E590 contained three fill deposits, a very dark grayish brown (10YR 3/2) loamy sand horizon from 0.0 to 8.0 centimeters, a dark yellowish brown (10YR 4/6) sandy loam from 8.0 to 27.0 centimeters, and a dark grayish brown (10YR 4/2) loamy sand from 27.0 to 31.0 centimeters below surface. The profile of the test pit noted that these three fill horizons sloped down into the center of the depression. A brown (10YR 5/3) loamy sand B-horizon was found from 31.0 to 45.0 centimeters below the fill episodes (Appendix B). No evidence of a spring-fed water source, such as lamellae or sediment sorting, was noted in the test pits. Cultural materials were limited to two modern amber bottle glass fragments from the A-horizon in STP N1053 E590 (Appendix B).

This depression was initially thought to represent the remains of a cellar or foundation possibly associated with one of two outbuildings depicted on the 1907 Hopkins map (Figure 26). Three fill episodes were identified overlying a subsoil horizon within the interior of the depression, possibly fill overlying a floor. The edge of the depression exhibited an A-horizon overlying an E-horizon. However, no evidence of wood cribbing, foundation stones, or other materials to support the depression walls were found in the excavations. In addition, the scale of the Hopkins map suggests that while the easternmost outbuilding and the depression are of a similar distance from the house, the depression is found roughly 15.2 meters further to the north than the outbuilding. No significant artifacts indicative of domestic occupation were found in the fill deposits. The lack of any significant cultural materials or subsurface features suggests that this depression is not associated with the outbuildings, but possibly is a product of soil removal and deposition associated with the cemetery. The scatter of flowers surrounding the depression may have come from the collection and discard of potted floral arrangements left on cemetery headstones.

Plate 6: Ground disturbance associated with cemetery. View looking north (June 2004).

Figure 26
1907 Hopkins Atlas of Camden County
I-295 / I-76 / Route 42 Direct Connection
Camden County, New Jersey



Not to Scale

Map Document X: Graphics\Projects\P-593A\Fig26_1907Hopkins.ai

An area of severe ground disturbance and fill deposition was noted in the north central portion of the APE between the E800 and E1000 transects (Figure 23). Three depressions noted between the E850 and E950 transects exhibited slightly sloped walls, ranged in shape from approximately 3.0 meters in diameter to approximately 5.0 meters in diameter, and averaged approximately 1.0 meter in depth. A visual inspection of the walls and bottoms of these depressions identified mottled fill deposits. No excavations were placed on the E850 and E900 transects due the extreme erosion and ground disturbance. To the east, STP N1200 E950 contained three, 9.0- to 21.0-centimeter thick fill deposits and a thin, 3.0-centimeter thick dark yellowish brown (10YR 4/4) sandy loam fill lens overlying the B-horizon. The top 9.0-centimeter thick fill deposit contained a brick fragment, and one sherd each of porcelain and whiteware, with no artifacts found in the underlying deposits (Appendix C). STP N1200 E1000 exhibited three, 14.0- to 23.0-centimeter thick fill deposits capping a dark yellowish brown (10YR 4/4) clay loam E-horizon. Stratum I and II yielded a small number of modern refuse, including wire, terra cotta flower pot fragments, and other refuse (Appendix C).Both of these test pits are located just north of the cemetery maintenance facility in an area containing eroded channels from surface runoff and refuse associated with the cemetery. Much of the ground disturbance noted above is associated with surface runoff channeled from the cemetery property to the wooded right-of-way.

At the eastern end of the Area I APE, STP N1300 E2300 yielded modern concrete rubble 35.0 centimeters below surface capped with two fill deposits. STP N1275 E1625 and N1275 E1650 yielded 50.0 to 100.0 centimeters of fill overlying a buried A- and E-horizon. The soil profiles in STP N1250 E2000, N1250 E2050, N1250 E2150, N1275 E1575, N1275 E1850, N1275 E1900, N1275 E1950, and N1225 E2200 exhibited extensive episodes of fill deposited along the eroding and sloping bank of I-295. These substantial fill horizons contained numerous fragments of plastic floral arrangements, terra cotta flower pot fragments, colorless bottle glass, wire fragments, can fragments, and other modern debris, as well as a small scattering of historic ceramics and cut nails, representing debris from the cemetery and the occupation of the Harrison-Glover House mixed together and landscaped as part of the construction of the I-295 roadway. Visible evidence of mounded soil piles along the edge of slope suggest the source for the fill material encountered in the test excavations along the slope.

A second depression was observed at the eastern end of the APE between the E2050 and E2100 transects (Figure 24). This roughly oval shaped depression measured approximately 10.7 meters in diameter and extended to approximately 0.8 meters below the natural surface. The depression, noted on a toe slope bordered by two intermittent streams or springs to the east and west, was surrounded by very thick brush and briars as well as older growth trees, which appeared to be approximately 40 to 60 years old. Landscaping activities had impacted a significant portion of the natural soil deposition surrounding the depression within the APE. STP N1300 E2050 and STP N1300 E2100, located to the north of the depression, contained an intact soil profile. STP N1300 E2050 exhibited a 10.0 centimeter-thick dark grayish-brown (10YR 4/2) silt loam A-horizon overlying a 31.0 centimeter-thick olive yellow (2.5Y 6/6) silt loam E-horizon and a 21.0 centimeter-thick light olive brown (2.5Y 5/6) silt loam B-horizon (Appendix B). STP N1300 E2100 yielded a similar soil profile. No cultural materials were noted in these two test excavations. Conversely, STP N1250 E2050 revealed over 1.0 meter of fill below the surface divided between six, 7.0 to 28.0 centimeter-thick fill episodes (Appendix B). STP N1250 E2100 contained a 9.0 centimeter-thick organic topsoil horizon overlying the B-horizon. Both test pits yielded a small assortment of modern refuse, including modern amber beer bottle glass, terra cotta flowerpot fragments, and silk flower fragments (Appendix C).

Initially, due to the location and the size of the trees, the depression appeared to be a possible foundation. After the brush was cleared and the soils surrounding the depression were examined, it was determined that the depression was a sink hole created by diverted groundwater runoff from the New St. Mary's Cemetery. Because the right-of-way fence that bounds the northern edge of the cemetery hangs suspended and does not touch the ground surface, the soil beneath the fence was eroded by the surface runoff. Unlike the daffodil-ringed ground disturbance recorded in the western end of the wooded ground, this particular depression differed in the aspect that it exhibited very deep (approximately 0.8 to 1.0 meter deep) straight walls and no vegetation or debris was discovered within the depression, suggesting that it has been subjected to recent erosion. Soils on the southern edge of the depression indicate that grading activities altered the original landform, possibly diverting the original water flow into the depression and accelerating the rate of erosion.

Test excavations conducted in the Harrison-Glover House yard area exhibited an A-horizon overlying a subsoil package. The typical soil profile consisted of a 20.0- to 40.0-centimeter thick very dark grayish brown to dark grayish brown (10YR 3/2-4/2) silty sand to loamy sand A-horizon overlying a dark yellowish brown (10YR 4/4-4/6) silty sand to silty clay E-horizon. Variations in the soil profile attributed to landscaping activities and the construction of additions to the Harrison-Glover House were noted in the yard area. Three, 10.0- to 20.0-centimeter thick silty clay fill horizons were observed overlying the A-horizon in STP N1050 E700, while STP N1000 E700 contained a 75.0-centimeter thick black mottled with yellowish brown and strong brown (10YR 2/1 m/w 10YR 5/6 and 7.5YR 5/6) sandy loam fill deposit. Fill deposits associated with recent landscaping events were also noted adjacent to the dwelling in STP N1025 E767. Three fill horizons, Stratum II, a black (2.5Y 2.5/1) cinder and ash horizon from 15.0 to 31.0 centimeters, Stratum III, a dark yellowish brown (10YR 4/4) sandy silt from 31.0 to 50.0 centimeters, and Stratum IV, a brownish yellow (10YR 6/6) sand located 50.0 to 91.0 centimeters, were exposed above the B-horizon (Appendix B).

A series of six trenches placed across the northern and western limits of the yard further validated the extent of the soil impacts (Figure 23). Trench 1, placed just beyond the northern edge of the yard in the woods, uncovered 64.0 to 93.0 centimeters of mottled fill overlying a 10.0 to 12.0 centimeter thick brown (10YR 4/3) sandy loam A-horizon and an underlying light olive brown (2.5Y 5/4) loamy sand E-horizon. The intact soil horizons were noted along the northern half of the trench, as the center and southern half of the trench evidenced fill deposits continuing down into the trench floor. Trench 1A, set on the south side of Trench 1 at its midpoint, produced a similar mix of mottled fill extending down onto a dense gravelly deposit at 64.0 centimeters below surface. Further stripping of the gravelly fill uncovered a fiberglass coated pipe encapsulated within the deposit approximately 76.0 centimeters below surface (Plate 7). It was noted that the pipeline extended parallel to I-295, as well as did the fill deposits in the floor of Trench 1, suggesting that the introduction of buried utility lines has impacted a significant portion of the wooded setting behind the Harrison-Glover House.

Plate 7: Fiberglass coated pipeline in Trench 1A. View looking northwest (May 2005).

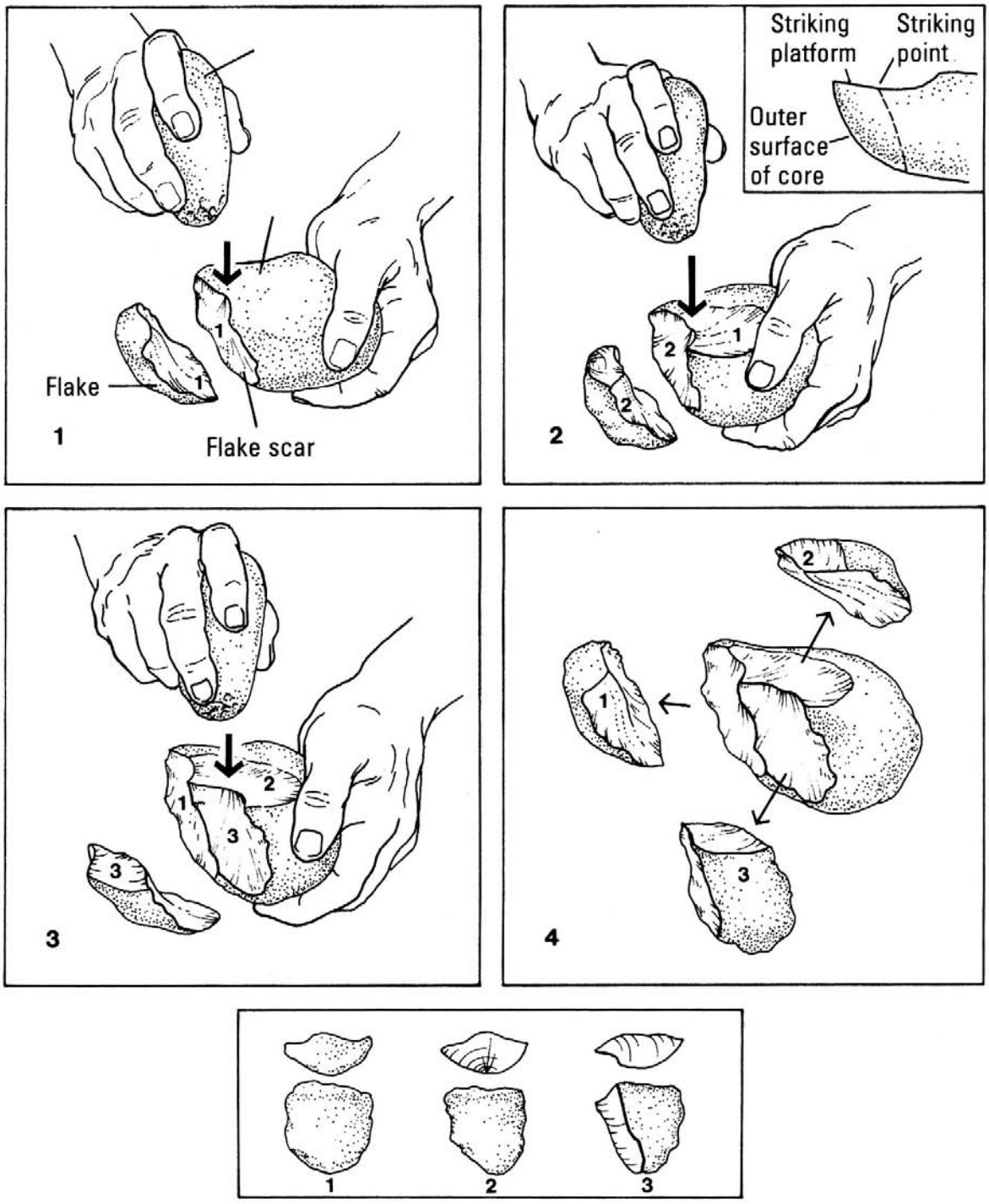
Trenches placed within the grassy yard area also yielded evidence of mixed fill deposits graded across the landform. In general, 40.0 to 50.0 centimeters of fill were noted overlying a brown (10YR 4/3) sandy loam A-horizon and a dark yellowish brown (10YR 4/4 to 4/6) sandy loam E-horizon (Plate 8). Analysis of the trench wall profiles identified little consistency between the fill horizons from one exposure to the next. A 15.0 to 22.0 centimeter-thick black (7.5YR 2.5/1 to 2.5Y 2.5/1) sandy silt to silt loam deposit containing ash, coal, slag, cinders, and asphalt was noted in Trench 4, 5 and 6 (Plate 9). The vertical profile of this fill increased in depth from 12.0 centimeters below surface in the south half of Trench 4 to 47.0 centimeters below surface in Trench 6. A pile of this asphalt/slag/cinder material was observed in the wooded ground along the western edge of the manicured lawn, suggesting that the buried fill deposit represents twentieth-century grading and fill, and not an intact nineteenth-century deposit. A tree root ball stain recorded in the walls of Trench 4 illustrates recent landscaping activities (Plate 10). No cultural features associated with wells, middens, privies, or outbuildings were observed in the trench excavations.

The artifact assemblage recovered from Area I included both prehistoric and historic period artifacts. A total of 140 prehistoric artifacts were recovered during the investigation of Area I. An inspection of the lithic materials recovered in Area I revealed that jasper (n=64, 70%) represented the largest cryptocrystalline source, followed by quartz (n=14, 15%), chert (n=6, 6%), chalcedony (n=4, 4%), quartzite (n=3, 3%) and rhyolite (n=2, 2%) materials. It is likely that the lithic collection includes materials transported from distant quarries, such as the South Mountain rhyolite in south central Pennsylvania and the jasper quarries in southeastern Pennsylvania, as well as local jasper, chert, quartz and quartzite cobble deposits collected along the Little Timber Creek and Big Timber Creek drainages. Analysis of the reduction stages in the debitage collection yielded examples of primary (n=9, 10%), secondary (n=48, 55%), and tertiary (n=19, 22%) waste flakes, as well as shatter and other debitage (n=11, 13%). The greater number of secondary and tertiary flakes suggests that primarily core reduction and tool maintenance activities occurred in the project area (Figure 27). The lithic collection contains a few examples of primary flakes and waste materials from tested pebbles, providing limited evidence of cobble use on site.

Plate 8: Trench 2, representative fill deposits overlying A- and E-horizons. View looking south (May 2005)

Plate 9: Trench 5, Stratum III, coal, coal ash, slag and asphalt horizon. View looking west (May 2005).

Plate 10: Trench 4, root ball stain. View looking southwest (May 2005).



The production of a simple Oldowan chopper core and the resultant flakes

Schick, Kathy D. & Nicholas Toth, "Making Silent Stones Speak: Human Evolution and the Dawn of Technology" Simon &Schuster, New York. 1993

Figure 27 Lithic Reduction Sequence

I-295 / I-76 / Route 42 Direct Connection
Camden County, New Jersey

Map Document X: Graphics\Projects\P-593A\Mapping\Figure 27_1862 LithReduxSequenc.ai

Tool forms were present in the collection. A quartzite Poplar Island or Piney Island point variant, exhibiting a broken stem section, was found in the E-horizon of TU N1192 E1050, Stratum IV, 27.0 to 38.0 centimeters below surface (Plate 11). This point exhibits a long, narrow-bladed body and slightly contracting shoulders typical of these projectile types, but the absence of the stem prohibits assigning classification to one variant. Two fragments of a jasper Madison type projectile point were also recovered from the E-horizon, Stratum V, 37.0 to 41.0 centimeters below surface, in TU N1276 E1543 (Plate 12). The Madison point generally corresponds with a Middle to Late Woodland temporal association, while the Piney Island/Poplar Island variant represents a Middle Archaic to Middle Woodland occupation (Fogelman 1992:201; Custer 1996:35). Other stone tools include a small chert thumbnail scraper found in the fill-covered A-horizon of STP N1150 E1050, 40.0 to 66.0 centimeters below surface, and a chalcedony utilized flake from a fill episode 28.0 to 43.0 centimeters below surface in STP N1225 E2200 (Plate 13). No ground stone tools, such as hammerstones, axes, or celts, were recovered in the assemblage. In addition to the stone tools, a total of 31 fragments of thermally altered rock were also recovered in Area I.

The prehistoric ceramic collection found in Area I provided a varied assortment of Early through Late Woodland period wares. A total of 18 prehistoric ceramic sherds were found in Area I (Appendix C). Analysis of the ceramic assemblage identified quartz-tempered and quartz- and mica-tempered body fragments exhibiting cord-marked exterior surfaces and smoothed interior surfaces, similar to Early to Middle Woodland Exterior Corded/Interior Smoothed and Late Woodland Riggins typologies (Plate 14). Two sherds of undecorated quartz-tempered Early Woodland Ware Plain, one sherd of fine sand and mica tempered pottery with cord impressed exterior and smoothed interior, and one sherd of undecorated coarse grit-tempered ceramic, were noted in the collection as well (Plate 15). One small ceramic sherd, recovered from Stratum I (A), 0.0 to 18.0 centimeters below surface, in STP N1300 E1850, exhibits gneiss or granite particles and mica in the temper, with a cord impressed exterior and smoothed interior (Plate 16). The 1983 Data Recovery of Site 28-Ca-50 in Gloucester City recorded 330 sherds of a similar gneiss- or granite-tempered ceramic, without any mica inclusions, designated Gloucester Corded

Plate 11: Quartzite Poplar Island projectile point, TU N1192 E1050, Stratum IV.

Plate 12: Jasper Madison projectile point, TU N1276 E1542, Stratum V.

Plate 13: Chert thumbnail scraper, STP N1150 E1050, Stratum III.

Plate 14: Exterior Corded/Interior Smoothed pottery, TU N1296 E1869, Stratum IV.

Plate 15: Ware Plain pottery, TU N1293 E1811, Stratum VIII.

