Photograph 27: Archaeological APE; Cauffiel Estate is on the left side of photograph. Facing northeast.

Photograph 28: Archaeological APE; Cauffiel Estate is to the right side of photograph. Facing southwest.

Photograph 29: Northern terminus of archaeological APE.
Facing west.

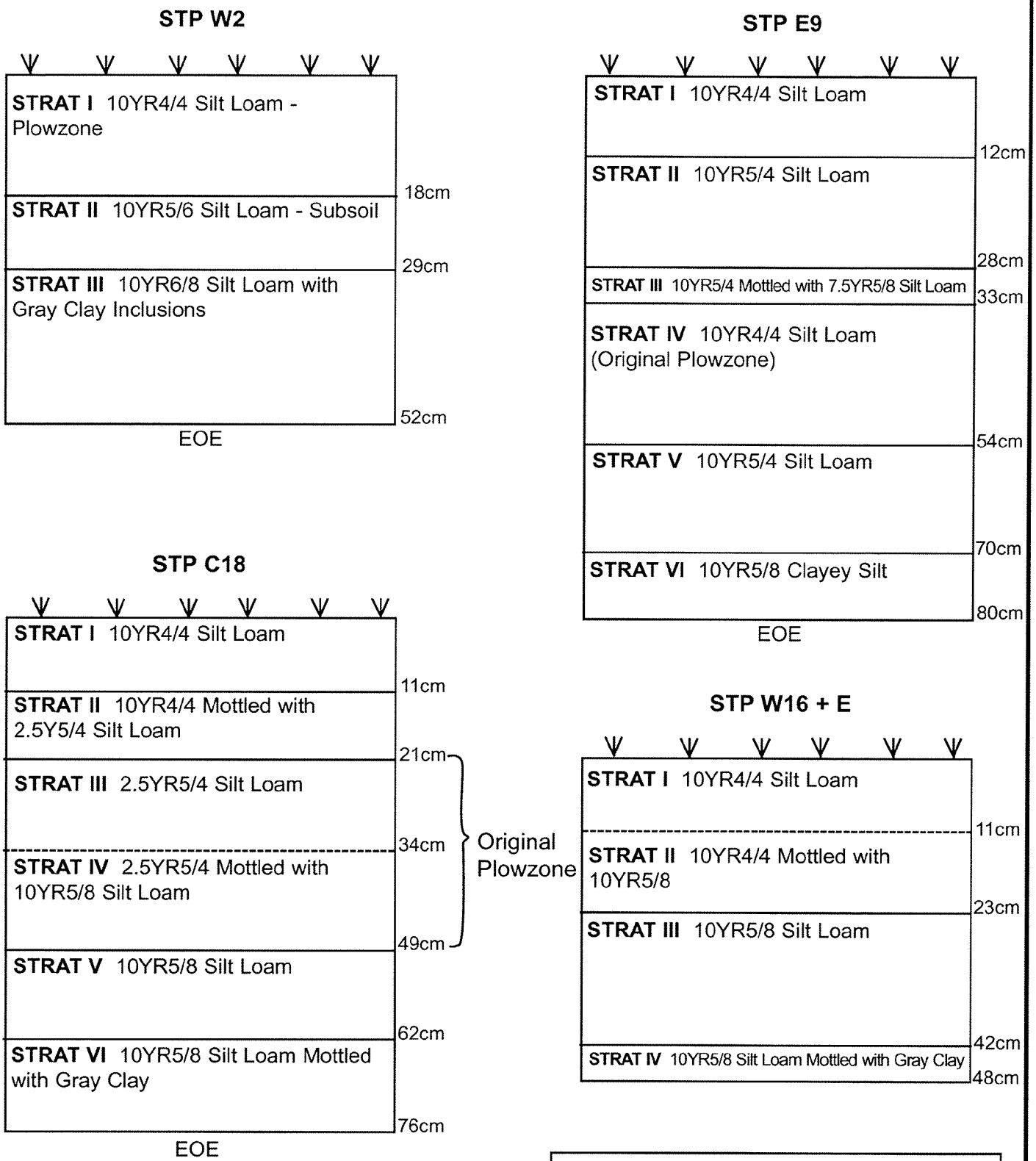
northeastern edge of the APE (transect E). Additional STPs were excavated at 7.5 meter (25 foot) intervals around some of the positive STPs to better define the boundaries of the locus within the APE. Two 1x1 meter TUs were also excavated, one within each loci, to assist in defining the soil stratigraphy and to investigate the presence of cultural features. The artifact inventory is in ***Appendix E***.

In general, STP profiles consisted of a very dark grayish brown to grayish brown (10YR 3/2-3/3) silt loam plowzone overlying a dark yellowish brown (10YR 4/6) to yellowish brown (10YR 5/6) silt loam subsoil, as seen in the profile for STP W2 ***(Figure 16)***. Two areas exhibited exceptions to the plowzone/subsoil stratigraphy. The first, affected by erosional processes, was identified along the lower margin of slopes, particularly in the STPs along the east boundary of the project area, where the landform grades eastward toward Stoney Run. Shovel Test Pit E9, which penetrated an initial 0.33 meter of slopewash before yielding to the plowzone (10YR 4/4 silt) and subsoil (10YR 5/4 silt), respectively, is representative of this erosional type of stratigraphy ***(Figure 16)***. The second area was encountered at Locus B, specifically in the STPs which were excavated in proximity to the old trolley system. Here, a combination of slopewash and fill deposits associated with the construction of the trolley grade were encountered, as noted for STP C18, which exhibited 0.21 meter of re-deposited soil overtop the original light olive brown (2.5Y 5/4) silt loam plowzone and yellowish brown (10YR 5/8) subsoil, respectively ***(Figure 16)***. Subsequent to the removal of the trolley line, the landform under investigation continued to be plowed, obscuring the extent of fill associated with the trolley line.