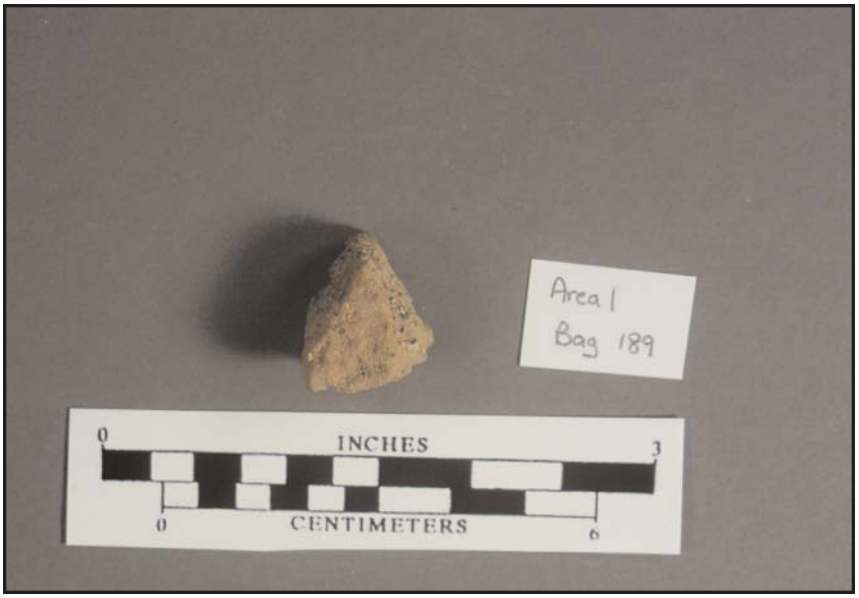


Plate 16: Gneiss/granite tempered pottery, possibly Gloucester Corded, STP N1300 E1850, Stratum I.

(Thomas et al. 1985:Vi-7). No base or rim fragments were present in the Area I collection to suggest vessel shape, use or other decorations. The presence of the ceramic assemblage suggests that food preparation and cooking activities took place in the project area, and that a long-term Native American habitation may have existed in the project APE during the Woodland Period. Unfortunately, no charcoal samples were identified or recovered during the excavations to provide a comparable date for the provenience of the ceramics. In addition, no subsurface prehistoric cultural features were noted in Area I.

The historic artifact assemblage is composed of late-eighteenth- through twentieth-century domestic and architectural debris. A variety of artifacts classified as modern refuse was recovered from Area I as well. A total of 2688 historic and modern artifacts and 127 faunal artifacts were recovered from Area I (Appendix C). Kitchen (n=1009) and personal (n=628) items were the most prevalent historic artifact classes found, followed by industrial (n=558), architectural (n=422), furniture (n=63), tobacco (n=3), and arms (n=2).

The kitchen artifact assemblage reflects a varied assortment of utilitarian items. A total of 281 ceramic sherds was found in Area 1, including whiteware (n=87), redware (n=90), porcelain (n=17), pearlware (n=17), industrial porcelain (n=23), ironstone (n=9), tin-glazed earthenware (n=5), unglazed earthenware (n=13), buff-bodied earthenware (n=1), stoneware (n=1) and yelloware (n=1). The ceramic collection yielded evidence of vessel forms, including fragments of foot rings, rims from flatware and bowls, and handles, indicating the presence of tableware, including dinner plates, saucers, and tea cups, in the ceramic collection.

Early-nineteenth- through twentieth-century wares were most frequently found in the collection, including manganese, lead, and clear lead glazed redware (1822 to 1900), transfer print whiteware (1828 to present), a sherd of Albany slip stoneware (1820 to 1900), undecorated whiteware (1820 to present), buff-bodied earthenware (1850 to 1870), ironstone (1840 to present), and yelloware (1830 to present). Porcelain fragments, including undecorated, molded, hand-painted and transfer print wares, represent a wider date range for production, from 1795 to present. Industrial porcelain, similar to the thick-bodied crockery found in restaurants and hotels, was also collected from Area I during the archaeological survey. This type of ceramic was most

popular from 1891 to 1927, providing cheap, utilitarian wares for the food service industry (South 1977; Ramsay 1939; Miller 1980). As noted in Table 7, a late-eighteenth-century component was present within the historic artifact assemblage, albeit a small component compared to the larger mid-nineteenth- to early-twentieth-century temporal association of the ceramic collection (Hughes 1961; Godden 1966; Hume 1969) (Appendix C).

Table 7. Late-eighteenth-century ceramics recovered from Area I.

Ceramic Type	Decoration	# of Sherds	Date Range
Porcelain	orange overglaze	2	1753 to 1825
"	annular overglaze	1	1753 to 1825
earthenware	tin-glazed	5	1700 to 1800
redware	Slip-trailed	8	1733 to 1850
Pearlware	blue edge	2	1779 to 1820
"	blue painted	2	1779 to 1820
"	scalloped edge	1	1795 to 1840
"	transfer print	2	1795 to 1840
"	green feather edge	1	1780 to 1820
Creamware		1	1762 to 1820

The glassware collection reflects an assortment of container types, with fragments of mid- to late-nineteenth-century to early-twentieth-century medicine and alcohol bottles, nondescript bottles, tumbler glass, and vessel glass. A total of 728 glass fragments, including bottle glass (n=595), jar fragments (n=80), and vessel glass (n=53), were recovered in Area I. The bottle glass collection yielded colorless (n=374), aqua (n=33), amber (n=169), green (n=8), light green (n=3) and olive (n=8) fragments. Non-descript glass fragments account for 95 percent (n=693) of the entire glass collection. However, examples of mid- to late- nineteenth- through twentieth-century manufacturing processes were noted throughout much of the glass collection. One complete, clear, round, medicine bottle, found in Stratum II, a fill deposit 8.0 to 22.0 centimeters below surface in STP N1000 E450, exhibits mold marks from a three-piece mold and a hand-tooled lip (Appendix B) (Plate 17). These marks are characteristic of bottles manufactured from 1840 to 1870 (Dating Antique Bottles, 3PM website 2004). An aqua bottle neck and lip fragment found in TU N1206 E1056, Stratum I, an A-horizon, exhibits characteristics of a blown-in-mold container with a hand-tooled finish, typical of glassware production between

Plate 17: Late nineteenth-century medicine bottle, STP N1000 E450, Stratum II.

1840 and 1870 (ibid.). Several fragments of jar necks exhibiting exterior screw threads are likely indicative of late nineteenth- through twentieth-century machine-made containers (Jones and Sullivan 1985:38). Five milk glass fragments are identified as parts of canning jar lid liners that date to the middle of the nineteenth century (ibid.:160-164).

Faunal remains included 52 bone fragments, 67 shell fragments, and three fish scales. Much of the faunal collection proved to be too small or incomplete for species identification (Appendix C). However, one large bone fragment, a distal portion of a pig (*Sus scrofus*) femur, was found in Stratum III, a fill horizon 31.0 to 50.0 centimeters below surface, in STP N1025 E767. This bone fragment exhibited saw marks where the distal end was separated from the shaft. Butchering marks were present on five other bone fragments found in STPs N1100 E850 (n=1) and N850 E450 (n=4) as well. Of the shell fragments encountered during the survey, some of the better preserved fragments were identified as clam and oyster. The three fish scales were found in Stratum VIII, a fill horizon 1.9 to 2.0 meters below surface, in STP N950 E550.

Other historic artifacts found in Area I represent personal (n=628) and industrial (n=558) classes of artifacts. The proximity of the cemetery provided a unique cross-section of personal grave adornment items, such as plastic floral arrangement fragments (n=290), terracotta flower pot remains (n=303), vial glass fragments (n=12), and a small United States flag (n=1) in the artifact assemblage. The remaining personal items include modern refuse, such as toothpaste tube fragments (n=2), mirror fragments (n=4), textile/clothing (n=15), and a 1973 U.S. dime. Industrial items include can fragments, slag, plastic, automotive parts, electrical components, cellophane, and unidentified metal fragments. Slag, cinders, coal and coal slag comprise 292 (n=52.3%) of the recovered industrial artifacts from Area I. Modern historic debris, including 12 fragments of plastic, 2 fragments of Bakelite, and a gear shift knob, was also encountered in the Area I historic artifact collection (Appendix C). Bakelite is an early plastic marketed for public use in 1910 (Bakelite: A Revolutionary Early Plastic, accessed 18 June 2004).

Architectural items include clear window glass shards (n=86), brick fragments (n=139), a piece of slate (n=1), corroded hardware (n=10), a fragment of lumber (n=1), tile fragments (n=2), and tar shingle fragments (n=16). A variety of fasteners was collected from the excavations,

including 111 wire nail and nail fragments, 26 cut nail and nail fragments, 11 unidentified nail fragments, and two screws. Other recovered architectural artifacts include a fragment of block glass, plaster (n=6), and pieces of mortar (n=10). A lead shot and plastic shotgun shell represent the few arms related artifacts found in Area I. Tobacco related artifacts include modern cigarette filters, a plastic pipe stem, and a fragment of a kaolin pipe stem. Furniture artifacts include lamp glass (n=60) and industrial porcelain from a toilet bowl or sink (n=3) (Appendix C).

The horizontal and vertical distribution of the prehistoric and historic artifact collection revealed discrete areas of artifact concentrations within the APE of Area I. Four prehistoric artifact loci were identified during the investigation. The first concentration was identified in an approximately 22.9-meter by 15.2-meter area north of the mausoleum complex. STP N500 E350 contained one jasper primary flake, while STP N500 E400 produced one undecorated coarse grit-tempered pottery sherd, one fire-cracked rock fragment, one chert tertiary flake, two quartz secondary flakes, and one quartz tertiary flake (Appendix C). These prehistoric artifacts were found in a 29.0 to 38.0 centimeter-thick light yellowish brown to brownish yellow (10YR 6/4-6/6) silty sand fill horizon mixed with mid-nineteenth- through twentieth-century domestic and architectural remains. Testing was not conducted to the west of these STPs, as this area was previously disturbed by the construction of a stormwater retention basin. STP excavations conducted along the eastern and southern limits of this concentration did not yield any additional prehistoric cultural remains. It is uncertain if this prehistoric artifact scatter represents the remains of a site transported from an off-site location, or if the cultural materials were stripped from an intact surface horizon as part of the construction of the stormwater basin. Unfortunately, the disturbed nature of the fill horizon offers little information as to their original context. Therefore, this artifact concentration was not assigned an archaeological site number.

The second prehistoric concentration was identified in the central portion of Area I. This approximately 30.5-meter-long by 22.9-meter-wide resource was identified in STP N1150 E1050 and N1200 E1050, and in three 1.5-meter-square test units, TU N1192 E1050, N1197 E1042, and N1206 E1056. The excavations uncovered one Exterior Corded/Interior Smoothed sherd, four flakes, a heat-shattered cobble fragment, a tested cobble, a chert thumbnail scraper, and eight fire-cracked rock fragments within a 8.0- to 29.0-centimeter-thick A-horizon. A 7.0- to

11.0-centimeter-thick E-horizon produced four sherds of Exterior Corded/Interior Smoothed ceramic, one sherd of Ware Plain, six flakes, and one Poplar Island variant projectile point. Historic and modern materials were recovered in the same context as the prehistoric remains, and no cultural materials were encountered in the underlying B-horizon. No cultural features were identified within this locus of prehistoric materials, despite the presence of an E- and B-horizon below the A-horizon. This prehistoric artifact cluster was designated the Harrison-Glover Prehistoric Site 2 (28-Ca-107) (Figure 24).

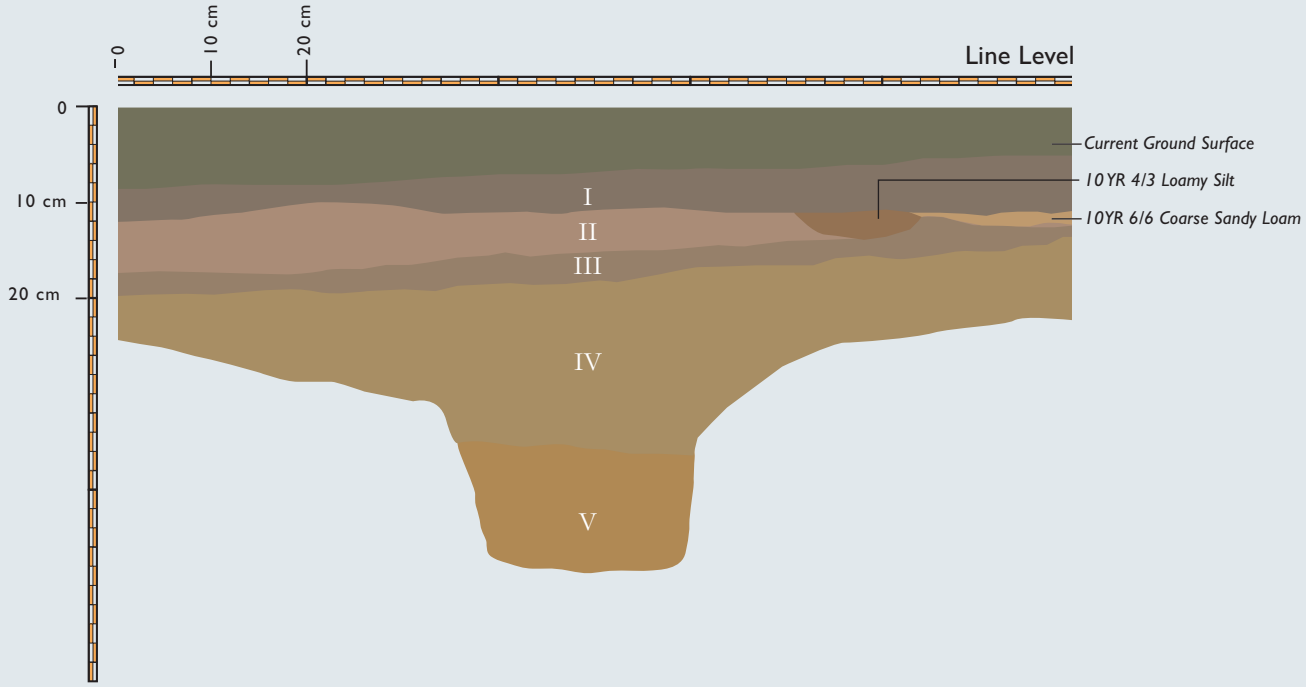
A third prehistoric artifact concentration was recorded in the wooded right-of-way approximately 79.2 meters east of 28-Ca-107. This resource, measuring approximately 13.7 meters long by 38.1 meters wide, comprised the cultural remains recovered in STP N1275 E1425, N1275 E1450, STP N1275 E1500, STP N1275 E1550, and in two 1.5 meter-square test units, TU N1276 E1543 and TU N1272 E1442. Prehistoric cultural remains found in the overlying 10.0 to 21.0 centimeter-thick fill deposits included 17 pieces of lithic debitage, one sherd of Exterior Corded/Interior Smoothed ceramic, a tested jasper pebble, and three fire-cracked rock fragments. TU N1272 E1442 evidenced significant ground disturbance in the form of an in-filled utility trench bisecting the unit in an east to west direction (Figure 28). Four episodes of trench fill were observed overlying the B-horizon subsoil. The depth of the B-horizon varied from 24.0 to 27.0 centimeters below surface on the outside edges of the trench to 66.0 centimeters below surface in the center of the trench. Seven flakes, one FCR, one pottery sherd, and a tested jasper pebble were recovered from the fill deposits in TU N1272 E1442, accounting for 45.4 percent of the prehistoric assemblage from fill in this locus. Interestingly, this trench profile generally aligns with the linear fill stain noted in the floor of Trench 1, and likely represents one utility trench extending along the right-of-way limits.

The A-horizon, 13.0- to 30.0-centimeter thick, produced one sherd each of Riggins and Hell Island Fabric Impressed wares, 26 pieces of lithic debitage, and three fire-cracked rock fragments. The 4.0- to 11.0-centimeter-thick E-horizon contained 11 flakes and a jasper Madison projectile point. Two jasper flakes were recovered from an E/B transitional horizon in TU N1276 E1543, 41.0 to 51.0 centimeters below surface. In general, historic and modern materials were

Figure 28
TU N1272 E1442, East Wall Profile

I-295 / I-76 / Route 42 Direct Connection

Camden County, New Jersey



Legend

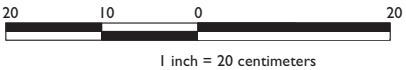
I 10YR 3/3 - Dark Brown Silt Loam

II 5YR 5/6 Mixed with 10YR 4/3 - Yellowish Red Mottled with Brown Sandy Clay

III 10YR 4/4 - Dark Yellowish Brown Sandy Silt

IV 11YR 5/4 - Yellowish Brown Silty Sand

V 10YR 5/8 - Yellowish Brown Silty Sand



Map Document X:\Graphics\Projects\P-593A\Historic Maps\Fig28_eastwallprofile.ai

recovered in the same context as the prehistoric remains in the fill and A-horizon. The E-horizon in STP N1275 E1550, 60.0 to 71.0 centimeters below surface, the E-horizon in TU N1276 E1543, 37.0 to 41.0 centimeters below surface, and the E/B transitional horizon in TU N1276 E1543, 41.0 to 51.0 centimeters below surface, contained only prehistoric materials. No prehistoric cultural materials were encountered below the transitional horizon in TU N1276 E1543, or in the B-horizon of the remaining excavations within this locus. This prehistoric artifact cluster was designated the Harrison-Glover Prehistoric Site 3 (28-Ca-106) (Figure 24).

The fourth prehistoric artifact concentration was identified in the wooded right-of-way approximately 121.9 meters east of 28-Ca-106. This 13.7-meter long by 22.9-meter-wide resource was identified by the cultural materials found in STP N1300 E1825, STP N1300 E1850, STP N1300 E1875, and in two 1.0 meter-square test units, TU N1293 E1811 and TU N1296 E1869. Prehistoric materials recovered from this concentration included three flakes and four FCR in the 4.0 to 29.0 centimeter-thick fill deposits, six FCR fragments and one sherd each of Exterior Corded/Interior Smoothed, Riggins, and possible Gloucester Corded pottery in the 10.0 to 18.0 centimeter-thick A-horizon, and in the 10.0 to 15.0 centimeter-thick E-horizon, two sherds of Ware Plain pottery, three sherds of Riggins pottery, two flakes, and one FCR fragment. Similar to Site 28-Ca-106, historic and modern materials were recovered in the same context as the prehistoric remains in the fill and A-horizon, but were absent from the E-horizon. Stratum VIII, 36.0 to 46.0 centimeters below surface, in TU N1293 E1811 yielded all of the prehistoric remains in the E-horizon, expect for one FCR fragment. However, the overlying A-horizon had been stripped away in the southwest corner of the test unit, with multiple fill deposits overlying the E-horizon, suggesting that some of the prehistoric artifacts may have been introduced into the E-horizon from the fill. No prehistoric cultural materials were encountered below the E-horizon in the remaining excavations within this locus. This prehistoric artifact cluster was designated the Harrison-Glover Prehistoric Site 3 (28-Ca-110) (Figure 24).

The archaeological survey identified additional scattered prehistoric finds within the APE of Area I limited to fill deposits and the A-horizon. STP N1150 E650, set in the wooded ground north of the Harrison-Glover House, produced a jasper flake in the A-horizon 0.0 to 28.0 centimeters below surface. A tested quartz cobble was recovered from Stratum VI, a fill-capped

A-horizon 54.0 to 71.0 centimeters below surface in STP N1275 E1650. Fill deposits in the area of the N500 and N550 transects produced isolated numbers of prehistoric artifacts, including FCR fragments in STP N550 E450, Stratum I, 0.0 to 11.0 centimeters below surface, one quartzite shatter in STP N700 E400, Stratum V, 162.0 to 202.0 centimeters below surface, and one quartz flake in STP N850 E450, Stratum VII, 203.0 to 254.0 centimeters below surface. In general, these isolated prehistoric artifacts were recovered in the same context with historic and modern debris.

Defining spatial patterns of historic artifact classes and temporally discrete deposits were limited in Area I. Overall, the fill episodes and A-horizon, and to a limited extent the E-horizon, exhibited a similar composition of mid- to late-nineteenth- through early-twentieth-century domestic ceramics and glassware, architectural items, and modern refuse in Area I, suggesting that refuse was redeposited and/or graded across a wide area beyond the yard of the Harrison-Glover House and the wooded border. The vessel glass, ceramics, and faunal remains comprise the household goods used by the occupants of the dwelling. Fragments of brick, nails, window glass and other architectural debris suggest that renovations occurred to the dwelling, or that outbuildings existed on the property at one time. These early nineteenth- through twentieth-century artifacts were dispersed over Area I through landscaping activities, and incorporated into fill episodes used to raise the central portion of the area.