Subsequent to the excavation of the original three transects of STPs, three positive shovel tests (STPs W18, E18, and W17) were bracketed at a 7.5 meter interval to better define the southwestern boundary of Locus B (7NC-C-12) and one 1x1 meter unit (TU 1) was excavated to provide better information regarding site formation processes ***(Figure 12B)***. All the radial STPs excavated near the southwestern boundary of Locus B exhibited plowzone/subsoil stratigraphy. The profile for STP W16E indicated that the relatively thin plowzone in this portion of the site has been subjected to erosion, based on the heavy disturbance to the subsoil by plowing ***(Figure 16)***. Test Unit 1, excavated near the center of the locus, penetrated 0.52 meter of fill and slopewash associated with the trolley grade, above the very thin (approximately 0.05 meter in thickness) original plowzone. The buried plowzone was directly underlain by the yellowish brown (10YR 5/6) silt subsoil ***(Figure 17)***.

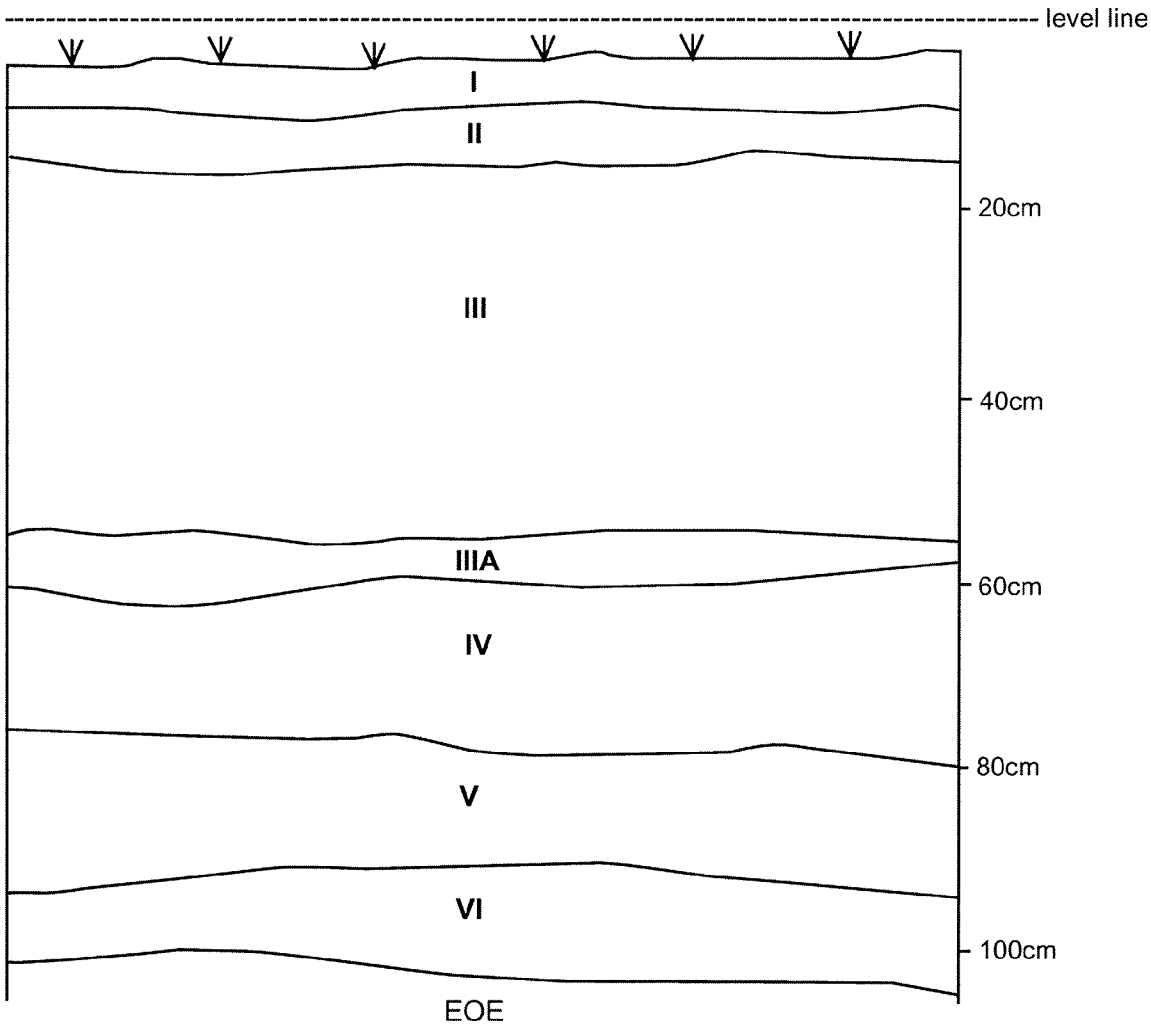
Test Unit 2 was placed within Locus A (approximately 0.25 meter southwest of DNREC Block) to further investigate the feature uncovered by DNREC during their Phase I Survey ***(Figure 14)***. At the plowzone/subsoil interface, a portion of a feature (Feature 1) with distinctly banded soils was identified in the northeast corner of the unit ***(Figure 18)***. This feature was secured with plastic and the unit was backfilled and was further investigated during the Phase II Evaluation Testing. Test Unit 2, the only test placed within the previously defined boundaries of Locus A, produced 5 pieces of glass, 1 piece of brick, 2 pieces of lithic debitage, and 1 piece of fire-cracked rock, all from the plowzone.

A total of 156 artifacts were recovered within the APE during the Phase I Archaeological Investigation. Forty-two of these artifacts were recovered outside of the boundaries delineated for



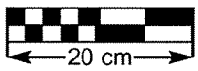
EOE - End of Excavation

Figure 16
Representative Shovel Test Pit Profiles
7NC-C-12B
Phase I Identification Survey
Cauffiel Connector Project
New Castle County, Delaware



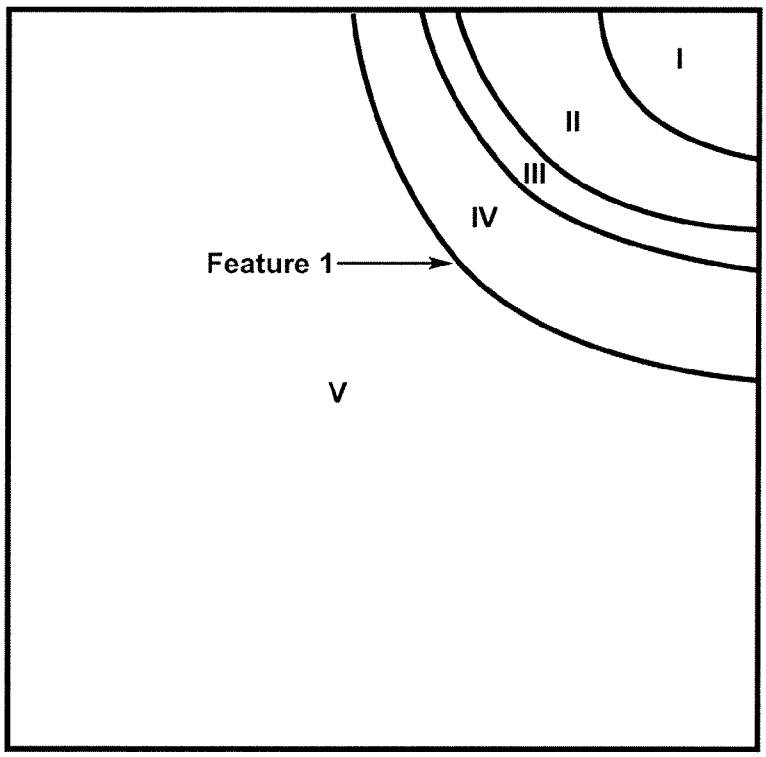
STRAT I - 10YR4/4 Silt Loam (Modern A Horizon)
STRAT II - 10YR5/6 Silt Loam (Fill/Slopewash)
STRAT III - 10YR5/4 Silt Loam (Fill/Slopewash)
STRAT IIIA - 10YR5/3 Silt Loam (Buried A Horizon)
STRAT IV - 10YR5/6 Silt Loam (Subsoil)
STRAT V - 10YR5/8 Silt Loam (Subsoil)
STRAT VI - 10YR7/8 Silt Loam (Subsoil)

Scale



EOE - End of Excavation

Figure 17
Test Unit 1 South Profile
7NC-C-12B
Phase I Identification Survey
Cauffiel Connector Project
New Castle County, Delaware



I. 10YR4/3 Silt Loam
II. 10YR5/8 Compact Silt Clay
III. 10YR3/2 Silt Loam
IV. 10YR4/3 Silt Loam
V. 10YR6/8 Silt Clay (Subsoil)

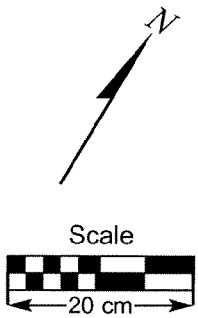


Figure 18
Test Unit 2 Planview of Feature 1
7NC-C-12B
Phase I Identification Survey
Cauffiel Connector Project
New Castle County, Delaware

Loci A and B. These artifacts, which included items such as historic ceramics, glass, coal, slag, brick were, recovered in very low densities. From the non-site shovel tests, only 3 yielded more than 1 historic artifact; these included 2 pieces of glass and 5 pieces of coal from STP CL1, 2 pieces of redware from STP W11, and 2 pieces of glass from STP W16E. These artifacts were interpreted to be field scatter and were not recorded as an archaeological site.

Four prehistoric artifacts were recovered from STPs that were outside of the site boundaries for Loci A and B (originally it was believed that seven were recovered, based on the field count, but after washing and examination in the laboratory, it was determined that only four of the recovered objects were prehistoric artifacts). These included a rhyolite late stage biface from STP CL10, Stratum III, a jasper flake fragment from STP CL12, Stratum I, a quartzite early reduction flake from STP CL3, Stratum III, and a fragment of prehistoric ceramic from STP W23, Stratum III. The geomorphologist determined that these artifacts were recovered from slopewash contexts, and had been redeposited due to erosion. This is the same conclusion that was reached by Cheshaek (1996a) during DNREC's testing of the northern portion of their Segment 3 for the proposed Cauffiel Tract Bikeway. The results of those investigation concluded that all of the artifacts located on that landform had been redeposited by slopewash. During a field view held on February 4, 1999, representatives from DNREC, DelDOT, and the Delaware SHPO agreed that the prehistoric artifacts recovered from the slopewash should not be recorded as an archaeological site.

In total, 109 artifacts were found within the boundaries of Locus B during the Phase I survey. Sixty -three historic artifacts were recovered in addition to 46 prehistoric artifacts. Historic artifacts included 18 pieces of glass, 10 pieces of redware, 9 pieces of brick, 8 pieces of pearlware, 6 nails, 2 pieces of whiteware, 2 pieces of creamware, 2 pieces of coal, 2 pieces of unidentifiable iron, 1 piece of porcelain, 1 iron stake, 1 piece of roofing slate, and 1 glass bead. Prehistoric finds included 35 pieces of lithic debitage, 8 pieces of prehistoric pottery, 1 retouched flake, 1 charred hickory nut shell, and 1 piece of fire cracked rock. Sixty percent (n=65) of the total artifacts in Locus B were found in TU 1; 10 of which were recovered from fill strata, 36 from found in the buried plowzone, while 19 were recovered from subsoil contexts. Interestingly, a mix of historic and prehistoric artifacts was found within each stratigraphic context in TU 1, further supporting that the eroded nature of the original plowzone likely facilitated the migration of artifacts into the subsoil.

c. Field View

A field view was held on February 4, 1999 with the DelDOT, the Delaware Division of Parks and Recreation, DNREC, and the Delaware SHPO. A summary of the meeting is in ***Appendix C***. During the field view, the testing conducted during the Archaeological Identification Survey and the results of the geomorphological evaluation were discussed. Three transects of shovel test pits (STPs) were excavated at 15 meter (50 foot) intervals within the APE. Two archaeological sites, 7NC-C-12 and 7NC-C-13, had been previously identified within the APE. Site 7NC-C-12 was known to have two loci, A and B. Both loci were identified during MTA's testing. It was agreed during the field view that further testing was necessary at both 7NC-C-12A and 7NC-C-12B to determine if either locus contained significant information to our understanding of prehistory or history. No testing was conducted by MTA at 7NC-C-13 since it had been previously determined that the portion which is in the APE for this project does not have the potential to contribute significant information in prehistory

or history (Cheshaek 1996b). At that time, all parties concurred that no additional Archaeological Identification Survey is necessary within the APE and that no further testing is necessary at 7NC-C-13.