Excavations in the wooded section of Area I recovered ceramics, architectural items, and modern refuse from the fill deposits, A-horizon, and to a limited extent the E-horizon, as well. However, these artifacts did not exhibit any vertical, horizontal, or temporal spatial patterns linking them to discrete eighteenth- and nineteenth-century activity areas in the woods. Rather, the historic artifact assemblage generally represents domestic and architectural items associated with the mid- to late-nineteenth- through twentieth-century occupation of the Harrison-Glover House. The few ceramics and fragments of olive bottle glass diagnostic of mid-eighteenth to early-nineteenth-century wares or containers recovered in Area I were found in the same context as later period items, and did not reveal any isolated eighteenth-century refuse episodes associated with the Harrison-Glover House. The archaeological investigation did not uncover any cultural

features of soil deposits linked to the eighteenth-century occupation of the Harrison-Glover House.

Excavations in the yard area of the Harrison-Glover House revealed ground disturbances associated with the construction of a buried pipeline along the north side of the yard in the woods, and multiple episodes of late-nineteenth through early twentieth-century fill and grading in the west and north yard areas of the house. One test excavation, STP N950 E700, produced a concentration of slag (n=70), cinders (n=10), a piece of burnt lumber, and coal slag (n=7), from Stratum IV, a very dark gray (10YR 3/1) sand fill deposit 55.0 to 64.0 centimeters below surface (Appendix C). This test excavation is located approximately 21.3 meters west of the Harrison-Glover House and correlates with the coal, ash, and cinder horizon identified in Trench 4, 5 and 6, and in STP N1075 E700, 43.0 to 48.0 centimeters below surface, and STP N1100 E675, 0.0 to 18.0 centimeters below surface (Appendix B). A similar ash and cinder layer was noted 15.0 to 31.0 centimeters below surface in STP N1025 E767 adjacent to the dwelling. Other than in STP N1025 E767, this horizon did not yield a significant number of nails, fasteners, or other architectural materials to suggest that the fill represented the demolition of the outbuildings depicted on the 1907 map of the farmstead, but rather a small mix of domestic refuse, including institutional porcelain, pearlware, whiteware, colorless bottle glass, industrial waste, such as coal, slag, and cinders, brick fragments, and shell fragments interpreted as a late-nineteenth- to early-twentieth-century mix of coal stove/furnace waste and domestic refuse discarded from the household and graded over the landscape.

One excavation placed adjacent to the northwest corner of the Harrison-Glover House identified cultural deposits associated with the occupation of the dwelling. STP N1025 E767 contained a large number of architectural artifacts (n=60), including cut (n=1), wire (n=5) and unidentified (n=1) nails, window glass (n=34), and brick (n=8), as well as vessel glass (n=23) and bone (n=22), distributed between Stratum II, 15.0 to 31.0 centimeters below surface, and Stratum III, 31.0 to 50.0 centimeters below surface, both fill deposits (Appendix C). Only four ceramic sherds, consisting of two ironstone, one hand-painted porcelain, and one redware, were recovered from this test pit. According to Anthony Sansone Sr., the last occupant of the house before its conversion to a cemetery office, the original windows and shutters were removed in

the early 1980's and replacement windows installed (Sansone, personal communication 2004). In addition, Mr. Sansone stated that the backyard area was much lower at one time and had been raised with the introduction of fill deposits (ibid.). Several examples of industrial porcelain dishes were recovered by Mr. Sansone from shallow excavations directly behind the house (Plate 18). The large number of window glass fragments and other architectural artifacts recovered in STP N1025 E767 are attributed to twentieth-century improvements to the house, including the installation of modern windows and the construction of a modern deck/entrance way to the back of the structure.

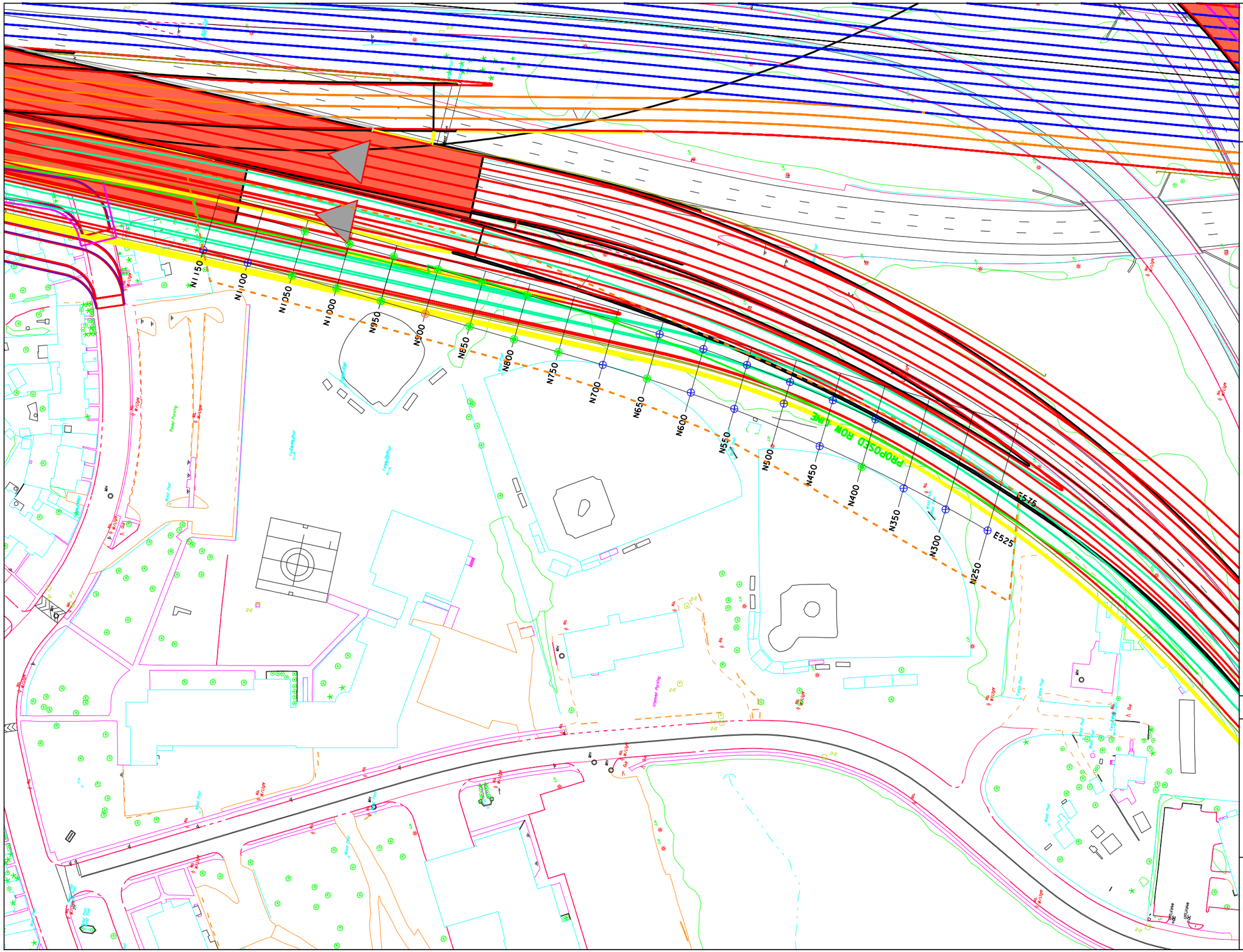
4.5.2 Bellmawr Ball Fields (Area II)

Area II is comprised of a 1.0-hectare parcel located between the Bellmawr Baseball ball fields and the ramp from the I-76 southbound lane to the I-295 southbound lane (Figure 29). The northern end of Area II is encompassed by a ball field affiliated with the Bellmawr Park School. The western half of Area II is covered in a maintained lawn, while the eastern half is primarily forest (Plate 19). A small drainage in the center of Area II redirects surface runoff from I-295 west under the ball fields. Area II corresponds to the proposed construction of Ramp F.

Three separate soils, Freehold-Downer-Urbanland complex gently sloping (FxB), Urban-moderately wetland complex (Um), and Howell-urban land complex, gently sloping (HoB) soils, are mapped in Area II. The soils within northern portion of Area II are categorized as Howell-urban land complex, gently sloping. This soil consists of well-drained to moderately well-drained, thick, silty clay-based soils found on divides, lower slopes, and stream bluffs. Developed in beds of marine silty clay, Howell-urban land complex, gently sloping soils are extremely acid, slowly permeable, and allow rapid runoff (Markley 1966:14).

The soils within the central portion of Area II are categorized as Freehold-Downer-Urbanland Complex, Gently Sloping (FxB). This soil type consists of Freehold and Downer soils in urban areas where it was impractical to separately map each soil. Freehold-Downer-Urbanland Complex, gently sloping soils have a slope that ranges from 0 to 5 percent and are generally of suburban residential and commercial use. The soils are naturally acidic and moderately fertile

Plate 18: Industrial porcelain collected from the backyard of the Harrison-Glover House by Anthony Sansone Sr. (October 2004)



N

PROJECT NORTH

Legend

- Shovel Test Pit - Positive Historic / Modern
- Shovel Test Pit - Positive Prehistoric
- Shovel Test Pit - Positive Historic / Modern and Prehistoric
- Shovel Test Pit - Negative
- Area of Potential Effects (APE)

0 50 100 200 Feet

New Jersey Department of Transportation

I-295 / I-76 / Route 42 Direct Connection Camden County

FIGURE 29

Area II Archaeological Base Map

Plate 19: Area II, view of wooded ground. View looking south (June 2004).

with moderate permeability and water holding capacity (Markley 1966:12-13).

Soils in the southern portion of Area II are classified as Urban-moderately wetland complex (Um). As the name implies, Urban-moderately wetland complex soils consist of moderately wet land that has been developed for suburban residential and urban use. Soils within this area have been heavily modified by mixing or filling of earth. Man-made ditches are frequently constructed to lower the water table and prevent flooding (Markley 1966:25).

Two transects were established within the 38.1-meter-wide by 289.6-meter-long section of testable ground in Area II (Figure 29). Each transect was located 7.6 meters from the centerline of Ramp F, following the outer edges of the alternative footprint. Survey stakes were placed at 61.0-meter intervals on each transect to maintain spatial reference points across the APE. STP excavations were established at 15.2- meter intervals on each transect. A datum point, designated N500 E500, was established on the western-most transect at the base of a light post on the northern edge of the southern-most ball field. From this datum point, the remaining test excavation locations were established across Area II. All excavations within the grid were designated by north and east coordinates.

A total of 36 STPs was excavated in Area II (Figure 29). The archaeological survey revealed that Area II is extensively disturbed and retains little evidence of an intact landform. Excavations in Area II exposed numerous episodes of fill consisting of 3.0- to 44.0-centimeter thick very dark gray (10YR 3/2), brown (10YR 4/3), dark yellowish brown (10YR 4/6), yellowish brown (10YR 5/4-5/6), and light olive brown (2.5Y 5/4) silt loam to sand horizons (Appendix B). No intact subsoil horizons were noted below the fill episodes. Fill deposits were recorded up to 98.0 centimeters below surface, and likely continued down in the soil profile (Appendix B). Soil variations associated with landscaping features were noted in Area II. STPs N1100 E525 and N1150 E525 produced a yellowish brown (10YR 5/4) pebbly sand fill horizon between 17.0 and 21.0 centimeters below surface. A strong, pungent smell was associated with this fill horizon and thought to represent a septic field. STP N800 E525 and STP N800 E575 uncovered a pale brown to light yellowish brown (10YR 6/3-6/4) sand fill horizon 60.0 to 62.0 centimeters below surface. This sand fill horizon is associated with a drainage improvement for the I-295/I-

76/Route 42 interchange, as the two test pits are located adjacent to the drainage that bisects the middle of Area II.

The archaeological survey in Area II uncovered an abundance of historic-period and modern cultural materials, but only one prehistoric artifact. A quartz biface was found mixed with historic debris in a light brownish gray mottled with yellowish brown and brown (10YR 6/2 m/w 5/6 and 4/3) sandy loam fill 61.0 to 98.0 centimeters below surface in STP N900 E525 (Plate 20). A total of 922 mid-nineteenth- through twentieth-century artifacts were recovered from the fill deposits. Architectural artifacts (n=106, 11.5%) included fasteners (n=37), coal (n=12), window glass (n=7), brick (n=7), concrete (n=3), a sewer pipe fragment, one piece of sheet metal and one fragment of light bulb glass. Fasteners included wire nail fragments (n=18), unidentifiable nail fragments (n=10), and cut nail fragments (n=9) (Appendix C).

Domestic items (vessel glass, ceramic, can fragments) accounted for the largest number of artifacts in the collection. The archaeological survey excavated 585 domestic artifacts (n=63.4%) in Area II. Ceramic vessel sherds included 39 fragments of industrial porcelain, 28 fragments of whiteware, and 18 fragments of ironstone. One ironstone sherd found in STP N950 E575, Stratum I (fill), 0.0 to 27.0 centimeters below surface, exhibits the maker's mark of Wood and Son, a English producer of Royal Ironstone China, operating in England from 1907 to 1981 (Kowalsky and Kowalsky 1999:379) (Plate 21). A sherd of blue transfer-print industrial porcelain recovered from Stratum II (fill), 20.0 to 58.0 centimeters below surface, in STP N1000 E525 displays the "Quiver and Bow" trademark used from 1872 to 1878 by Ridgeway, Sparks and Ridgeway, Staffordshire, England (ibid.:322) (Plate 22). Ten fragments of porcelain, four fragments of redware, and two fragments of unidentifiable ceramic were also recovered in Area II (Appendix C).

A total of 454 vessel glass fragments were recovered from Area II, predominantly clear vessel glass (n=274) and amber vessel glass (n=122). Lower quantities of green vessel glass (n=21), aqua vessel glass (n=16), milk glass (n=6), olive vessel glass (n=6), cobalt blue vessel (n=4), and amethyst vessel fragments (n=2) were recovered as well. One intact bottle was recovered from STP N700 E575 0.0 to 17.0 centimeters below surface (Appendix C). This early- to

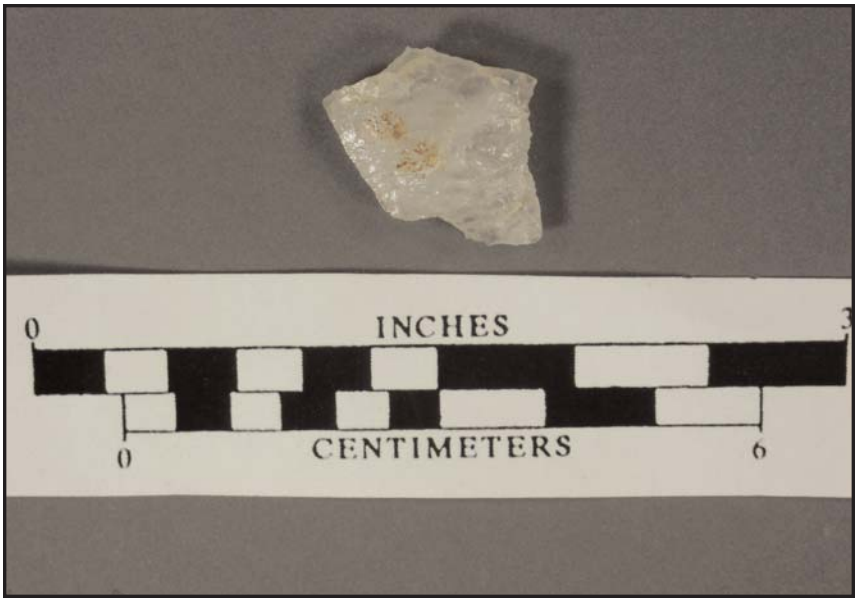


Plate 20: Quartz biface, STP N900 E525, Stratum III.

Plate 21: Wood and Son makers mark on ironstone fragment, STP N950 E575, Stratum I.

Plate 22: Ridgeway, Sparks and Ridgeway makers mark on sherd of institutional porcelain, STP N1000 E525, Stratum II.

mid-twentieth century milk bottle was embossed with the logo from the Supplee Wills-Jones Clean Milk Company, a division of Sealtest (Plate 23). The dairy, demolished in 2002, was located in Philadelphia (Sealtest/Supplee-Wills-Jones Milk Company website 2004). Two clear tumbler glass fragments were also found in Area II. Other items found in Area II include 27 can fragments, one bottle cap, and four lamp glass fragments (Appendix C).

Nine personal items/toys were recovered from Area II. This includes three marbles, one plastic airplane, a bird figurine, a barrel from a cap gun, one fragment from the head of a porcelain doll, one button, and one roller skate. The roller skate, found in STP N800 E575, 0.0 to 62.0 centimeters below surface, consisted of a "clip to shoe" type that used ball bearings in the wheels (Plate 24). These types were made only after 1884 (Evolution of the Rollerskate 2004). As Area II is bounded by a school and a little league field, these artifacts are likely related to activities occurring on these properties.

Faunal items recovered from Area II include 129 fragments of bone and 69 fragments of shell. Four bone fragments exhibit saw marks; however, the incomplete nature of the bone prohibited species identification. Based on the shell fragment collection, clam and oyster were identified as the predominant shellfish species in the assemblage for Area II. It is evident from the faunal assemblage that rodents were present in the project area. A small concentration of 11 rodent bones were collected from the interior of the Supplee Wills-Jones milk bottle found in STP N700 E575.

The general distribution of the historic artifact collection provides little indication of activity areas or potential for structures to have existed in Area II at one time. The Area II artifact assemblage was found in multiple fill deposits spread over an acre of land. The artifact assemblage did not present any particular class groupings vertically or horizontally to suggest the presence of activity areas or temporal stratification in the fill deposits. In addition, no intact cultural deposits were found below the fill horizons to provide an origin for these deposits.