2. Archaeological Evaluation Survey

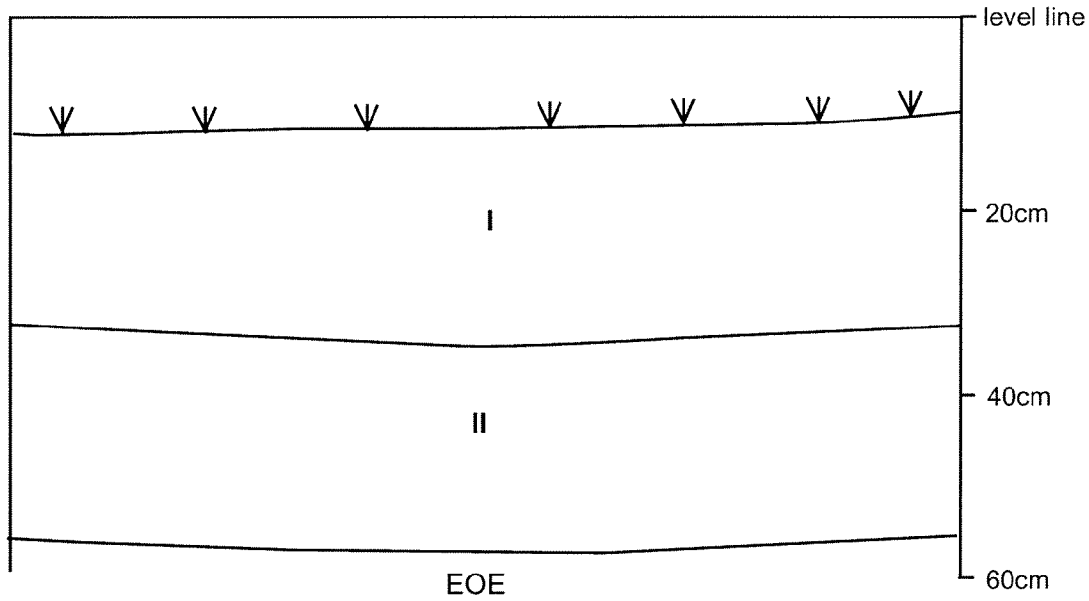
a. 7NC-C-12A

Based on the results of DNREC's and MTA's Identification Survey the size of the locus within the APE was estimated to be approximately 1500 square meters. Initially, eleven 1x1 meter test units were randomly placed within the locus during the Evaluation Survey to provide information regarding artifact densities across the site. The first 5 random TUs (numbers 34, 35, 37, 38, 39) were excavated and screened by natural strata, ending excavation after two arbitrary 0.1 meter levels of sterile subsoil were removed. All five units possessed the same two soil horizons: a plowzone and subsoil ***(Figure 19)***.

In this initial group of 5 test units, artifacts were confined to the plowzone, which exhibited an average depth of 0.22 meter. Recovered artifacts included 3 brick fragments, 1 piece of unidentifiable iron, and 1 piece of whiteware from TU 34; 7 flakes, 6 pieces of brick, 4 pieces of redware, 3 nails, 1 piece of FCR, 1 piece of ironstone, 1 piece of porcelain, and 1 piece of slate from TU 35; 3 flakes, 2 nails, 1 piece of brick, and 1 piece of whiteware from TU 37; 3 pieces of shell, 2 pieces of glass, and1 nail from TU 38; and 9 pieces of glass, 2 unidentifiable pieces of iron, 2 pieces of redware, 2 pieces of lithic debitage, and 1 piece of concrete from TU 39.

Because artifact density was relatively low, and the main purpose of the excavations was to identify features, only a sample of the plowzone was screened. TUs 30-33, and 36 were hand excavated to subsoil without screening so they could be examined for cultural features. Two potential features, intrusive to the subsoil, were encountered in the southern half of TU 31, and as a result, an eleventh TU (TU 45) was placed adjacent to TU 31 to investigate these anomalies. Upon further examination, it became evident that the features identified in TUs 31 and 45 were discontinuous, shallow plowscars about 2-3 centimeters in thickness.

Feature 1, discovered in TU 2 during the Identification Survey, became the focus of subsequent excavations at Locus A. This feature appeared somewhat similar in composition to the feature exposed in DNREC's Block E ***(Figure 20).*** DNREC interpreted their feature as a stone footing within a builder's trench that "compares favorably to the construction used in Swedish farm buildings in the seventeenth century" (Clark 1996). Therefore TU 2 and DNREC's Block E were re-opened to gain a better understanding of the horizontal relationship between the two anomalies. To further elucidate the function and cultural affiliation of the features, Test Units 40-44 were placed just to the west of TU 2. Because of their proximity to the previously identified features, this group of units was hand excavated and screened, and yielded relatively low artifact densities. These included 4 pieces of concrete, 3 pieces of unidentifiable iron, 2 pieces of glass, 2 nails, and 1 piece of brick from TU 40; 6 nails, 5 pieces of glass, 3 pieces of coal, 2 pieces of redware, 1 piece of brick, 1 piece of whiteware, and 1 piece of fire-cracked rock from TU 41; 3 pieces of plastic and 2 pieces of glass from TU 42; and 2 pieces of coal and 1 piece of brick from TU 44.