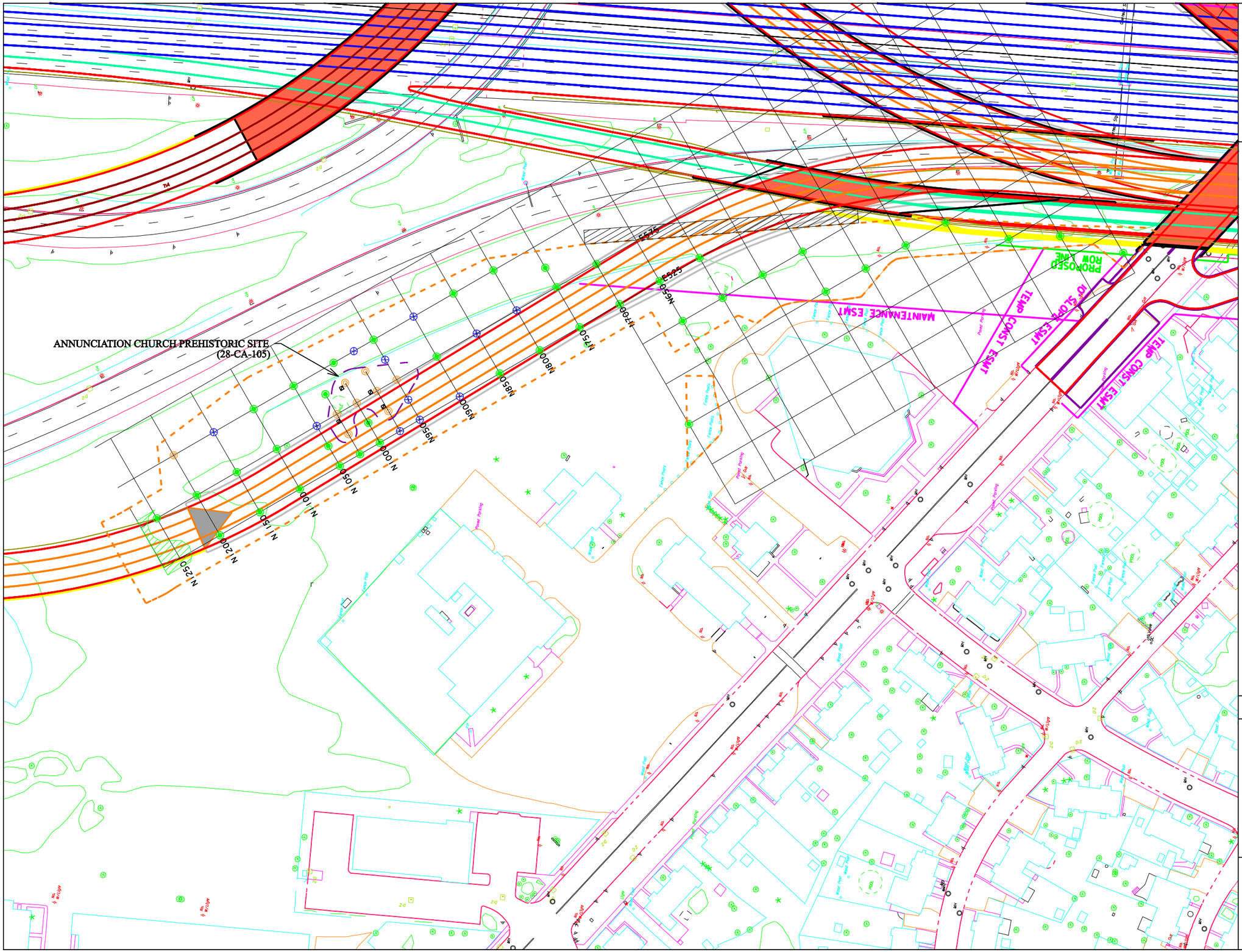
Plate 23: Supplee milk bottle, STP N700 E575, Stratum I.

Plate 24: Assorted toys recovered from fill deposits in Area II.

4.5.3 Annunciation B.V.M. Church (Area III)

Area III consists of an approximately 1.1-hectare parcel situated in the northwest quadrant of the project APE (Figure 30). This parcel was initially assessed as archaeologically sensitive ground located on the property of the Annunciation B.V.M. Church and the right-of-way for the I-295/I-76/Route 42 corridor, the overwhelming majority of Area III is composed of a maintained lawn and recreation field for the Annunciation B.V.M. Church Catholic School (Plate 25). The northern portion of Area III consists of heavily forested woodlot covered in dense brush and briars overlooking Little Timber Creek, while the eastern limits of the APE contain wooded ground bordering the ramp which delivers traffic on southbound I-295 to eastbound Route 42 and southbound I-295.

Area III contains three soil types, Howell-urban land complex, gently sloping (HoB), Howell-urban land complex, sloping (HoC), and Made land (Ma). The Howell-urban land complex, gently sloping soil is found in the maintained lawn and recreation field portion of Area III. The wooded northern portion of Area III consists of Howell-urban land complex, sloping soils. Howell-urban land complex, sloping soils are similar to Howell-urban land complex, gently sloping soils with the exception of steeper slopes. In addition to acidity, permeability is slow and run off is rapid, and frost heaving is severe (Markley 1966:15). Made Land consists of areas so heavily impacted by filling, excavation, and other construction activities that the original soil strata have been destroyed (ibid.:19). Two transects were established within the 243.8-meter by 30.5-meter section of testable ground in Area III (Figure 30). Each transect was located 7.6 meters from the centerline of Ramp C, Alternative D1, following the outer edges of the alternative footprint. Survey stakes were placed at 61.0-meter intervals on each transect to maintain spatial reference points across the APE. STP excavations were established at 15.2-meter intervals on each transect. A datum point, designated N1000 E500, was established on the western-most transect 22.9 meters east of the southeast corner of the Annunciation B.V.M. Church school yard. From this datum point, the remaining test excavation locations were established across Area III. All excavations within the grid were designated by north and east coordinates.



N

PROJECT NORTH

Legend

- Shovel Test Pit - Positive Historic / Modern
- Shovel Test Pit - Positive Prehistoric
- Shovel Test Pit - Positive Historic / Modern and Prehistoric
- Shovel Test Pit - Negative
- Area of Potential Effects (APE)
- Push Piles
- Ground Disturbance

0 50 100 200
Feet

New Jersey Department of Transportation

I-295 / I-76 / Route 42 Direct Connection Camden County

FIGURE 30

Area III Archaeological Base Map

Plate 25: Grassy lawn in Area III. View looking southeast (June 2004).

A total of 61 STPs and four 1.5-meter by 1.5-meter test units were excavated in Area III (Figure 30). Evidence of landscaping activities and the introduction of fill was noted extensively throughout the APE in Area III. In general, the fill deposits were represented by 12.0- to 37.0-centimeter thick dark brown (10YR 3/3), brown (10YR 5/3), black (10YR 2/1), light olive brown (2.5Y 5/4), and other colored silty sand to clay fill episodes (Appendix B). A large area of significant ground disturbance was noted between the N200 and N950 transects, consisting roughly of the manicured lawn flanking the church. STP N300 E375, situated along the edge of a parking lot south of the church, exhibited four, 6.0- to 39.0-centimeter-thick sandy loam to sand fill deposits overlying a deposit of crushed rock. STP N700 E375, located on the edge of a parking lot north of the church, produced four, 9.0- to 54.0-centimeter-thick sandy silt to silt loam fill horizons in the excavation profile. The presence of a shallow drainage swale channeling surface runoff from the parking lot north of the N700 transect southeast to north of STP N650 E525 into a ditch on the east side of the right-of-way fence provides some evidence for the fill deposition. A walkover of the drainage ditch within the right-of-way identified extensive ground disturbance between the N400 and N700 transects associated with the construction of the ditch, as well as landscaping associated with the construction of the adjacent I-295 curve, effectively removing the potential for an intact soils.

Fill deposition was recorded between the N1050 and N1250 transects as well. Unlike the substantial fill deposits in the southern portion of Area III, the fill horizons in the northern section of the APE comprised thinner deposits that yielded to underlying natural topsoil and subsoil horizons. STP N1100 E575 contained a 9.0-centimeter-thick dark yellowish brown (10YR 3/4) silty sand fill and a 23.0-centimeter-thick brown (10YR 4/3) silty sand fill overlying a dark yellowish brown (10YR 3/4) silty sand A-horizon from 32.0 to 43.0 centimeters below surface. The A-horizon capped a dark yellowish brown (10YR 4/6) silty clay E-horizon.

Testing within the wooded right-of-way flanking the eastern edge of the Area III APE north of the N700 transect produced minor evidence of disturbance. Overall, the soil profile in the forested setting included a 10.0 to 15.0 centimeter-thick very dark grayish brown (10YR 3/2) loam to silt loam A-horizon, followed by a 16.0 to 25.0 centimeter-thick yellowish brown (10YR 5/4-5/6) silt loam to silty clay E-horizon. STP N900 E625, STP N950 E625, and N1050 E625

contained a light brownish gray to light olive brown (2.5Y 2/6-5/6) sandy loam subsoil horizon (B) 35.0 centimeters below surface to the end of the excavation at 52.0 centimeters below surface. Scattered episodes of fill associated with construction activities for I-295 were noted in a selection of the soil profiles.

Artifacts from the E625 transect were generally recovered from the A-horizon and consisted of modern vessel glass, plastic and brick fragments. Several fragments of porcelain and whiteware were also noted in the A-horizon of the E625 transect. Only one STP (N800 E625) along the E625 transect revealed any substantial disturbance. Soils in STP N800 E625 revealed six separate fill episodes extending to 94.0 centimeters below ground surface. Few artifacts were recovered from this STP and were limited to a fragment of porcelain and a brick fragment found in Stratum I and a bullet casing found in Stratum IV. No intact soils were noted in STP N800 E625.

Filling and landscaping activities in Area III are responsible for the distribution of the historic artifact assemblage across the parcel, limiting the potential for undisturbed historic deposits. The historic artifact assemblage was recovered primarily from the top 50.0 centimeters of the fill found south of the N975 transect and north of the N1050 transect. The wooded portion of Area III along the N1250 transect contains extensive push piles and is littered with modern historic debris, including chunks of macadam, brick fragments, fragments of cinder blocks, tar shingles, copious amounts of bottle glass, cellophane, window glass, and several aluminum can pull tabs, likely part of the soil matrix used for fill in Area III (Plate 26). A small number of historic artifacts were also found mixed with prehistoric materials in the A-horizon localized between the N975 and N1050 transects. STP N900 E575 produced one Bakelite plastic fragment in Stratum V, 72.0 to 93.0 centimeters below surface, the only artifact found deeply buried in the soil stratigraphy. No discernable historic artifact patterns were noted that would suggest historic features or activity areas in Area III.

Interestingly, a large concrete monument was noted in the wooded right-of-way between STP N800 E625 and N850 E625. The monument was approximately 1.4 meters long and obelisk-like

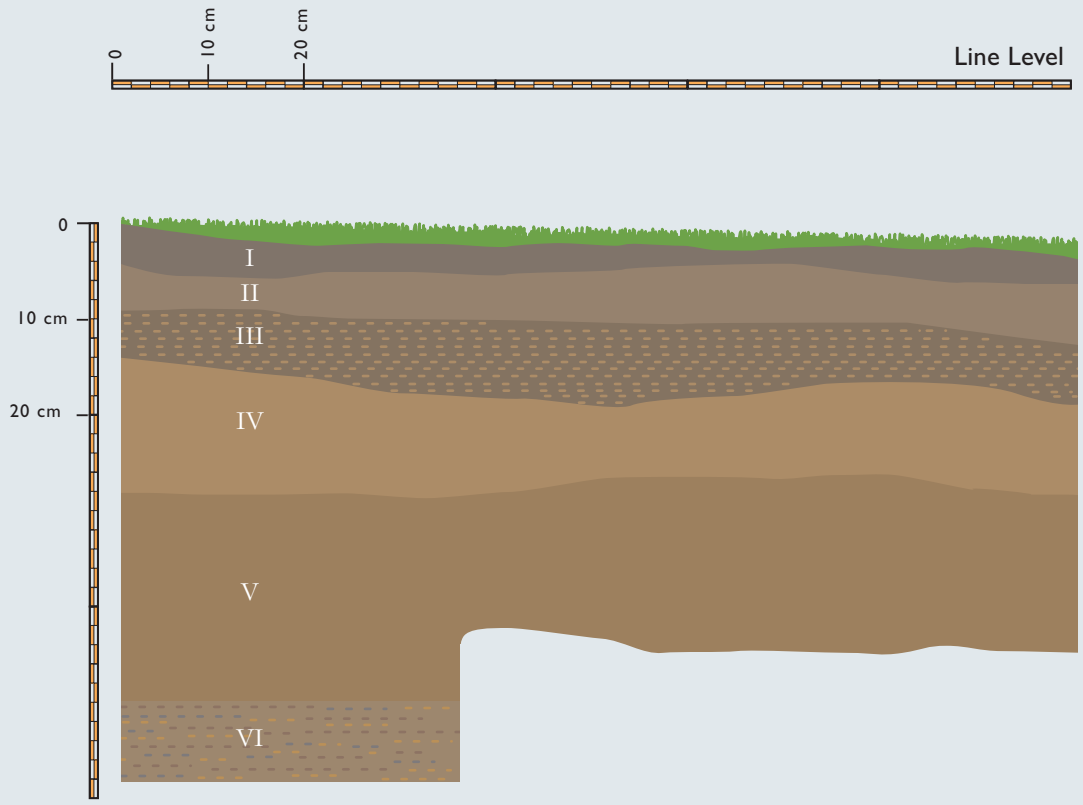
Plate 26: Northern wooded portion of Area III. View looking northwest (June 2004).

in shape and located in a section of woods which appeared to have older growth trees. It was constructed of concrete and was laying on its side adjacent the right-of-way fencing. No markings were evident on the monument and no base was noted in the vicinity.

Test excavations placed between the N950 and N1025 transects, as well as several STPs on the N1100 transect, identified a thin surface fill deposit overlying an intact plowzone and subsurface package. TU N980 E575 provides a representative example of the soil stratigraphy (Figure 31). Stratum I is comprised of a 10.0 centimeter-thick moderately compacted very dark brown to very dark grayish brown (10YR 3/2-2.5Y 3/2) sandy loam organic horizon. Stratum II consists of a moderately compact very dark gray to dark brown (10YR 3/1-3/3) sandy loam fill horizon (Fill 1), extending from 10.0 to 14.0 centimeters below surface. TU N1005 E595 and TU N975 E957 contain a slight strong brown to yellowish brown (7.5YR 5/8-10YR 5/6) mottling in the fill horizon. Stratum III, 14.0 to 21.0 centimeters below surface, exhibits a dark brown mottled with yellowish brown (10YR 3/3 m/w 5/6) sandy loam horizon, interpreted as a plowzone episode (Ap). Stratum IV, 21.0 to 36.0 centimeters below surface, consists of a yellowish brown (10YR 5/4-5/6) clay to loamy clay E-horizon. Stratum IV was noted in all test units in Area III with the exception of TU N1025 E565. Plowscars oriented in a northeast to southwest direction were observed at the interface between Stratum III and IV in TU N980 E575.

Stratum V is noted below Stratum IV in TU N980 E575, TU N1005 E595, and TU N1025 E565. Stratum V, a B-Horizon found 36.0 to 64.0 centimeters below surface, is comprised of a moderately compact dark yellowish brown (10YR 4/6) clay loam to sandy clay with approximately 20 percent rounded gravels. Stratum VI, a second B-horizon extending from 64.0 to the base of excavation at 86.0 centimeters below surface, consists of a yellowish brown mottled with light brownish gray and strong brown (10YR 5/4 m/w 2.5Y 6/2 and 7.5YR 5/8) clay to sandy clay with approximately 20 to 40 percent gravel content. In TU N1005 E595, a third B- horizon was identified in the soil profile. Stratum VII consists of a light yellowish brown mottled with light brownish gray and strong brown (10YR 5/4 m/w 10YR 6/2 and 7.5YR 5/8) clay B-horizon. No artifacts were recovered from Stratum VI and Stratum VII in Area III (Appendix B).

Figure 31
TU N980 E575, West Wall Profile
I-295 / I-76 / Route 42 Direct Connection
Camden County, New Jersey



Legend

I 10YR 3/2-2.5Y 3/2 – Very Dark Brown to Very Dark Grayish Brown Sandy Loam; Ao

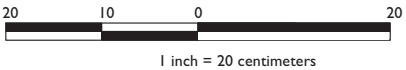
II 10YR 3/1-3/3 – Moderately Compact Very Dark Gray to Dark Brown Sandy Loam; Fill

III 10YR 3/3 Mottled with 10YR 5/6 - Dark Brown Mottled with Yellowish Brown Sandy Loam; A/E Transition

IV 10YR 5/4-5/6 – Yellowish Brown Clay to Sandy Clay; E

V 10YR 4/6 – Moderately Compact Dark Yellowish Brown Clay Loam to Sandy Clay; B

VI 10YR 5/4 mottled with 2.5Y 6/2 and 7.5YR 5/8 – Yellowish Brown Mottled with Light Brownish Gray and Strong Brown Clay to Sandy Clay; B2



Map Document X: Graphics\Projects\P-593A\Historic Maps\Fig31_westwallprofile.ai

Minor variations in the soil profile were noted in the area of intact soils. STP N1000 E575 and STP N975 E525 contained a strong brown (7.5YR 5/6-5/8) clay to sandy clay B-horizon with 40 percent gravels at 24.0 to 54.0 centimeters below surface and 15.0 to 34.0 centimeters below surface, respectively.

The artifact assemblage recovered from Area III includes both prehistoric and historic period artifacts. A total of 543 prehistoric artifacts were recovered during the investigation of Area III. Prehistoric artifacts include flakes (n=472, 88%), shatter and other debitage (n=43, 8%), FCR (n=21, 4%), flake tools (n=2, <1%), hammerstones (n=2, <1%), tested cobbles (n=2,<1%), and a scraper (n=1, <1%) (Plate 27). An examination of the lithic materials recovered in Area III revealed that jasper (n=496, 96%) represented the most heavily used lithic material, followed by chert (n=8, 2%), quartz (n=7, 1%), chalcedony (n=6, 1%) and quartzite (n=1, <1%) materials. Analysis of the reduction stages in the debitage collection yielded examples of primary (n=47, 10%), secondary (n=320, 68%), and tertiary (n=103, 22%) waste flakes, as well as shatter and other debitage (n=10, 12%). Both flake tools recovered consisted of jasper (Plate 28). No prehistoric ceramic or diagnostic stone tools were recovered from Area III.

Historic and modern artifacts recovered from Area III include a variety of ceramics, glass, architectural materials, and other refuse associated with mid-nineteenth through twentieth-century occupation in the project area. A total of 1,187 historic and modern artifacts were recovered from Area III, including architectural items (n=286, 24%), kitchen items (n=609, 52%), industrial (n=241, 20%), furniture associated items (n=27, 2%), personal items (n=19, 2%), tobacco and smoking related (n=3, <1%), and one firearms related item (n=1, <1%) (Appendix C). A number of fasteners were found in the architectural assemblage, including 35 wire nail fragments, 18 cut nail fragments, 12 unidentifiable nail fragments, and one spike. Structural debris included 88 fragments of brick, 97 window glass fragments, 17 fragments of coal, eight fragments of asphalt/macadam, three shingle fragments, one fragment of a cinder block, one piece of mortar, and one fragment of fire brick (Appendix C).

Kitchen related activities included bottle glass (n=341, 56%), ceramics (n=173, n=28%), can

Plate 27: Quartzite hammerstone, STP N975 E575, Stratum III.

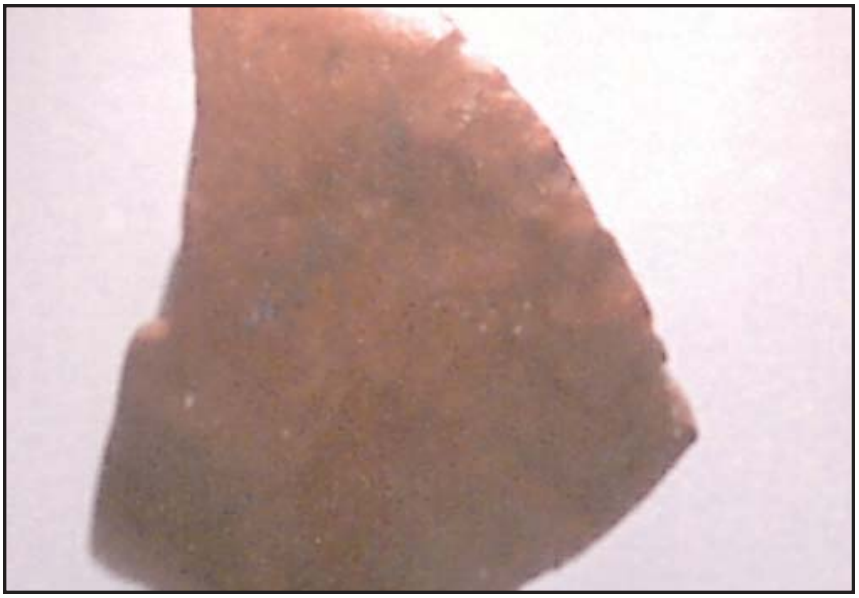


Plate 28: Jasper flake tool, STP N1000 E575, Stratum I.

Kitchen items comprise the largest class of historic artifacts. A large number of vessel glass fragments (n=48, 8%), vessel glass (n=40, 7%), bottle caps (n=6, n=1%), and a jar (n=1, <1%). fragments were found in Area III, including 161 clear vessel glass fragments, 111 amber vessel glass fragments, 38 green vessel glass fragments, 26 aqua glass fragments, three olive vessel glass fragments, two fragments of light green glass. Much of the vessel glass assemblage consists of the modern bottle glass associated with beer and juice bottles. Ceramic types included whiteware fragments (n=83, 47%), porcelain fragments (n=25, 14%), redware fragments (n=25, 14%), ironstone (n=20, 12%), pearlware fragments (n=8, 5%), institutional porcelain fragments (n=3, 2%), stoneware fragments (n=3, 2%), semi-porcelain fragments (n=2, 1%), creamware fragments (n=2, a 1%), yellowware fragment (n=1, 1%), and a buff bodied fragment (N=1, 1%) (Appendix C). One fragment of porcelain exhibited the maker's mark for porcelain produced by C.S. Field Haviland Limoge (Plate 29). The sherd did not contain a pattern by which to determine a date of manufacture; however, 1891 is considered a general start date for porcelain production in this firm (Haviland Backmarks website 2004).

Ceramic types found in the assemblage recovered from Area III included Buff-bodied earthernware (1779-1820), creamware (1762-1820), institutional porcelain (1890-1927), redware (1822-1900), porcelain (1796-present), semi-porcelain (1880-1900), pearlware (1779-1820), brown salt glazed stone ware (1840-1900), yellowware (1830-present, whiteware (1820-present), and ironstone (1840-present). While all ceramics were noted in fill episodes throughout the site, only stoneware, creamware, porcelain, redware, pearlware, ironstone and whiteware were noted in the intact soil deposits, specifically in the A-horizons of TU N980 E575, TU N975 E557, and TU N1005 E595 (Appendix C). No historic ceramics were recovered for the E-horizon or B-horizon of the test units.

Architectural items included window glass fragments (n=97, 35%), brick fragments (n=88, 32%), nails and nail fragments (n=65, 24%), pieces of slag (n=13, 5%), plaster fragments (N=6, 2%), asphalt shingle fragments (n=3, 1%), mortar fragments (n=2, 1%), and cinder block fragment (n=1,<1%). Industrial artifacts included coal (N=105, 43%), packing material (n=34, 13%), unidentified metal fragments (n=26, 10%), coal slag (n=20, 8%), charcoal fragments

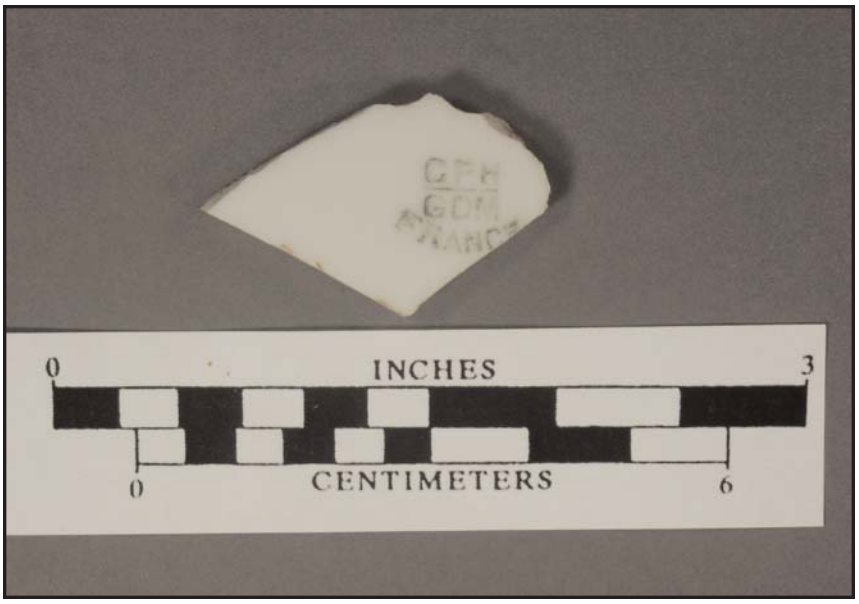


Plate 29: C.S. Field Haviland Limoge makers mark on a sherd of porcelain, STP N750 E525, Stratum I.

(n=17, 7%), fragments of cellophane (n=13, 5%), hardware fragments (n=10, 4%), asphalt fragments (n=8,3%), electrical activity associated items (n=6, 2%), plastic fragments (n=3, 1%), miscellaneous items (n=3, 1%), Bakelite fragments (n=2,<1%), and one metal spike (n=1, <1%).

Few personal items were recovered from Area III. These items included terra cotta flower pot fragments (n=6, 32%), textile fragments (n=4, 21%), coins (n=4, 21%), plastic flower fragments (n=2, 11%), a glass vial (n=1, 5%), a comb fragment (n=1, 5%), and a piece of jewelry (n=1, 5%).

Faunal remains recovered from Area III included 24 bone fragments and 51 shell fragments. While the majority of the recovered shell fragments were too eroded to identify, ten clam shell fragments and eleven oyster shell fragments were noted. All of the bone fragments were either too small or incomplete for species identification (Appendix C). Three bone fragments exhibited evidence of butchering and sawing. One fragment of bone was recovered from Stratum III, an A-horizon 14.0 to 21.0 centimeters below surface, in TU N975 E557. Butchering marks were present on two "rib eye" bones fragments which were recovered from TU N1025 E565, Stratum III, which extended from 15.0 to 26.0 centimeters below the ground surface.

The distribution of the prehistoric artifact collection is highly focused in a 580.6 square-meter area in the center of Area III between the N975 and N1050 transects (Figure 32). STPs N950 E575, N975 E550, N975 E575, N975 E600, N1000 E575, N1000 E600, N1025 E550, and N1025 E575, and TU N975 E557, N980 E575, N1005 E595, and TU N1025 E565 produced an assortment of prehistoric materials. The highest concentration of artifacts (n=320) was noted in TU N980 E575, with substantial decreases in prehistoric artifact counts noted in the excavations surrounding from this excavation (Figure 32). TU N975 E557 contained a total of 68 flakes, while TU N1005 E595 revealed only 20 flakes, the majority of which (n=16) were recovered from the Ap-horizon. Only two flakes were recovered from the E-horizon in TU N1005 E595. No cultural features indicative of hearths, storage pits, pit houses, or other subsurface features were observed in the excavations conducted in Area III.

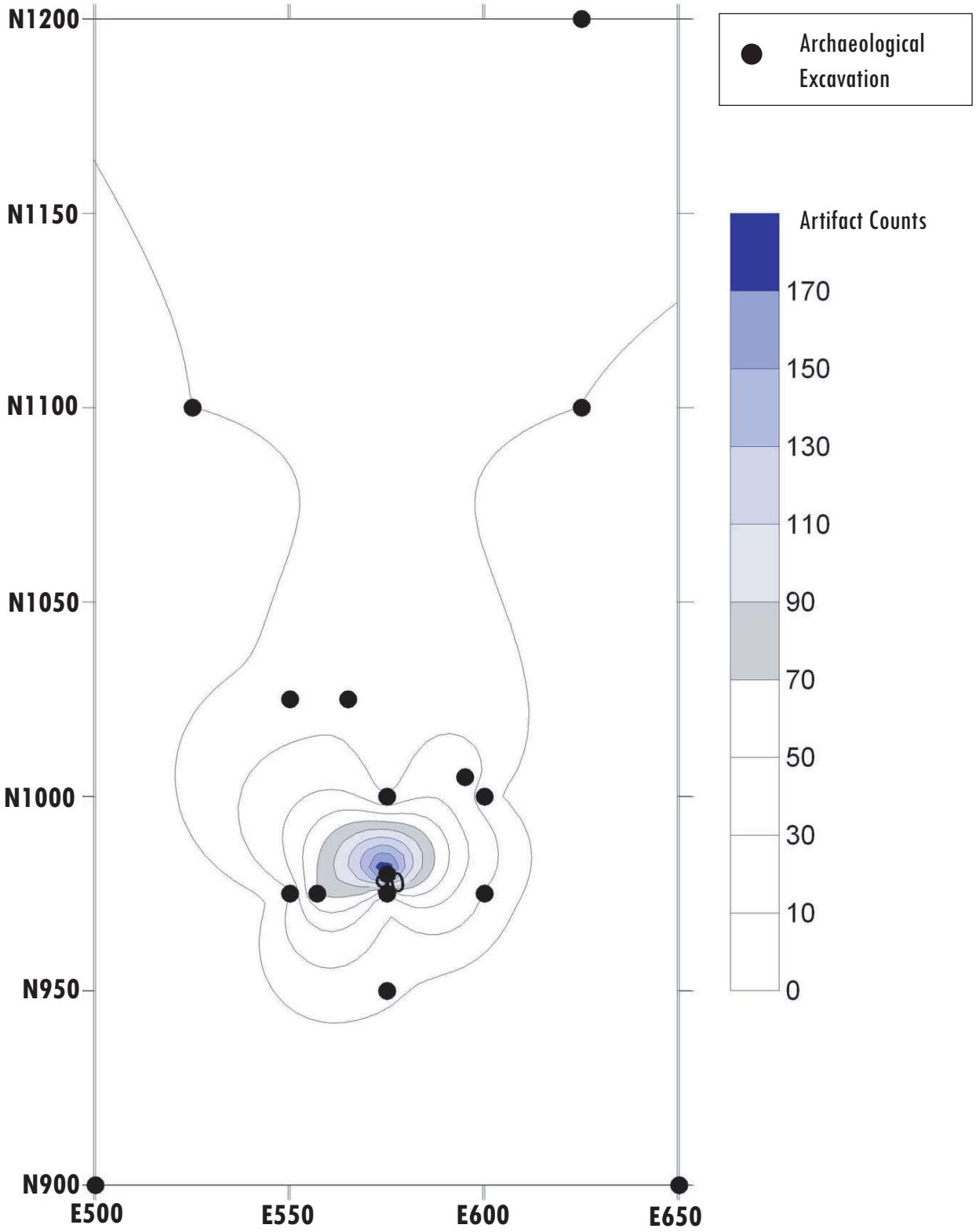


Figure 32
Horizontal Distribution of the Prehistoric Artifact Assemblage in Site 28-Ca-105, Area III
I-295 / I-76 / Route 42 Direct Connection
Camden County, New Jersey

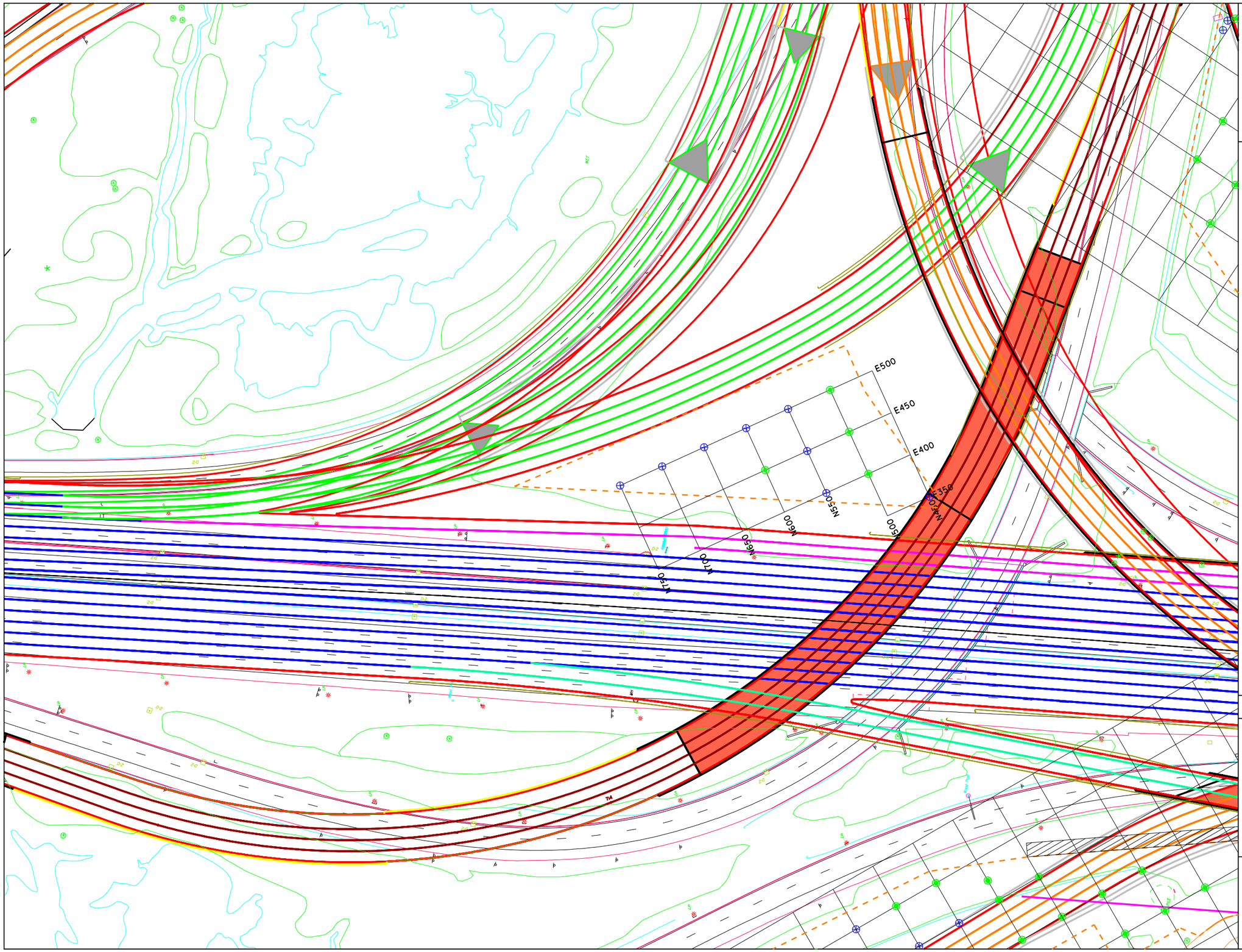
Map Document X: Graphics\Projects\P-593A\Fig32_Dist of Prehist Artifacts.ai

Analysis of the vertical distribution of the prehistoric collection revealed the greatest quantity of debitage in the Ap-horizon (n=235), followed closely by the E-horizon (n=234), with decreased prehistoric artifact counts in the fill deposits (n=36), the B-horizon (n=27), and the Ao-horizon (n=6). Inspection of the lithic collection did not yield any trends in flake reduction stage by soil stratum. Overall, primary, secondary, and tertiary flakes, debitage and the few tools recovered were found mixed together in the same stratum, although secondary flakes were found in slightly greater numbers than other reduction sizes. An in-filled rodent burrow in TU N980 E575, which extended down into the B-horizon, yielded 11 flakes in the feature matrix. This concentration of prehistoric artifacts was designated the Annunciation B.V.M. Church Prehistoric Site (28-Ca-105).

The archaeological investigation of Area III suggests that the landform has undergone significant disturbance associated with grading and landscaping activities for the Annunciation B.V.M. Church and the I-295/I-76/Route 42 interchange. The historic artifact assemblage, consisting of modern debris and mid- to late nineteenth- through early-twentieth-century artifacts, was recovered largely from the fill and plowzone horizons, and offers little information regarding the original context of these materials. Site 28-Ca-105 likely consisted of a larger lithic reduction work site at one time, but late nineteenth- through early-twentieth-century agricultural use of the landscape, combined with mid- to late-twentieth-century grading, stripping and redeposition of fill for the church, has disturbed the original context of the site, leaving a very limited portion of the site. The absence of diagnostic materials prohibits assigning a temporal association to the age of the site. Given the documentation of known Late Archaic to Late Woodland sites along the Little Timber Creek and Big Timber Creek drainages, Site 28-Ca-105 is anticipated to be of a similar age.

4.5.4 I-295/I-76/Route 42 Infield Island (Area IV)

Area IV consists of a 0.4-hectare parcel located in the infield median east of I-76, north of the ramp from Route 42 northbound to I-295 northbound, and south of the ramp from southbound I-295 to the northbound lane of I-76 (Figure 33). The landscape is heavily forested with dense brush and undergrowth. Area IV also contains a small boggy area supporting phragmites and cattails at the western end of the testable area (Plate 30). A series of push piles, likely associated



N

PROJECT NORTH

Legend

- Shovel Test Pit - Positive Historic / Modern
- Shovel Test Pit - Positive Prehistoric
- Shovel Test Pit - Positive Historic / Modern and Prehistoric
- Shovel Test Pit - Negative
- Area of Potential Effects (APE)

0 50 100 200 Feet

New Jersey Department of Transportation

I-295 / I-76 / Route 42 Direct Connection Camden County

FIGURE 33

Area IV Archaeological Base Map

Plate 30: Area IV. View looking northwest (June 2004).

with the construction of the existing interchange, and general roadside debris were noted in Area IV. A few large trees in Area IV suggest that the infield median portion of the parcel contains sections of intact soils unaffected by the construction of the I-295/I-76/Route 42 interchange.

Two soils have been identified within Area IV. Made Land (Ma) was identified in the southern portion of the area. Made Land consists of areas so heavily impacted by filling, excavation, and other construction activities that the original soil strata have been destroyed. In Camden County, most Made Land soils are comprised of sand and gravel underlain by clayey layers, but areas close to creeks and riverways also include dredge spoils (Markley 1966:19). Tidal Marsh–Made Land complex (Tm) was identified in the northern part of Area IV. The Tidal Marsh-Made Land complex is composed of low-lying tidal marsh areas that have been filled in by the dredging of stream and river channels and other construction activities. It contains mostly organic matter and silt, and supports vegetation that can withstand wet conditions. Though this land has been reclaimed, it is still subject to flooding (Markley 1966:25).

A 15.2-meter (50.0-ft) interval testing grid was established across the 140.2-meter-long by 61.0-meter-wide triangular section of Area IV. A north-south baseline for the grid was created following the staked centerline of the proposed Ramp B, using Station 611 as a datum point for the grid (Figure 33). This datum point was designated STP N500 E500. A 91.4- meter-long reel tape was used to establish the grid. Survey stakes were placed at 45.7-meter intervals in the grid to maintain spatial reference points across Area IV. Pin flags were placed at 15.2-meter intervals to delineate STP sites. All points within the grid were designated by north and east coordinates. A total of 12 STPs were excavated in Area IV (Figure 33). The soil morphology in Area IV revealed a small section of possibly intact soils in the western portion of the parcel and extensive fill deposits in the eastern portion of the area. STPs N500 E500 through N700 E500 consisted of a 27.0- to 34.0-centimeter thick very dark grayish brown to dark yellowish brown (10YR 3/2-3/4) silty sand fill horizon overlying a very dark gray (10YR 3/1) clay fill horizon. This dark gray clay fill extended as deep as 1.0 meter below surface, and prohibited the exposure of any underlying deposits. STP N750 E500, located in the vicinity of the cattails and phragmites, consisted of a very dark grayish brown (10YR 3/2) clay fill 0.0 to 32.0 centimeters below surface

overlying a lamellae-stained dark grayish brown (10YR 4/2) silty clay horizon extending 32.0 to 70.0 centimeters below surface (Appendix B).