STRAT I - 10YR4/2 Silt Loam
STRAT II - 10YR5/6 Silt Loam

EOE - End of Excavation

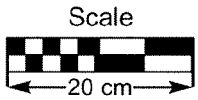
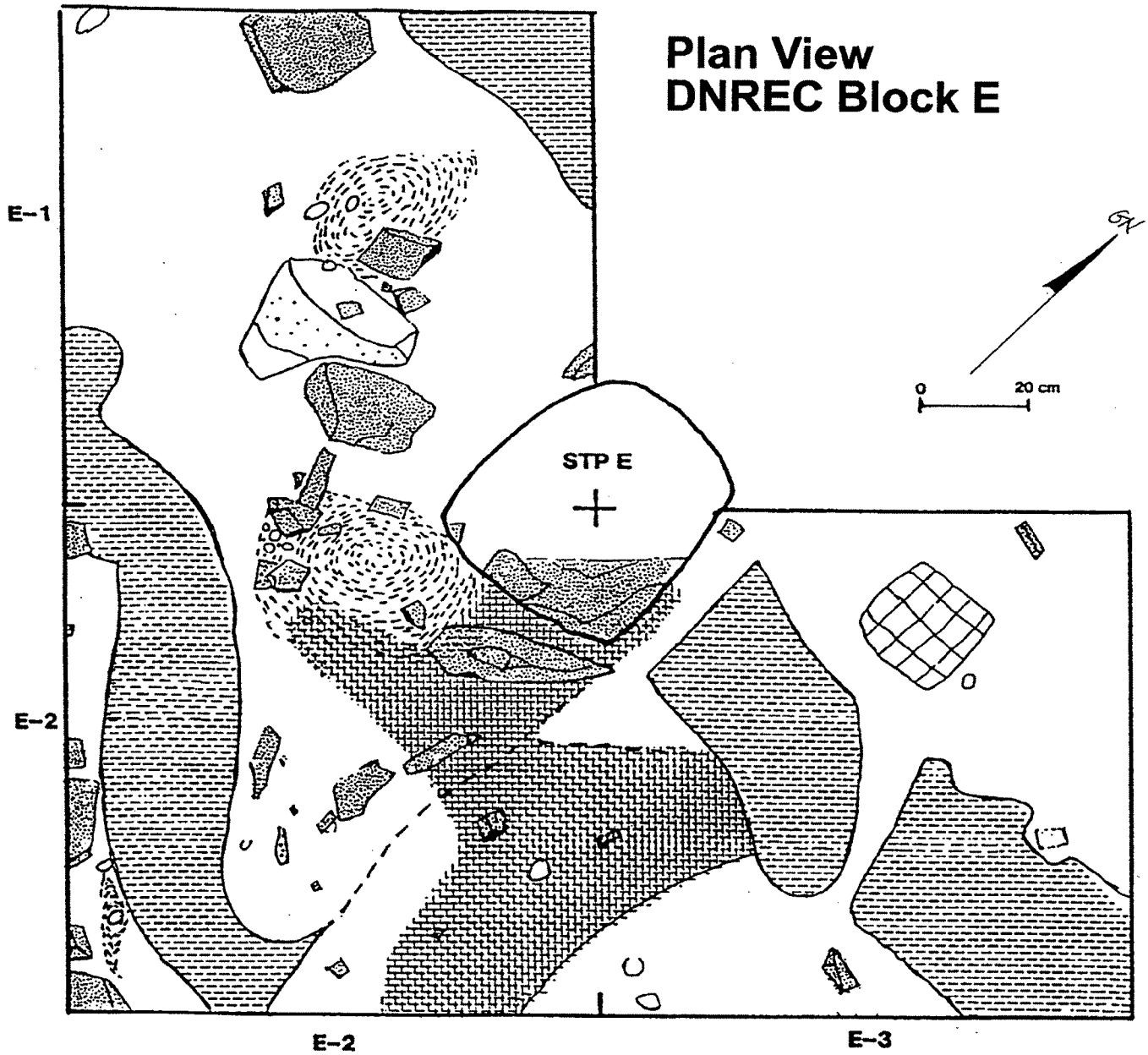


Figure 19
Test Unit 34 South Profile
7NC-C-12B
Phase I Identification Survey
Cauffiel Connector Project
New Castle County, Delaware



Gray brown clay fill

Strong brown clay subsoil

Mottled orange clay fill

Gray clay

Blue granite rock

Quartz, quartzite or jasper pebbles

Quartz cobble

Recent disturbance

Figure 20
Planview of DNREC Block E
TUs E1, E2, E3

7NC-C-12A
Phase I Identification Survey
Cauffiel Connector Project
New Castle County, Delaware

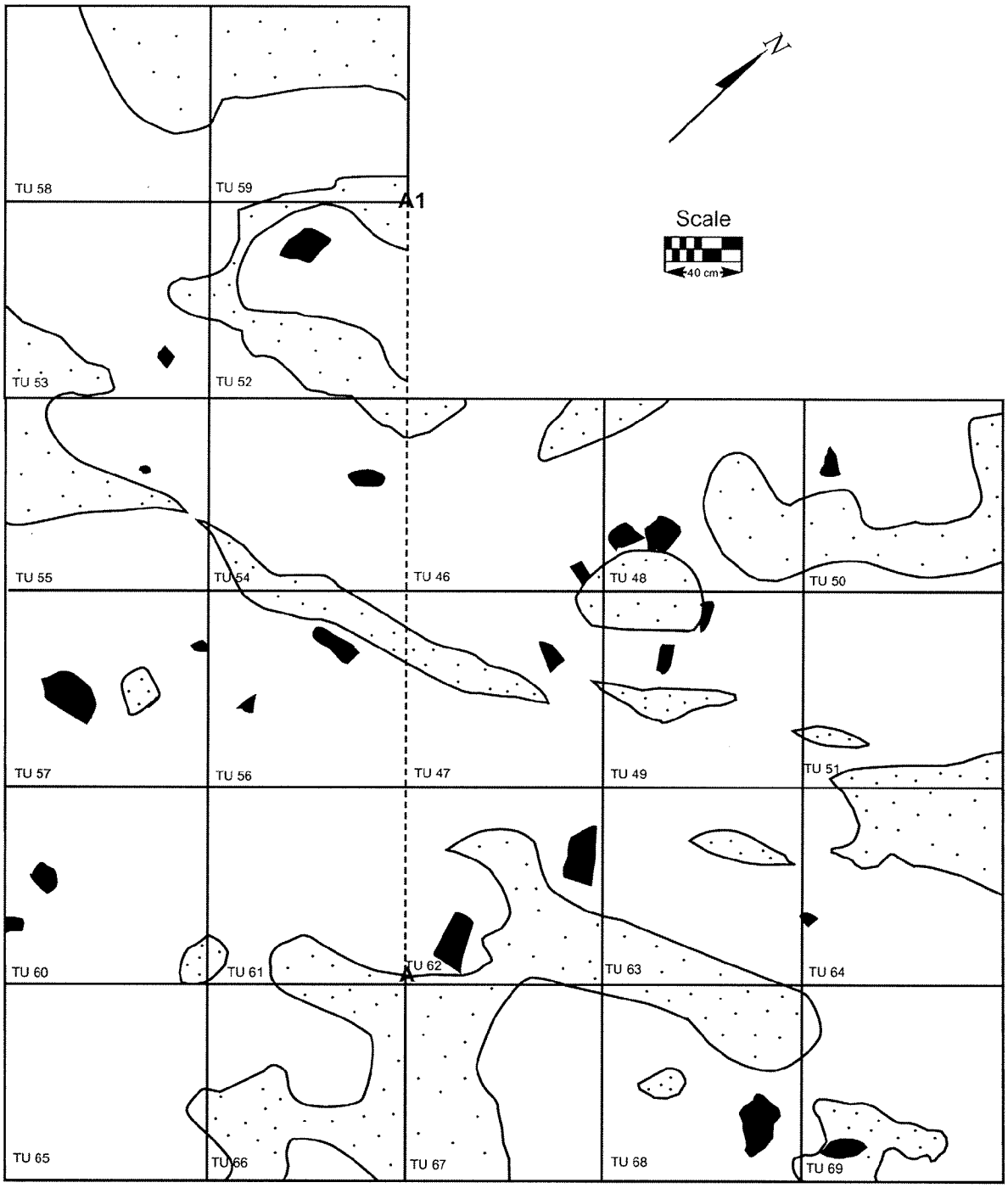
The boundaries of Feature 1 (a large, somewhat linear, dark amorphous stain running east to west) were not confined to TUs 40-44, therefore the plowzone from TUs 46-69 was mechanically stripped and the surface of the subsoil was troweled to delineate the feature boundaries. As a larger area was opened, it became apparent that more stains were present and the plowzone feathered substantially toward the south and Governor Printz Boulevard. The newly uncovered stains (which were designated Features 2 and 3) were found to run roughly parallel to Feature 1 and at times criss-crossed one another ***(Figure 21 and Photograph 30)***. Large pieces of granite were found randomly scattered within the feature fill, which was consistent with DNREC's results. Again, these large (approximately 1 meter in width) linear features extended beyond the limits of the excavation.