Test excavations conducted on the E450 and E400 transects produced evidence of an intact yellowish brown (10YR 5/6-5/8) silt loam to sandy loam B-horizon overlain by a series of 10.0- to 19.0-centimeter thick fill deposits, including a very dark grayish brown to dark yellowish brown (10YR 3/2-3/4) silty sand, a yellowish brown (10YR 5/4) sandy loam to clay loam, and a brown (10YR 4/2-4/3) sandy loam. STP N600 E450 did not exhibit the B-horizon in the profile, but instead contained a fill episode 36.0 to 65.0 centimeters below surface comprised of black (10YR 2/1) road gravel mixed with plastic bread bags. The bags, labeled "Bond Bread," were in poor condition and were not retained for laboratory analysis. A large wooden board was discovered below the gravel horizon, and the shovel test was terminated. A black (10YR 2/1) humus layer (Ao-horizon) was present in several of the soil profiles on the E400 and E450 transects, but absent on the E500 transect, possibly an indication of soil stability and development in the western portion of Area IV.

Three strata were noted within STP N450 E400. Stratum I was comprised of a brown (10YR 4/3) sandy loam fill extending from 0.0 to 14.0 centimeters below surface. Stratum II consisted of a fill horizon comprised of an olive brown (2.5Y 4/4) mottled with a yellowish brown (10YR 5/6) silty clay extending from 14.0 to 53.0 centimeters. Stratum III extended from 53.0 to 65.0 centimeters and was comprised of a yellowish brown (10YR 5/6) silty loam B-horizon. STP N450 E400 tested negative for buried cultural remains.

The few artifacts recovered from Area IV consisted exclusively of mid-nineteenth- through twentieth-century architectural and domestic refuse. Architectural artifacts included three coal fragments, one cut nail, and one fragment of heavy gauge wire. Domestic artifacts were limited to one fragment of clear vessel glass, one unidentifiable bone fragment, and one eroded shell fragment (Appendix C).

All of the artifacts in Area IV were recovered from fill deposits, and present little diagnostic material. Because of this, analysis of the artifact distribution revealed little about this area. The

archaeological survey did identify a slight depression clear of brush and trees and surrounded by several old-growth trees, thought to be a possible foundation (Plate 31). However, STP N450 E350, placed within the depression, exposed three culturally-sterile fill horizons, and no evidence of human occupation.

Plate 31: Clearing in the western portion of Area IV. View looking northwest (June 2004).

5.0 Determination of Eligibility and Effect of Archaeological Resources

5.0 DETERMINATION OF ELIGIBILITY AND EFFECT OF ARCHAEOLOGICAL RESOURCES

5.1 Harrison-Glover Prehistoric Site 3 (28-Ca-106), Area I

The archaeological investigation of the Harrison-Glover Prehistoric Site 3 (28-Ca-106) in Area I identified prehistoric cultural materials temporally associated with a Middle to Late Woodland period occupation dispersed between several minor fill deposits, an A-horizon topsoil, and an E-horizon subsoil. The prehistoric artifact collection included two fragments of a Madison projectile point, two sherds of pottery, lithic debitage, and fragments of fire-cracked rock, materials reflective of hunting, cooking and tool maintenance activities. The vertical and horizontal distribution of the prehistoric artifacts yielded little information regarding temporally discrete episodes within the site. In addition, no evidence of discrete deposits associated with cooking, food processing, tool maintenance, or other artifact-specific activities were noted in the distribution of the prehistoric assemblage.

Overall, the distribution of the artifact collection suggests that secondary deposition through landscaping and grading activities has redeposited much of the collection from its original context. The prehistoric artifact assemblage was recovered with mid-nineteenth- through early-twentieth-century artifact collection and a scattering of modern refuse within the fill deposits and A-horizon, but not in the E- and E/B transitional horizon. While the E-horizon produced eleven pieces of lithic debitage and two fragments of a Madison projectile point, and an E/B transitional horizon yielded two flakes, no cultural materials were identified in the B-horizon. The presence of a light prehistoric artifact scatter in the upper subsoil horizons in 28-Ca-106 is certainly only a fraction of the original vertical limits of the site, which must have been truncated by historic and modern landscaping activities. Also, no cultural features associated with hearths, subterranean structures, such as pit houses or storage pits, or other subsurface deposits were identified within the limits of the site within the APE. The few artifacts recovered from the E- and E/B-horizon represent general refuse and tool forms typical for Woodland period sites.

Based on the recovery and analysis of the soil morphology and artifact collection recorded in Site 28-Ca-106, this site is not eligible for inclusion in the National Register of Historic Places.

This Middle to Late Woodland site consists of a small number of prehistoric artifacts in the upper level of the subsoil context, capped with artifact-bearing fill and an A-horizon. The prehistoric artifact assemblage suggests that 28-Ca-106 represents an ephemeral edge of a seasonal campsite, given the recovery of ceramics in the overlying fill, a projectile point in the E-horizon, and the lack of subsurface features. However, similar period archaeological sites bearing prehistoric cultural materials in temporally-stratified deposits have been recorded in the surrounding area and represent better examples of cultural, technological and environmental information concerning Native American occupation in southern New Jersey than observed in Site 28-Ca-106 (Hunter Research 1996, 1999; Kingsley and Benedict 1992; Thomas et al 1985). Site 28-Ca-106 does not have the potential to yield new information important in prehistory or history.

5.2 Harrison-Glover Prehistoric Site 2 (28-Ca-107), Area I

The archaeological investigation of the Harrison-Glover Prehistoric Site 2 (28-Ca-107) in Area I identified prehistoric cultural materials temporally associated with a Middle Archaic to Late Woodland period occupation dispersed between a thin A-horizon topsoil and an E-horizon subsoil. The prehistoric artifact collection included a Middle Archaic to Middle Woodland quartzite Poplar Island projectile point, six sherds of Middle to Late Woodland pottery, lithic debitage, a thumbnail scraper, and fragments of fire-cracked rock. These materials are reflective of hunting, cooking and tool maintenance activities. The documentation of prehistoric, mid-nineteenth- through early-twentieth-century, and modern refuse in the same soil horizons illustrates the effects of secondary deposition through landscaping and grading activities. No cultural materials were recorded in the B-horizon, and no cultural features associated with hearths, subterranean structures, such as pit houses or storage pits, or other subsurface deposits were exposed within the recorded site limits within the APE. The vertical and horizontal distribution of the prehistoric artifacts indicated little potential for temporally discrete episodes within the site. In addition, no evidence of discrete deposits associated with cooking, food processing, tool maintenance, or other artifact-specific activities were noted in the distribution of the prehistoric assemblage.

Based on the recovery and analysis of the soil morphology and artifact collection recorded in Site 28-Ca-107, this site is not eligible for inclusion in the National Register of Historic Places. This Middle Archaic to Late Woodland site consists of a small number of prehistoric, historic and modern artifacts in the E-horizon, capped with artifact-bearing A-horizon. The prehistoric artifact assemblage suggests that 28-Ca-107 represents an ephemeral edge of a seasonal campsite, given the recovery of ceramics in the overlying fill, a projectile point in the E-horizon, and the lack of subsurface features. However, similar period archaeological sites bearing prehistoric cultural materials in temporally-stratified deposits have been recorded in the surrounding area and represent better examples of cultural, technological and environmental information concerning Native American occupation in southern New Jersey than observed in Site 28-Ca-107. In addition, the introduction of recent burials within the southern portion of Site 28-Ca-107, located within the New St. Mary's Cemetery, has dramatically impacted the preservation of the site. Site 28-Ca-107 does not have the potential to yield new information important in prehistory or history.

5.3 Harrison-Glover Prehistoric Site 1 (28-Ca-110), Area I

The archaeological investigation of the Harrison-Glover Prehistoric Site 1 (28-Ca-110) identified prehistoric cultural materials temporally associated with a Middle to Late Woodland period occupation dispersed between several minor fill deposits, an A-horizon topsoil, and an E-horizon subsoil. The prehistoric artifact collection included eight sherds of pottery, five pieces of lithic debitage, and eleven fragments of fire-cracked rock. These materials are indicative of cooking and tool maintenance activities. Analysis of the prehistoric artifact assemblage distribution did reveal a concentration of five pottery sherds, two flakes and one FCR fragment in the E-horizon within TU N1293 E1811. This horizon was devoid of any historic or modern artifacts. Also, one additional FCR fragment was recovered from the E-horizon outside of this excavation. The pottery collection illustrated a general collection of Middle to Late Woodland cord-marked and plain exterior wares containing crushed quartz temper, with one sherd exhibiting possible granite/gneiss temper in the A-horizon. Despite the cluster of pottery sherds and FCR in the E-horizon, the excavations in Site 28-Ca-110 did not uncover any hearths, charcoal deposits, or other subsurface features associated with cooking activities in the subsoil horizon. In addition, no

evidence of discrete deposits associated with food processing, tool maintenance, or other artifact-specific activities were noted in the distribution of the prehistoric assemblage of Site 28-Ca-110.

The distribution of the artifact collection suggests that secondary deposition through landscaping and grading activities has redeposited much of the collection from its original context. The prehistoric artifact assemblage was recovered with mid-nineteenth- through early-twentieth-century artifact collection and a scattering of modern refuse within the fill deposits and A-horizon, but not in the E-horizon. While the E-horizon produced five pottery sherds, two flakes, and one FCR fragment, no cultural materials were identified in the B-horizon. The very limited presence of intact, prehistoric-artifact bearing subsoil horizons in 28-Ca-110 offers little evidence of the original vertical limits of the site. However, no cultural features associated with hearths, subterranean structures, such as pit houses or storage pits, or other subsurface deposits were exposed within the recorded site limits within the APE. The few artifacts recovered from the E-horizon represent general refuse and ceramic types typical for Woodland period sites.

Based on the recovery and analysis of the soil morphology and artifact collection recorded in Site 28-Ca-110, this site is not eligible for inclusion in the National Register of Historic Places. This Middle to Late Woodland site consists of a small number of prehistoric artifacts in the upper level of the subsoil context, capped with artifact-bearing fill and an A-horizon. The prehistoric artifact assemblage suggests that 28-Ca-110 represents an ephemeral edge of a seasonal campsite, given the recovery of ceramics and FCR in the fill, A-horizon and E-horizon, and the lack of subsurface features. However, similar period archaeological sites bearing prehistoric cultural materials in temporally-stratified deposits have been recorded in the surrounding area and represent better examples of cultural, technological and environmental information concerning Native American occupation in southern New Jersey than observed in Site 28-Ca-110 (Hunter Research 1996, 1999; Kingsley and Benedict 1992; Thomas et al 1985). Site 28-Ca-110 does not have the potential to yield new information important in prehistory or history.

5.4 Annunciation B.V.M. ChurchPrehistoric Site (28-Ca-105), Area III

The archaeological investigation of the Annunciation B.V.M. ChurchSite (28-Ca-105) identified an lithic concentration of indeterminate age dispersed between a modern fill deposit, an Ap-horizon, an E-horizon subsoil, and, to a limited extent, a B-horizon subsoil. The results of the investigation indicate that the site consists of the remains of a lithic reduction work station. A large number of secondary and tertiary flakes suggests that blank forms were transported to this work station and reduced into finished tool forms, as well as maintenance activities with finished tools. No diagnostic tools or ceramics were recovered to identify the age of the site. The site has been impacted by mid- to late-nineteenth- through twentieth-century agricultural use and construction activities associated with the development of the Annunciation B.V.M. Church and the I-295/I-76/Routre 42 interchange. The sediment composition of Site 28-Ca-105 consists of a weathered upland landform composed of gravelly silty clay to clay deposits overlain by a shallow E-horizon capped with late-nineteenth- through twentieth-century disturbed plowzone and fill horizons. No buried surface horizons were present on this site, and no subsurface cultural features were recorded during the excavations.

The archaeological results from the Annunciation B.V.M. ChurchSite suggest an isolated artifact concentration surrounded by extensive impacts associated with the historic development of the property. The vertical distribution of the artifact assemblage includes a concentration of both historic and prehistoric artifacts in the disturbed fill and plowzone. A variety of historic and modern artifacts recovered from these horizons, including ceramics, architectural items, glassware, and modern refuse, such as plastic toys, food wrappers, coins, and other debris, reflect the late-nineteenth/twentieth-century development of the church property. An assortment of lithic debitage and a few flake tools were also recovered mixed with the historic artifacts in the fill and Ap-horizon, attesting to the disturbance of the site. The presence of roughly 50 percent of the lithic debitage assemblage in the E-horizon and roughly 5 percent of the lithic collection in the B-horizon suggests that remnants of the prehistoric site are present in the subsoil. The recovery of a small number of historic artifacts in the E-horizon suggests that impacts from the plowing and fill deposition have introduced materials into the subsoil, possibly including prehistoric artifacts. The horizontal distribution of the prehistoric artifact assemblage indicates

that the prehistoric site locus existed in the southeast corner of the site. However, the absence of any subsurface prehistoric features, the extensive ground disturbance noted to the north, west and south of the prehistoric artifact concentration, and the lack of any prehistoric materials to the east of the locus illustrates that 28-Ca-105 has been impacted by the historic development of the property.

Based on the recovery and analysis of the soil morphology and artifact collection recorded in Site 28-Ca-105, this site is not eligible for inclusion in the National Register of Historic Places. While a large number of lithics were recovered from the E-horizon, and to a lesser extent the B-horizon, ground disturbance has impacted the preservation of the site. The presence of extensive fill deposits and truncated or absent subsoil horizons adjacent to the site suggests that the site may have extended further to the north, west and south of the recorded site boundaries, and that the current site represents the cultural remains that have survived plowing, grading, and landscaping. The archaeological materials recovered from the site provide an interesting cross-section of lithic technology, but the assemblage offers limited information concerning patterns of seasonal use, local versus transported materials, and the extent of the original site across the project area. The lack of diagnostic materials further limits the site's significance. Site 28-Ca-105 does not have the potential to yield new information important in prehistory or history.

5.5 Application of Effect

5.5.1 Alternative D

The construction of Alternative D will impact Site 28-Ca-107, Site 28-Ca-106, and Site 28-Ca-110, specifically with the construction of the roadway carrying traffic on I-295 through the New St. Mary's Cemetery and the construction of a noise wall along the north side of the cemetery. The archaeological investigation did not find these three sites to be eligible for inclusion in the National Register of Historic Places. No effect will occur with Alternative D.

5.5.2 Alternative D1

The construction of Alternative D1 will impact Site 28-Ca-107, Site 28-Ca-106, and Site 28-Ca-110, specifically with the construction of the roadway carrying traffic on I-295 through the New

St. Mary's Cemetery and the construction of a noise wall along the north side of the cemetery. Alternative D1 will also impact Site 28-Ca-105 with the construction of a new Ramp C following the existing Ramp C alignment at Al-Jo's curve. The archaeological investigation did not find these four sites to be eligible for inclusion in the National Register of Historic Places. No effect will occur with Alternative D1.

5.5.3 Alternative G2

The construction of Alternative G2 will impact Site 28-Ca-107, Site 28-Ca-106, and Site 28-Ca-110, specifically with the construction of the roadway carrying traffic on I-295 through the New St. Mary's Cemetery and the construction of a noise wall along the north side of the cemetery. The archaeological investigation did not find these three sites to be eligible for inclusion in the National Register of Historic Places. No effect will occur with Alternative G2.

5.5.4 Alternative H1

The construction of Alternative H1 will impact Site 28-Ca-107, Site 28-Ca-106, and Site 28-Ca-110, specifically with the construction of the roadway carrying traffic on I-295 through the New St. Mary's Cemetery and the construction of a noise wall along the north side of the cemetery. Alternative H1 will also impact Site 28-Ca-105 with the construction of a new Ramp C following the existing Ramp C alignment at Al-Jo's curve. The archaeological investigation did not find these four sites to be eligible for inclusion in the National Register of Historic Places. No effect will occur with Alternative H1.

5.5.5 Alternative K

The construction of Alternative K will impact Site 28-Ca-107, Site 28-Ca-106, and Site 28-Ca-110, specifically with the construction of the roadway carrying traffic on I-295 through the New St. Mary's Cemetery and the construction of a noise wall along the north side of the cemetery. The archaeological investigation did not find these three sites to be eligible for inclusion in the National Register of Historic Places. No effect will occur with Alternative K.

6.0 Conclusions and Recommendations

6.0 CONCLUSIONS AND RECOMMENDATIONS

A Phase I Archaeological Survey was conducted in four archaeologically-sensitive areas within the archaeological APE for the I-296/I-76/Route 42 interchange reconstruction project. The excavations revealed that a significant portion of the APE has been impacted by landscaping and filling activities associated with the construction of the existing interchange and twentieth century commercial and residential development. Three prehistoric artifact concentrations, designated Site 28-Ca-106, 28-Ca-107, and 28-Ca-110, were recorded within the APE in Area I, and one prehistoric artifact concentration, designated Site 28-Ca-105, was recorded within the APE in Area III. The conclusions and recommendations for each area in the APE will be discussed separately.

6.1 New Saint Mary's Cemetery (Area I)

A total of 91 STPs, five 1.5-meter-square test units, two 1.0-meter-square test units, 19 mechanically-assisted deep test excavations, and six test trenches were excavated within the 2.5-hectare parcel of land comprising Area I. Overall, the central portion of Area I consists of extensive sandy fill deposits encapsulating the original, boggy hydric soil landscape. In some areas the fill deposits extended to 6.0 meters below surface, but gradually decreased in depth to the northeast, southeast, and southwest. This boggy feature was determined to be a natural drainage that was filled to create a stable surface for the cemetery property. Archaeological testing identified a historic and modern artifact-bearing A-horizon overlying the boggy, hydric soils, and isolated artifact deposits in the overlying fill deposits. The artifact assemblage in this former boggy section consisted primarily of early-nineteenth- through twentieth-century domestic and architectural debris. A few sherds of late-eighteenth-century ceramics were recovered with the later artifact assemblage in the fill deposits as well. No cultural features were noted in the hydric soils. Much of the historic artifact assemblage was found in a mixed context that did not exhibit any artifact trends to suggest that intact activity areas or structural remains were present in the filled central section of Area I.

Archaeological testing in the wooded section of the APE along I-295 recorded the presence of an E-horizon and B-horizon subsoil overlain by an A-horizon and scattered episodes of fill

deposition. Prehistoric artifacts, including pottery, projectile points, flake tools, FCR, and lithic debris, were recovered from three discreet concentrations located east of the Harrison-Glover House. These artifact concentrations, designated the Harrison-Glover Prehistoric Site 1 (28-Ca-110), Harrison-Glover Prehistoric Site 2 (28-Ca-107), and the Harrison-Glover Prehistoric Site 3 (28-Ca-106), yielded prehistoric materials in the fill, A-horizon, E-horizon, and E/B transitional horizon. Diagnostic tools and ceramics found in the three sites indicate a Middle to Late Woodland period date with the resources. While the recovery of a Middle Archaic to Middle Woodland period Poplar Island projectile point in Site 28-Ca-107 extends that site's temporal association to an earlier period of time, the overall range of diagnostic materials falls within Middle to Late Woodland period. No prehistoric cultural features were identified in these sites.

Despite the recovery of diagnostic pottery and stone tools, the preservation of the site and context of the prehistoric artifact collection offers limited new information concerning Native American activities along the Little Timber Creek drainage. Much of the prehistoric artifact assemblage was recovered from disturbed horizons, and provides little evidence of the original context of the collection. The few artifacts found in the subsoil represent the remnants of the original site. The absence of subsurface cultural features further reduces the information potential of these sites.

Excavations in the yard area of the Harrison-Glover House revealed ground disturbances associated with the construction of a buried pipeline along the north side of the yard in the woods, and multiple episodes of late-nineteenth through twentieth-century fill and grading in the west and north yard areas of the house. One soil horizon, composed of coal ash, coal, slag, cinders, asphalt, and a small number of ceramics and bottle glass, reflects a late-nineteenth- to early-twentieth-century mix of coal stove/furnace waste and domestic refuse discarded from the household and graded over the landscape. Testing adjacent to the Harrison-Glover House uncovered a pocket of architectural debris in two fill horizons associated with twentieth-century renovations to original windows of the structure. Unfortunately, the excavations placed within the yard area did not uncover any refuse deposits or subsurface features associated with the earlier eighteenth occupation of the property and residence.