At this point, a sample of the feature fill was excavated from TUs 44, 46, 47, and 62 in the central portion of the block, to expose cross sections of Features 2 and 3. The profiles indicated that the features were relatively shallow and trough-like in shape, and in general, exhibited characteristics similar to very large plowscars ***(Figure 22 and Photograph 31)***. Artifacts from Feature 2 included 1 piece of brick, 1 piece of coal, and 1 piece of stoneware. Feature 3 yielded 2 brick fragments, 5 pieces of redware, 1 piece of clear vessel glass, 2 pieces of window glass and 2 pieces of corroded iron (including 1 possible nail fragment). Relatively large rocks (appearing to be granite) were also uncovered within the stains, none of which appeared to have any deliberate patterning or any cultural significance.

While the fieldwork was in progress aerial photographs depicting construction activities associated with the construction of Governor Printz Boulavard during the 1950s were presented to MTA by DelDOT ***(Figure 23)***. These photographs indicated that the plowzone within this portion of the APE had been mechanically removed during construction. The existing plowzone had been removed and replaced and the subsoil graded during the 1950s. Based on the photographs and the morphology of the features identified in Block Z, the features were interpreted as ruts associated with the construction of Governor Printz Boulevard. It is believed that the stones were placed in the ruts in the mud during construction to assist the equipment with traction. This interpretation is also likely for the features identified by DNREC in Block E. The very thin and disturbed nature of the plowzone observed during the mechanical stripping of Block Z verified that this area had been previously disturbed. In addition, soils mapped in this area consist of the Aldino-Keyport-Mattapex-Urban land complex (Am), which represent a mix of disturbed or redeposited soils from the Aldino-Keyport-Mattapex associations (Mathews and Lavoie). Where these urban soils are encountered, the original soil profile has usually been cut away (Mathews and Lavoie).

b. 7NC-C-12B

The DNREC archaeological testing in 1995 defined tentative boundaries for 7NC-C-12B. Through the excavation of STPs, MTA did not find that the locus extends northwest of the trolley bed. Isolated prehistoric and historic artifacts were recovered, however the density was low, and the geomorphological evaluation indicated that much of the soil horizon northwest of the trolley bed has been redeposited during the historic period. The boundaries for the locus within the APE for this project have been redefined and are depicted on ***Figure 13***. The trolley bed is considered to be the northwestern boundary of the locus. The edges of the APE are the boundaries to the southwest and



- 10YR5/8 Silt Loam (Subsoil)
- Rock (Granite)
- 7.5YR5/6 Silt Loam (Feature Soil)

Figure 21
Block Z Representative Planview
7NC-C-12A
Phase II Identification Survey
Cauffiel Connector Project
New Castle County, Delaware

Photograph 30: Block Z Planview, 7NC-C-12A.

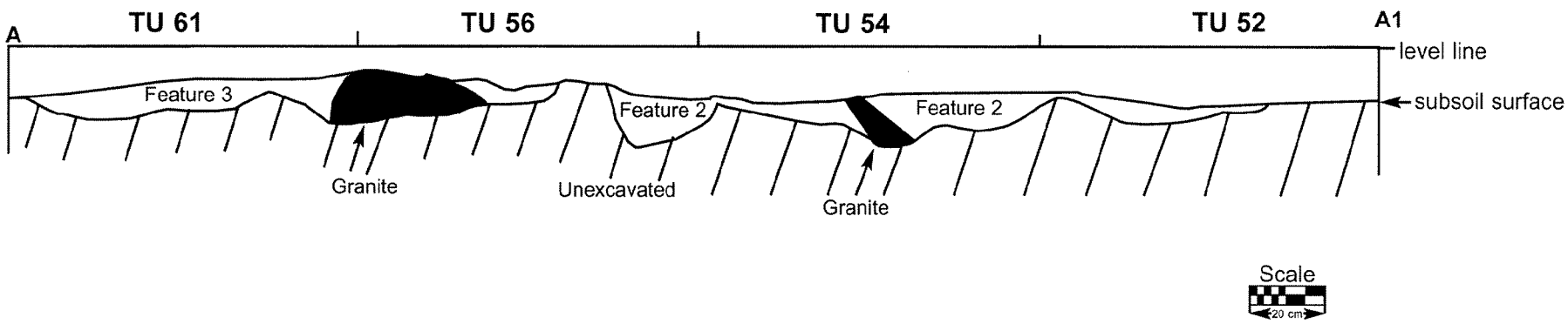
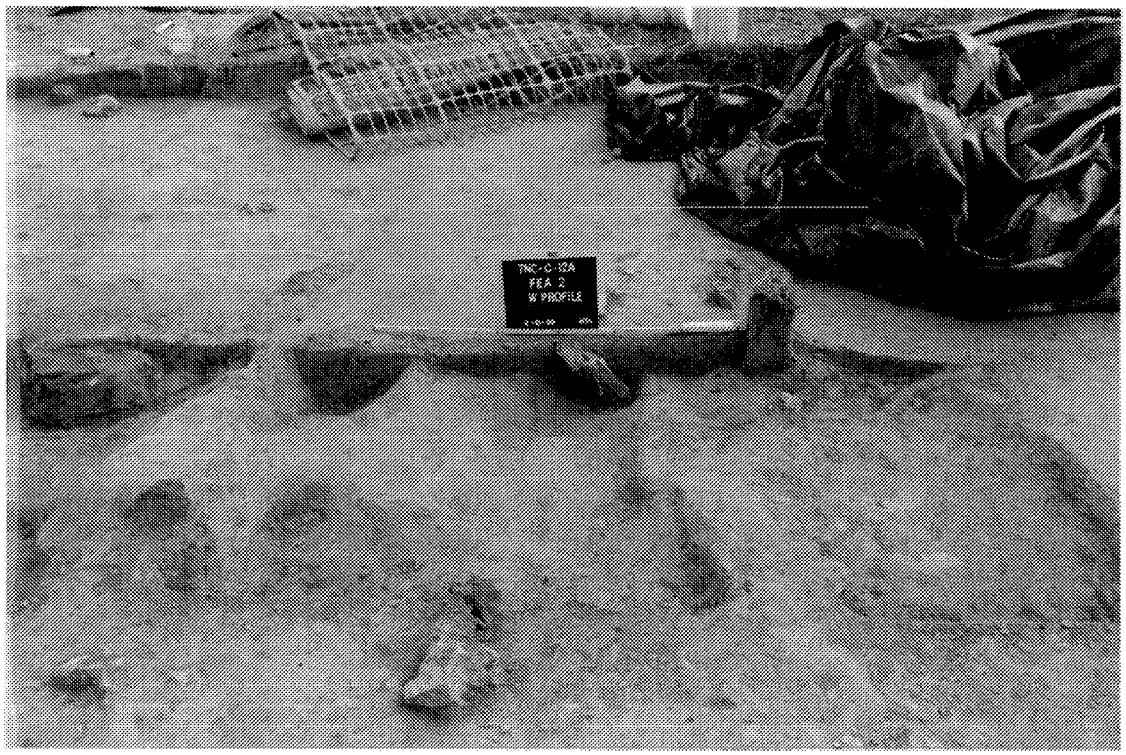


Figure 22
Features 2 and 3 West Profile
7NC-C-12B
Phase I Identification Survey
Cauffiel Connector Project
New Castle County, Delaware



Photograph 31: Features 2 and 3 West Profile, 7NC-C-12A.