While the test excavations within the Area I APE revealed ceramics, architectural debris, vessel glass, and other debris associated with the domestic occupation of the dwelling, the assemblage reflects a mid-nineteenth- through twentieth-century temporal association in a disturbed context. A small number of late-eighteenth through early-nineteenth-century ceramics were recovered in these sections, but the paucity of this material and the wide horizontal and vertical distribution of these finds offer little evidence for any early, intact cultural deposits. Similarly, the recovery of prehistoric pottery, stone tools, lithic debitage and other cultural materials indicate Native American occupation within the APE. Ground disturbance has impacted the preservation of the prehistoric sites, leaving behind a thin horizon of cultural deposits within the subsoil.

After a review of the Phase I/II Archaeological Investigation, no further investigation is recommended for the Area I APE.

6.2 Bellmawr Ball Fields (Area II)

A total of 36 test pits were excavated within the 1.0-hectare parcel of land in Area II. Area II has been severely impacted by the construction of the I-295/I-76/Route 42 interchange. The archaeological survey encountered numerous fill deposits in Area II, with little evidence of the original soil profile present. Numerous mid-nineteenth- through twentieth-century artifacts, including ceramics, vessel glass, architectural debris, faunal remains, and one prehistoric artifact, were recovered from the fill deposits. However, no discernable concentrations or patterns were noted in the fill deposits to suggest the location of structures or subsurface deposits. The fill deposits and cultural materials that comprise the soil profile in Area II do not offer any new information concerning the prehistoric and historic occupation of the landscape. No further archaeological investigations are recommended for Area II.

6.3 Annunciation B.V.M. Church (Area III)

A total of 61 STPs and four 1.5-meter-square test units were excavated in the 1.1-hecatre parcel of land in Area III. With the exception of the central portion of the APE, the majority of Area III has been subjected to substantial fill deposits. The depth of the fill deposits are unknown, but extend at least 1.0 meter below ground surface. Archaeological testing did reveal an intact portion of land within the central portion of the APE that contained an E-horizon and B-horizon

subsoil profile capped with a remnant plowzone and fill deposit. This small section of intact landform was surrounded by extensive fill deposition.

A small, stratified prehistoric artifact cluster, designated the Annunciation Church Prehistoric Site (28-Ca-105), was revealed within this intact landform. The artifact assemblage included a large number of jasper flakes, as well as chert, quartz and chalcedony debitage, two flake tools, two hammerstones, and a small number of FCR. The largest number of prehistoric artifacts in Site 28-Ca-105 trended towards the southeast portion of the site, suggesting that this site, a lithic reduction workstation, may have continued beyond the site limits if not for the impacts from grading and landscaping. The recovery of numerous waste flakes in the E-horizon, overlain by a plowzone horizon containing an equal number of prehistoric artifacts mixed with historic artifacts and modern refuse, suggests that the subsoil supports a thin remnant of the original site, and the that site has been impacted and truncated through plowing and landscaping activities.

Historic and modern artifacts were also recovered during the excavations, but most of these materials were discovered within disturbed fill deposits and the plowzone horizon. The majority of modern artifacts consisted of bottle glass fragments, cinder block fragments, plastic, and other refuse. Historic artifacts were limited to mid- to late-nineteenth- to early twentieth-century ceramics and vessel glass. These materials are representative of domestic and architectural refuse associated with the Harrison-Glover House dispersed through agricultural use of the project area. A trace number of historic artifacts were found within the E-horizon of Site 28-Ca-105, attributable to plow activities, but overall were limited to the overlying fill episodes and the plowzone.

The archaeological investigation of Area III suggests that the landform has undergone significant disturbance associated with grading and landscaping activities for the Annunciation B.V.M. Church and the I-295/I-76/Route 42 interchange. The historic artifact assemblage, consisting of modern debris and mid- to late nineteenth- through early-twentieth-century artifacts, was recovered largely from the fill and plowzone horizons, and offers little information regarding the original context of these materials. Site 28-Ca-105 likely consisted of a larger lithic reduction work site at one time, but late nineteenth- through early-twentieth-century agricultural use of the

landscape, combined with mid- to late-twentieth-century grading, stripping and redeposition of fill for the church, has disturbed the original context of the site, leaving a very limited portion of the site. The absence of diagnostic materials prohibits assigning a temporal association to the age of the site. No further archaeological investigations are recommended for Area III.

6.4 I-295/I-76/Route 42 Infield Median (Area IV)

Archaeological testing in the 0.4-hectare parcel of Area IV documented no potentially significant archaeological resources. The landscape consists of extensive fill deposits associated with the construction of the I-295/I-76/Route 42 interchange. A small area of intact subsoil was exposed in the eastern portion of Area IV. However, no artifacts were recovered from the subsoil horizon, and no subsurface cultural features were identified in the survey. The few artifacts recovered from Area IV consist of mid-nineteenth- through twentieth-century architectural and domestic refuse found exclusively in fill deposits. Analysis of the artifact distribution revealed little information to indicate the presence of cultural features in Area IV. No additional archaeological investigations are recommended for Area IV.

7.0 References

7.0 REFERENCES

A.G. Lichtenstein & Associates
1994 The New Jersey Historic Bridge Survey. Document prepared for the New Jersey Department of Transportation, Bureau of Environmental Analysis and the Federal Highway Administration, New Jersey Division.

Andariese, Walter S.
1981 *History of the Benjamin Franklin Bridge.* Delaware River Port Authority, Camden, New Jersey.

Anon.
n.d. Cærte vande Svydt Rivier in Niew Nederland. Manuscript map. Reproduced in *Bulletin [off] the Archeological* [*sic*] *Society of New Jersey.* Nos. 15-16, November 1958.

[*c.* 1778] Manuscript map of the road network between Cooper's Creek and Great Mantua Creek, Old Gloucester County, New Jersey. Library of Congress Collection, Washington, D.C.

Averill, Stephen P.
1980 "Late Wisconsin-Holocene History of the Lower Hudson Region: New Evidence from the Hackensack and Hudson River Valleys," *Field Studies of New Jersey Geology and Guide to Field Trips: 52nd Annual Meeting of the New York State Geological Association.* Pp. 159-187. Rutgers University, Newark, New Jersey.

Barnes, R. S. K.
1974 *Estuarine Biology.* Studies in Biology no. 49. Edward Arnold, London, England.

Battle, J.H.
1887 *History of Bucks County, Pennsylvania.* n.p., Philadelphia, Pennsylvania and Chicago, Illinois.

Bertland, Dennis, P. Valence, and R. Woodling
1975 *The Minisink.* Four-County Task Force on the Tocks Island Dam Project, Stroudsburg, Pennsylvania.

Bloom, Arthur L.
1983a "Sea Level and Coastal Changes," *Late Quaternary Environments of the United States.* Vol. 2. H. E. Wright, Jr., ed., pp. 42-51. University of Minnesota Press, Minneapolis, Minnesota.

1983b "Sea Level and Coastal Morphology of the United States through the Late Wisconsin Glacial Maximum," *Late Quaternary Environments of the United States.* Vol. 1. S. C. Porter ed., pp. 215-229. University of Minnesota Press, Minneapolis, Minnesota.

Bloom, A. L. and M. Stuiver
1963 "Submergence of the Connecticut Coast," *Science* 139 (3552):332-334.

1964 "Peat Accumulation and Compaction in a Connecticut Coastal Marsh," *Journal of Sedimentary Petrology* 34(3):599-603.

Boyd, Howard P.
1991 *Field Guide to the Pine Barrens of New Jersey.* Plexus Publishing, Incorporated, Medford, New Jersey.

Boyd, William
1916 *Camden City Directory for 1916.* William Boyd, Publisher, Philadelphia, Pennsylvania.

Boyer, Charles S.
1933 *The Origin and Meaning of Place Names in Camden County.* Camden History, Vol. 1, no. 8. Camden County Historical Society, Camden, New Jersey.

1962 *Old Mills of Camden County.* Camden County Historical Society, Camden, New Jersey.

1967 *Rambles Through Old Highways and Byways of West Jersey.* Camden County Historical Society, Camden, New Jersey.

Brugam, R. B.
1978 "Pollen indicators of land-use change in southern Connecticut," *Quaternary Research* 9:349-62.

Bush, Bernard, compiler
1977 *Laws of the Royal Colony of New Jersey : 1703-1769.* New Jersey Archives, Third Series, Vol. II. New Jersey State Library, Archives and History Bureau, Trenton, New Jersey.

1982 *Laws of the Royal Colony of New Jersey : 1760-1745.* New Jersey Archives, Third Series, Vol. IV. New Jersey State Library, Bureau of Archives and History, Trenton, New Jersey.

Camden County Deeds
Camden County Clerk's Office, Camden, New Jersey.

Camden County Estate Index
Camden County Surrogate's Office, Camden, New Jersey.

Camden County Filed Plans
Camden County Clerk's Office, Camden, New Jersey.

Camden County Historical Society.
Map 89.96.40. Plan of Resurrection of Christ Cemetery. Works Progress Administration cemetery plans. Camden County Historical Society, Camden, New Jersey.

Chesler, Olga
1982 "New Jersey's Archeological Resources from the Paleo-indian Period to the Present: A Review of Research Problems and Survey Priorities," in *New Jersey's Archeological Resources: A Review of Research Problems and Survey Priorities, The Paleo-Indian Period to the Present*. New Jersey State Historic Preservation Office, Trenton, New Jersey.

Cleland, Charles E.
1976 "The Focal-Diffuse Model: an Evolutionary Perspective on the Prehistoric Cultural Adaptations of the Eastern United States," *Mid-Continental Journal of Archaeology* 1(1):59-75.

Clement, John
n.d. Maps & Draughts. Vol. Sixth. Manuscript. Historical Society of Pennsylvania, Philadelphia, Pennsylvania.

1846 *A Map of Camden County State of New Jersey.* John Clement, Haddonfield, New Jersey.

1877 *Sketches of the First Emigrant Settlers, Newton Township, Old Gloucester County, West New Jersey.* John Clement, Haddonfield, New Jersey.

Coe, Joffre L.
1964 "The Formative Cultures of the Carolina Piedmont," *Transactions of the American Philosophical Society*, New Series 54(5). Philadelphia, Pennsylvania.

Cook, W. George and William J. Coxey
1980 *Atlantic City Railroad: Royal Route to the Sea.* West Jersey Chapter, National Railway Historical Society, Incorporated, Oaklyn, New Jersey.

Courier-Post
Courier-Post daily newspaper. Camden, New Jersey.

Cram, George F.
n.d. *New Jersey.* Map showing railroad lines. George F. Cram, Chicago, Illinois.

Cranmer, H. Jerome
1964 *New Jersey in the Automobile Age: A History of Transportation.* D. Van Nostrand Company, Incorporated, Princeton, New Jersey.

Crawford, Michael J.
1996 *Naval Documents of The American Revolution.* Vol. 10. Naval Historical Center, Department of the Navy, Washington, D.C.

Crist, Thomas A.S., Tod L. Benedict and Peter E. Siegel, Ph.D.
1996 Assessment of Archaeological Potential Route 42F, Sections 13N & 14S, Bellmawr and Runmeade Boroughs Camden County and Deptford. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey

Cross, Dorothy
1941 *Archaeology of New Jersey, Volume One.* The Archaeological Society of New Jersey and the New Jersey State Museum, Trenton, New Jersey.

Cultural Resource Consulting Group (CRCG)
2000 Phase IB Cultural Resource Investigation. Camden Combined Sewer Overflow (CSO) City of Camden and Gloucester City Camden County, New Jersey. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey.

Cunningham, John T.
1953 *This is New Jersey.* Rutgers University Press, New Brunswick, New Jersey.

Cushing, Thomas and Charles E. Sheppard
1883 *History of the Counties of Gloucester, Salem, and Cumberland New Jersey.* Everts and Peck, Philadelphia, Pennsylvania.

Custer, Jay
1984 "The Paleoecology of the Late Archaic: Exchange and Adaptation," *Pennsylvania Archaeologist* 54(3-4):32-47.

1989 *Prehistoric Cultures of the Delmarva Peninsula.* University of Delaware Press, Newark, Delaware.

1996 *A Guide to Prehistoric Arrowheads and Spear Points of Delaware*. Center for Archaeological research, Department of Anthropology, University of Delaware, Newark, Delaware.

Custer, Jay and E. B. Wallace
1982 "Patterns of Resource Distribution and Archaeological Settlement Patterns in the Piedmont Uplands of the Middle Atlantic Region," *North American Archaeologist* 3(2):139-170.

Davis, Charles A.
1910 "Salt Marsh Formation Near Boston and Its Geological Significance," *Economic Geology* 5:623-639.

Davis, Margaret Bryan
1983 "Holocene Vegetational History of the Eastern United States," in *Late Quaternary Environments of the United States.* Vol. 2. H. E. Wright, Jr. ed., pp. 166-181. University of Minnesota Press, Minneapolis, Minnesota.

Day, Gordon M.
1953 "The Indian as an Ecological Factor in the Northeastern Forest," in *Ecology* 34(2):329-346.

Döhla, Johann Conrad
1990 *A Hessian Diary of the American Revolution.* Translated and edited by Bruce E. Burgoyne. University of Oklahoma Press, Norman, Oklahoma.

Dorwart, Jeffrey M.
2001 *Camden County, New Jersey : The Making of a Metropolitan Community, 1626-2000.* Rutgers University Press, New Brunswick, New Jersey.

Dorwart, Jeffrey M. and Philip English Mackey
1976 *Camden County, New Jersey 1616-1976: A Narrative History.* Camden County Cultural & Heritage Commission, Camden County, New Jersey.

Du Chesnoy, Michel Capitaine
1778 *Carte de L'Action de Gloucester Entre un Parti Americaine D'Environs 250 Hommes Sous le G^{l} Lafayette et un Parti des Troupes de Lord Cornwallis Commande Par le G^{el} Apre Son Sorties Dans le Jersey le 25 9bre 1777*. Manuscript map. Sparks Collection, Cornell University, Cornell, New York.

Dunn, Mary Maples and Richard S. Dunn, editors
1981 *The Papers of William Penn.* Volume One: 1644-1679. University of Pennsylvania Press, Philadelphia, Pennsylvania.

Evans, Shirley
2003 Library volunteer, Camden County Historical Society. Personal communication, 10 January 2003.

Faden, William
1778 The Province of New Jersey Divided into East and West, commonly called the Jerseys. William Faden, Charing Cross.

Fairlie, Robert F.
1872 *Railways or No Railways.* Effingham Wilson, Royal Exchange, London, England.

Fletcher III, C.H., H.J. Knebel, and J.C. Kraft
1990 "Holocene Evolution of an Estuarine Coast and Tidal Wetlands," In *Geological Society of America Bulletin* 102:283-297.

Fogelman, Gary L.
1992 *A Projectile Point Typology for Pennsylvania*. Fogelman Publishing Company, Turbotville, PA.

Fox, Edward E.
n.d. Unpublished manuscript (work in progress) on the roads of Camden County, 1626-1825. Edward Fox, Collingswood, New Jersey.

Gardner, William
1978 *Comparison of Ridge and Valley, Blue Ridge, Piedmont and Coastal Plain Archaic Period Site Distribution: An Idealized Transect*. Paper presented at the 1978 Middle Atlantic Archaeological Conference, Rehoboth Beach, Delaware.

Giglio, Reverend Monsignor Charles J.
1987 *Building God's Kingdom: A History of the Diocese of Camden.* Seton Hall University Press, South Orange, New Jersey.

Gimigliano, Michael N., David E. Church and Liana Hoodes
1980 Cultural Resources Survey Delaware Basin, District I Camden County, New Jersey Stage IA Update and Stage IB. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey

Gladulich, Richard M.
1986 *By Rail to the Boardwalk.* Trans-Anglo Books, Glendale, California.

Gloucester County Deeds
Gloucester County Clerk's Office, Woodbury, New Jersey.

Gloucester County Historical Society
n.d. Map Collection. Gloucester County Historical Society, Woodbury, New Jersey.

Gloucester County Road Return Books.
Gloucester County Clerk's Office, Woodbury, New Jersey.

Goddard, Ives
1978 Delaware, *Handbook of North American Indians.* Vol. 15. B.G. Trigger, ed., pp. 213-239. Smithsonian Institute, Washington, D.C.

Godden, Geoffrey
1966 *An Illustrated Encyclopedia of British Pottery & Porcelain.* Crown Publishing, New York

Gordon, Thomas F.
1834 [A Map of] New Jersey. A. Finley, Philadelphia, Pennsylvania.

Greenberg, Gail
1992 "Sites and Structures: The Camden County Inventory of Historic Places." Report and survey forms on file, New Jersey State Historic Preservation Office, Trenton, New Jersey.

Griffin, James B.
1978 "The Midlands and Northeastern United States," *Ancient Native Americans.* J. Jennings ed., pp. 221-280. W. H. Freeman, San Francisco, California

Grossman-Bailey Illene and Martha E. Heuser
2003 Cultural Resources investigations I-295/ Route 42-Missing Moves Bellmawr and Runnemeade Boroughs Camden County and Deptford Township and Westville Borough, Gloucester County. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey

Gunnarsson, Robert L.
1991 *The Story of the Northern Central Railway.* Greenberg Publishing Company, Inc., Sykesville, Maryland.

Hagley Library, Greenville, Delaware
Accession 1451, 1520, Reading Company Collection.

Harrison, E. Z. and A. L. Bloom
1977 "Sedimentation Rates on Tidal Salt Marshes in Connecticut," *Journal of Sedimentary Petrology* 47:1484-1490.

Hasse, Adelaide R.
1914 Index of Economic Material in Documents of the States of the United States New Jersey 1789-1904. Carnegie Institute of Washington, Washington, D.C.

Heite, Edward F. and Louise B. Heite
1986 Preliminary Cultural Resources Reconnaissance Investigation in Connection with Comprehensive Navigation Study Delaware River, Delaware and New Jersey. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey.

Heusser, C. J.
1963 "Pollen Diagrams from Three Former Cedar Bogs in the Hackensack Tidal Marsh, Northern New Jersey," *Bulletin of the Torrey Botanical Club* 90(1):16-28.

Hills, John
1808/1814 *A Plan of the City of Philadelphia and Environs.* Annotated through December 1814. John Hills, Philadelphia, Pennsylvania. Map located at the Camden County Historical Society, Camden, New Jersey.

Hilton, George W.
1990 *American Narrow Gauge Railroads.* Stanford University Press, Stanford, California.

Hoffecker, Carol E., Richard Waldron, Lorraine E. Williams, and Barbara E. Benson
1995 *New Sweden in America*. University of Delaware Press, Newark, Delaware.

Honeyman, A. Van Doren, editor
1918 *Documents Relating to the Colonial History of the State of New Jersey.* First Series, Vol. XXX. Calendar of New Jersey Wills, Administrations, etc. Vol. II : 1730-1750. [New Jersey Historical Society, Newark, New Jersey].

Hood, John
1871 *Index of Titles of Corporations….* True American Office, Trenton, New Jersey.

Howson, Jean
1996 Cultural Resource Inspection of Market and Hunter Street Sewer Reconstruction Gloucester City, Camden County, New Jersey. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey.

Hughes, Bernard G.
1961 *English & Scottish Earthenware 1660-1860*. MacMillian Co., Hampshire, England.

Hume, Ivor Noël
1969 *A Guide to Artifacts of Colonial America*. Alfred A. Knopf Inc. Reprinted 2000 by University of Pennsylvania Press, Philadelphia, Pennsylvania.

Hunter Research
1996 Management Summary Phase I Archaeological Survey Route I-76/I-295 Noise Barriers (Walt Whitman Bridge to Route 73) Camden and Burlington Counties New Jersey. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey.

Hunter, Richard, Vincent Maresca, Sarah Waters and Christy Roper Morganstein.
1999 Combined Phase II/III Archaeological Sites Investigations. Noise Barriers S and K Route I-295 (southbound) Township of Cherry Hill and Borough of Barrington Camden County, New Jersey. Late Archaic/ Early Woodland. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey.

Idzerda, Stanley I., editor
1977 *Lafayette in the Age of the American Revolution.* Vol. I : December 7, 1776-March 30, 1778. Cornell University Press, Ithaca, New York.

1979 *Lafayette in the Age of the American Revolution.* Vol. II : April 10, 1778-March 20, 1780. Cornell University Press, Ithaca, New York.

Jackson, John W.
1977 *The Delaware Bay and River Defenses of Philadelphia : 1775-1777.* The Philadelphia Maritime Museum, Philadelphia, Pennsylvania.

1986 *Fort Mifflin : Valiant Defender of the Delaware.* Olde Fort Mifflin Historical Society, Incorporated, Philadelphia, Pennsylvania.

Jacobson, George L. Jr., T. Webb III, and E. C. Grimm
1987 "Patterns and rates of vegetation change during the deglaciation of eastern North America," *The Geology of North America.* Vol. K-3. W.F. Ruddiman and H.E. Wright, Jr. eds., pp. 277-288.

Johnson, Amandus
1914 *The Swedes on the Delaware: 1638-1664.* International Printing Company, Philadelphia, Pennsylvania.

Jones, Olive R., and Catherine Sullivan
1985 *The Parks Canada Glass Glossary for the Description of Containers, Tableware, Flat Glass, and Closures*. National Historic Parks and Sites Branch, Parks Canada, Ottawa, Ontario.

Kardas, Susan and Edward Larrabee
1981 *Cultural Resource Reconnaissance of Upper Raritan Wastewater Facilities Plan Somerset County, New Jersey*. Report on file, Historic Preservation Office, Trenton, New Jersey.

1984 *Cultural Resource Survey Stage IA and IB East Lake Drive Borough of Audubon Camden County, New Jersey*. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey.

1986 *Stage I Cultural Resources Survey Revised Haddon Heights Interceptor Sewer from MH 303-39 to 303-45 Borough of Haddon Heights Camden County, New Jersey*. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey.

Kern, John R. Ph.D. and Stephen R. Claggett
1979 *Gilbert/Commonwealth R-1998 Cultural Resources Overview and Sensitivity Analysis for the Delaware River and Bay*. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey

Kingsley, Robert G. and Tod L. Benedict
1992 *Final Report The Delta and Pretzel Sites, Two Late Archaic-Early Woodland Sites on Big Timber Creek, Gloucester County, New Jersey. Archaeological Data Recovery in Association with the Final Design of Routes 41 and 42, Township of Deptford, New Jersey*. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey.

Kinsey, W. Fred
1972 *Archaeology in the Upper Delaware Valley.* Anthropological Series, No. 2. Pennsylvania Historical and Museum Commission, Harrisburg, Pennsylvania.

Klein, Joel
1984 *An Archaeological Overview and Management Plan for Fort Monmouth (Main Post), Camp Charles Wood and the Evans Area*. Report on file, Historic Preservation Office, Trenton, New Jersey.

Kowalsky, A. and Dorothy Kowalsky
1999 *Encyclopedia of Marks on American, English and European Earthenware, Ironstone and Stoneware, 1780-1980.* Schiffer Publishing Ltd., Atglen, Pennsylvania.

Kraft, Herbert C.
1982 "The Archaic Period in Northern New Jersey," *New Jersey's Archaeological Resources from the Paleoindian Period to the Present: A Review of Research Problems and Survey Priorities.* Olga Chesler ed., pp. 60-81. Office of New Jersey Heritage, Trenton, New Jersey.

1986 *Lenape: Archeology, History, and Ethnography.* New Jersey Historical Society, Newark, New Jersey.

2001 *The Lenape-Delaware Indian Heritage 10,000 BC to AD 2000*. Lenape Books, Union, Jersey.

Kraft, John C. and John J. Chacko
1978 "Paleogeographic Analysis of Coastal Archaeological Settings in Delaware." *Archaeology of Eastern North America* vol.6 pgs. 41-60.

Lane, Wheaton J.
1939 *From Indian Trail to Iron Horse.* Princeton University Press, Princeton, New Jersey.

Leap, William W.
1981 *The History of Runnemede, New Jersey : 1626-1976.* Borough of Runnemede, Runnemede, New Jersey.

Maleolem Pipnie Incorporated
1997 *Welsbach/General Gas Mantle Contamination Site Camden New Jersey Work Association Number 050-28 UC Stage IA Archaeological Inventory. Remedial Planning Activities at Selected Uncontrolled Hazardous Substance Disposal Site USEPA Regulation II (NY,NJ,PR,VI)*. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey.

Markley, Marco
1966 *Soil Survey of Camden County, New Jersey*. Soil Conservation Service, United States Department of Agriculture, Washington, D.C.

Marshall, Sydney
1982 "Aboriginal Settlement in New Jersey During the Paleoindian Cultural Period: ca. 10,000 B.C.-6,000 B.C." in *New Jersey's Archaeological Resources from the Paleoindian*

Period to the Present: A Review Of Research Problems and Survey Priorities. Olga Chesler, ed., pp. 10-5. Historic Preservation Office, Trenton, New Jersey.

Mason, Ronald J.
1959 "Indications of Paleoindian Occupation in the Delaware Valley," *Pennsylvania Archaeologist* 29(1):1-17.

McNett, Charles W., editor
1986 *Shawnee-Minisink.* Academic Press, New York.

Mickle, Isaac
1845[1968] *Reminiscences of Old Gloucester County….* Gloucester County Historical Society, Woodbury, New Jersey.

Miller, George L.
1980 Classification and Economic Scaling of Nineteenth Century Ceramics. *Historical Archaeology,* 14:1-40

Mounier, R. Alan
1985 *Cultural Resource Survey of Route 55 Freeway Wetland Shifts, Station 1099-1140, Station 1170-1220, Station 1400-1510 Franklin and Elk Township Gloucester County, New Jersey*. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey.

1991 *Archaeology Data Recovery Route 55 Freeway Section 13A Deptford Township Gloucester County, New Jersey*. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey.

Mounier, R. Alan and John W. Martin
1992a *Report of Archaeological Data Recovery Interstate Highway 295, Section IW, West Deptford Township, Gloucester County, New Jersey*. Report on file at the Historic Preservation Office, Trenton, New Jersey.

1992b *Report of Archaeological Data Recovery Route 55 Freeway, Section 2, Franklin and Elk Townships, Gloucester County, New Jersey*. Report on file at the Historic Preservation Office, Trenton, New Jersey.

Mullica, Ralph
2004 Maintenance personnel, New Saint Mary's Cemetery. Personal communication. 3 June 2004.

Munn, David
2003 Chairman, Gloucester City Historic Preservation Commission. Personal communication, 5 April 2003.

National Archives and Records Administration
Record Group 15. Revolutionary War Pension and Bounty Land Warrant Application Files, Records of the VA. National Archives Microform Publication M804. National Archives and Records Administration, Washington, D.C.

Nelson, William, editor
1901 *Documents Relating to the Colonial History of the State of New Jersey.* Vol. XXIII. Calendar of New Jersey Wills, Vol. I. 1670-1730. [New Jersey Historical Society, Newark, New Jersey].

New Jersey State Board of Agriculture
1893 *Twentieth Annual Report of the State Board of Agriculture 1892-1893.* The John L. Murphy Publishing Company, Printers, Trenton, New Jersey.

New Jersey Secretary of State
1914 *Corporations of New Jersey List of Certificates to December 31, 1911*. Secretary of State, Trenton, New Jersey.

New Jersey State Highway Department
1955 *Official Map and Guide of New Jersey.* New Jersey State Highway Department, Trenton, New Jersey.

New Jersey Tax Ratables
Microform edition. New Jersey State Archives, Trenton, New Jersey.

New Jersey Wills
Secretary of State Collection, microform edition. New Jersey State Archives, Trenton, New Jersey.

Niering, William A. And Richard H. Goodwin
1960 "Ecological Studies in the Connecticut Arboretum Natural Area," *Ecology* 43(1):41-54.

Ogden, J. Gordon III
1977 "The Late Quaternary Paleoenvironmental Record of Northeastern North America," *Amerinds and Their Paleoenvironments in Northeastern North America.* Annals of the New York Academy of Sciences 288:16-34.

Parsons, Floyd W., ed.
1928 *New Jersey Life, Industries and Resources of a Great State.* New Jersey State Chamber of Commerce, Newark, New Jersey.

Pennington, Charles K. and Paul S. Schopp
1998 Sewer Overflow Planning study City of Camden and Gloucester City Camden County, New Jersey. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey.

Pennsylvania Gazette.
Accessible Archives, Malvern, Pennsylvania.

Philhower, Charles A.
1925 "The Indians of Somerset County," *Proceedings of the New Jersey Historical Society,* New Series, Vol. 10, pp. 28-41.

Pomfret, John E.
1956 *The Province of West New Jersey: 1609-1702.* Princeton University Press, Princeton, New Jersey.

Posten, Stephen
1979 Addendum Cultural Survey Proposed S2 Alignment Route 55 Freeway Right Of Way, Gloucester County, New Jersey. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey.

Prowell, George R.
1886 *The History of Camden County, New Jersey*. L.J. Richards & Company, Philadelphia, Pennsylvania.

Public Law
Federal Register. Microform edition. National Archives and Records Administration, Washington, D.C.

Ramsay, John
1939 *American Potters & Pottery.* Tudor, New York.

Redfield, Alfred C. and Meyer Rubin
1962 "The Age of Salt Marsh Peat and its Relation to Recent Changes in Sea Level at Barnstable, Massachusetts," *Proceedings of the National Academy of Sciences* 48:1728-1735.

Ritchie, W. A. and R. E. Funk
1973 *Aboriginal Settlement Patterns in the Northeast.* New York State Museum and Science Service, Memoir 20. The University of the State of New York, Albany, New York.

Robichaud, Beryl and Murray F. Buell
1973 *Vegetation of New Jersey.* Rutgers University Press, New Brunswick, New Jersey.

Sansone, Anthony Sr.
2004 Previous tenant of Harrison-Glover House. Personal communication. 2 October 2004.

Schopp, Paul W.
Photographic Collection, Riverton, New Jersey.

Unpublished manuscript on the Camden & Woodbury Railroad and Transportation Company.

Semeken, Holmes A., Jr.
1983 "Holocene Mammalian Biogeography and Climatic Change in the Eastern and Central United States," in *Late Quaternary Environments of the United States.* Vol. 2. H. E. Wright, Jr., ed., pp. 182- 207. University of Minnesota Press, Minneapolis, Minnesota.

Sharp, Thomas
1700 Manuscript map of lands lying between the South Branch of Newton Creek and Cooper's Creek.

Sheridan, Frank
1919 *History of Camden County in the Great War: 1917-1919.* Victory Jubilee and Memorial Committee, Publicity and Historical Committee, Camden, New Jersey.

Sidney, J.C.
1850 *Plan of the Townships of Union and Newton, County of Camden.* Richard Clark, Philadelphia, Pennsylvania.

Skinner, Alanson and Max Schrabisch
1913 "A Preliminary Report of the Archaeological Survey of the State of New Jersey," in *Bulletin 9,* Geological Survey of New Jersey.

Smith, Samuel
1765[1877] *The History of the Colony of Nova-Cæsaria, or New-Jersey*.... Second Edition. William S. Sharp, Trenton, New Jersey.

Smith, Samuel Stelle
1970 *Fight for the Delaware 1777.* Philip Freneau Press, Monmouth Beach, New Jersey.

Snow, Dean
1979 *The Archaeology of New England.* Academic Press, New York.

Snyder, John P.
1969 *The Story of New Jersey's Civil Boundaries*. Bureau of Geology and Topography, Trenton, New Jersey.

South, Stanley
1977 *Research Strategies in Historic Archaeology*, Academic Press, New York

Stewart, Frank H.
1917 *Notes on Old Gloucester County.* New Jersey Society of Pennsylvania, Philadelphia, Pennsylvania.

1929 *Foraging*... Gloucester County Historical Society, Woodbury, New Jersey.

1937 *Notes on Old Gloucester County New Jersey.* Vol. 3. Frank H. Stewart, Woodbury, New Jersey.

Stewart, R. Michael
1987 Gropp's Lake Site (28Me100G), Data Recovery. Trenton Complex Archaeology Report 2. Revised edition 1996. The Cultural Resource Group, Louis Berger & Associates, Inc., East Orange, New Jersey. Prepared for the Federal Highway Administration and the New Jersey Department of Transportation, Bureau of Environmental Analysis, Trenton.

Stoltman, James B. And David N. Baerreis
1983 "The Evolution of Human Ecosystems in the Eastern United States," *Late Quaternary Environments of the United States.* Vol. 2. H.E. Wright Jr. ed., pp. 252-268. University of Minnesota Press, Minneapolis, Minnesota.

SGO (Surveyor General's Office), Burlington, New Jersey
Survey Books, microform edition. New Jersey State Archives, Trenton, New Jersey.

Szylvian, Kristin M.
1996 "Audubon Village: Model Housing for New Jersey Shipyard Workers." Synopsis of a oral presentation delivered at the "Building History, Labor History" conference held at the George Meany Memorial Archives, Silver Spring, Maryland on 12 February 1996.

Tanner, H[enry] S.
c. 1845 *New Jersey, reduced from T. Gordon's Map by H.S. Tanner.* H.S. Tanner, [Philadelphia, Pennsylvania].

The Cultural Resource Group Louis Berger & Associates, Inc.
1983 *A Cultural Resources Survey of the New Jersey Shore Of the Delaware River in Camden and Gloucester Counties New Jersey*. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey

Thomas, Ronald A, Martha J. Schiek, Edward C. Goodley, Antony F. Opperman, Ellen Denker, L.T. Alexander, Ted M. Payne, David Parris, and Deborah Fimbel.
1985 *Archaeological Data Recovery at 28CA50 Gloucester City, New Jersey*. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey.

Thornton, John and Robert Greene
[*c*. 1678] *A Mapp of Virginia Mary-land, New-Jersey, New-York, & New England.* John Thornton at the Sundyall in the Minories and Robert Greene at ye Rose and Crowne, in Budg-rowe, London, England.

Tuck, James A.
1978 Regional Cultural Developments, *Handbook of North American Indians.* Vol. 15. B. Trigger ed., pp. 28-43. Smithsonian Institute, Washington, D.C.

United States Geological Survey (USGS)
1995 7.5' Quadrangle, *Camden, NJ-PA*. United States Geological Survey, Washington, D.C.

1966 7.5' Quadrangle, Runnemede, NJ. Photorevised 1991. United States Geological Survey, Washington, D.C.

United States Railroad Association (USRA)
1975 *Preliminary System Plan for Restructuring Railroads in the Northeast and Midwest Region Pursuant to the Regional Rail Reorganization Act of 1973.* United States Railway Administration, Washington, D.C.

Wacker, Peter O.
1968 *The Musconetcong Valley of New Jersey.* Rutgers University Press, New Brunswick, New Jersey.

1975 *Land and People.* Rutgers University Press, New Brunswick, New Jersey.

Wacker, Peter and Paul G.E. Clemens
1995 *Land Use in Early New Jersey.* New Jersey Historical Society, Newark, New Jersey.

Wallace Papers
John William Wallace Collection, 1725-1854. Historical Society of Pennsylvania, Philadelphia, Pennsylvania.

Weigley, Russell F., editor, *et al*
1982 *Philadelphia: A 300-Year History.* W.W. Norton & Company, New York City, New York.

Weslager, C.A.
1961 *Dutch Explorers, Traders and Settlers in the Delaware Valley 1609-1664.* University of Pennsylvania Press, Philadelphia, Pennsylvania.

West Jersey Colonial Deeds
Microform Edition. New Jersey State Archives, Trenton, New Jersey.

West Jersey & Seashore Railroad
1932 Proposed Lease of W.J. & S. R.R. by A.C.R.R. Co. Map of Both Lines with Portions to be Abandoned. West Jersey & Seashore Railroad, Camden, New Jersey.

Whitehead, William A., editor
1880 *Documents Relating to the Colonial History of the State of New Jersey.* New Jersey Archives, First Series, Vol. 1. [New Jersey Historical Society, Newark, New Jersey].

Williams, W.
1847 *Map of the G^t. Travelling Routes Between N. York and Philadelp^a with other Railroads and Places of Resort.* W. Williams, New York City, New York.

Williams, Lorraine and Ronald Thomas
1982 The Early/Middle Woodland period n New Jersey: ca. 1000 B.C. - A.D. 1000, *New Jersey's Archaeological Resources from the Paleoindian Period to the Present: A Review of Research Problems and Survey Priorities.* Olga Chesler, ed., pp. 103-138. Office of New Jersey Heritage, Trenton, New Jersey.

Wilson, Budd
n.d. Cultural Resource Survey Lions park Recreational Facility Borough of Oaklyn Camden County, New Jersey. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey.

Wilson, Thomas B.
1988 *Notices from New Jersey Newspapers : 1781-1790.* Hunterdon House, Lambertville, New Jersey.

Wolfe, Peter
1977 *The Geology and Landscape of New Jersey*. Crane, Russak & Company, New York.

Wytrwal, Joseph Anthony
1969 Poles in American History and Tradition. Endurance Press, Detroit, Michigan.

Zmoda, David, Susan Dill-Wendrzyckil, David Mudge, Lauralee Rappleye-Marsett and Ihor Jaroslaw Sypko
1985 An Archaeological Survey for Route 4, Sections 1A and 2A and Route 4, Section 14M Deptford Township Gloucester County, New Jersey. Report on file, New Jersey State Historic Preservation Office, Trenton, New Jersey.

Internet Resources

Bakelite: A Revolutionary Early Plastic website
<www.deco-echoes.com/bakelite.html> [accessed 18 June 2004].

Conrail history website
<http://www.newsteel.com/2000/NS0002f3.htm> [accessed 23 February 2004].

Dating Antique Bottles, 3PM website
<www.antiquebottles.com/dating.html> [accessed 10 June 2004].

Evolution of the Rollerskate website
<http://inventors.about.com/library/weekly/aa050997.htm> [accessed 22 June 2004].

Harrison Family Genealogy website
<http://homepages.rootsweb.com/~marshall/esmd3.htm> [accessed 12 July 2004].

Haviland Backmarks website
<www.havilandonline.com/backmark.htm> [accessed 23 September 2004].

Hugg Family Genealogy website
<http://homepages.rootsweb.com/~marshall/esmd100.htm> [accessed 30 March 2003].

Philadelphia area highway website
<http://www.phillyroads.com/roads/> [accessed 28 July 2004].

Sealtest/Supplee-Wills-Jones Dairy Company website
<www.oldchesterpa.com/business_daries_supplee.html> [accessed 21 June 2004].

South Jersey Railroads website
<http://www.sjrail.com/> [accessed 07 January 2003].

VA (VA) history website
<http://www.va-home-loans.com/history_VA_loan.htm> [accessed 04 February 2003].

US Department of Transportation
Federal Highway Administration
New Jersey Department of Transportation