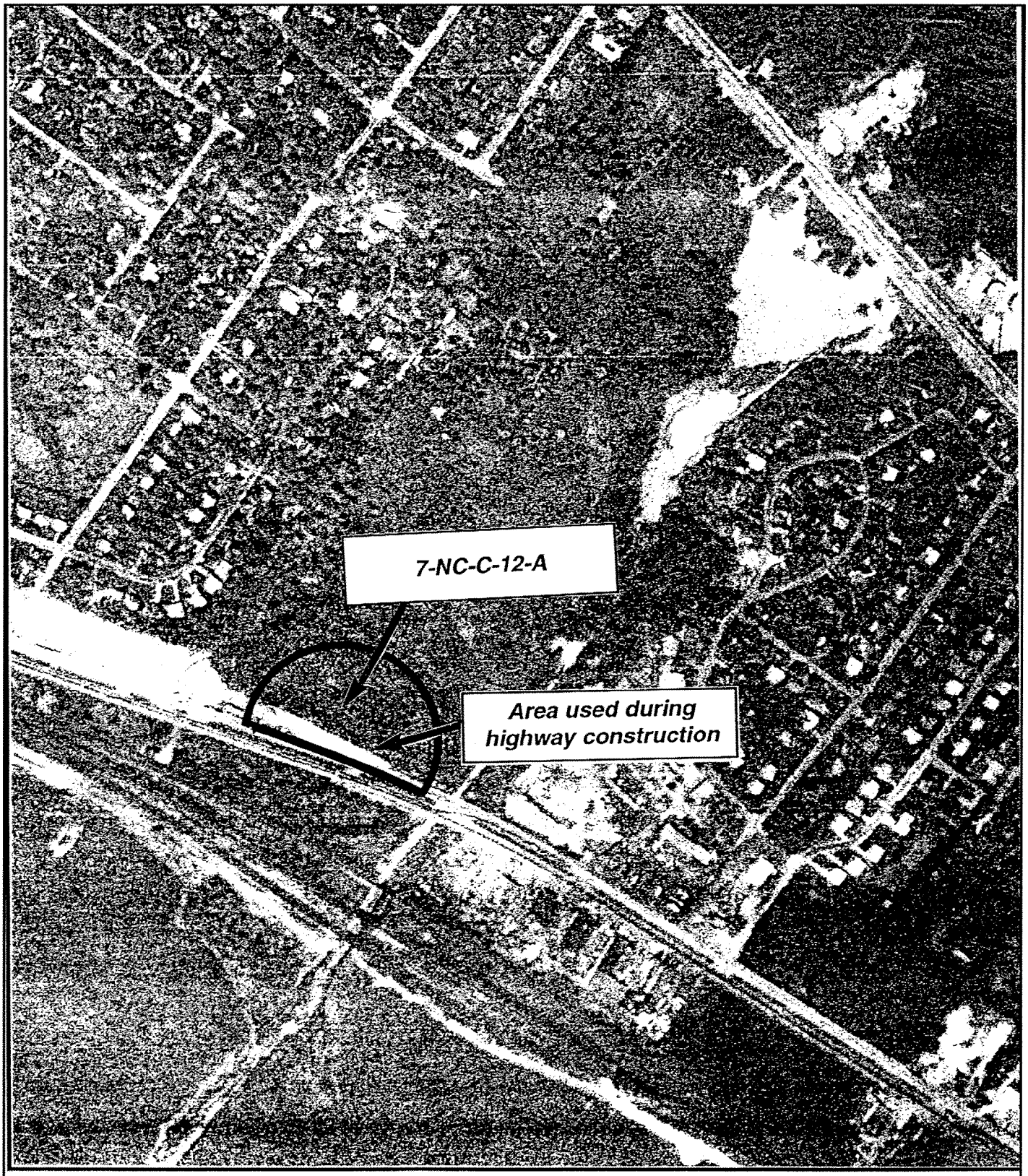


Figure 23
Aerial Photograph
Circa 1950s

Cauffiel Connector Project
New Castle County, Delaware

northeast, and the southeastern edge of the locus appears to coincide with the natural landscape where a slope increase towards Stoney Run defines this boundary.

The size of the locus within the APE was estimated to be approximately 1350 meter^2. Twenty-three additional 1x1 meter TUs were excavated within the locus during the Evaluation Survey ***(Figure 13 and Photographs 32 and 33)***. Combined, approximately 2.1% of the Locus was sampled during the Identification and Evaluation Surveys.

The stratigraphy encountered during the Evaluation Survey remained consistent with the Identification Survey results, generally consisting of a plowzone (Ap) and subsoil as seen in the profile for TU 14 ***(Figure 24 and Photograph 34).*** Thick deposits of fill and slopewash were variably encountered throughout the portions of the Locus within the APE, but particularly in proximity to the old trolley grade (in the northern and central portions of the locus), as seen in the profiles for the block containing TUs 21 and 25-27 ***(Figure 25 and Photograph 35).*** A buried surface horizon (Apb) was usually encountered beneath re-deposited soil packages, but the Apb was found to be of inconsistent thickness and was discontinuous across the site, likely due to its incorporation into the fill used for the trolley line grade, as seen in the west wall of TU 5 ***(Figure 26)***. Because the Apb horizon was exposed at ground surface during historic times, it yielded a mix of prehistoric and historic artifacts.

The Evaluation Survey yielded 644 artifacts. Of the total, 276 (43%) artifacts were prehistoric and 382 (57%) were from the historic period. Three hundred ten artifacts (48%) were recovered from the plowzone, 276 (43%) were found in fill related contexts, 33 (5%) came from the buried A horizon, 15 (2%) were recovered in the subsoil, and 10 (2%) were recovered from historic features. Again, the artifacts recovered from the subsoil were interpreted as being due to bioturbation and natural migration, facilitated by the heavy erosion of the deeply plowed ground surface during historic times. Based on the recovery of Marcey Creek prehistoric ceramics in addition to a chalcedony triangular projectile point manufactured from white chalcedony, the prehistoric component of the site dates predominantly to the Woodland I Period.

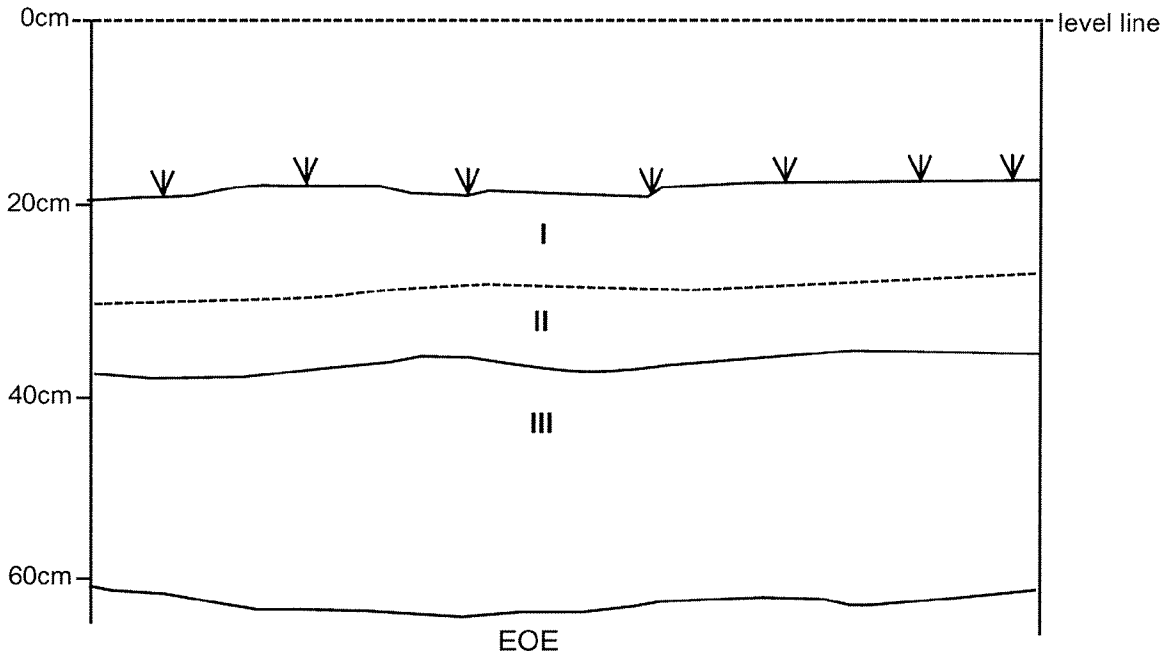
Four historic period and no prehistoric period features were identified during the Evaluation Survey. Additional potential features had been identified in the field, were assigned feature numbers, but were eventually determined not to be cultural in nature. Features interpreted as being formed by natural processes were interpreted as being caused by root casts or rodent burrows. Non-cultural feature numbers were not reassigned. Therefore, the feature numbers are discontinuous. All four cultural features were interpreted as posts.

Features determined to be cultural in nature are described below.

> **Feature 3** was located in TU 5 ***(Figure 27)***. This post measured approximately 0.31 meter in diameter and was intrusive into the fill and slopewash deposits, Apb, and the subsoil. It exhibited a depth of approximately 0.8 meter ***(Figure 26).*** Just one artifact, a railroad spike, was removed from the posthole fill. This indicates that the hole was filled in after the railroad was constructed in 1838.

Photograph 32: View of 7NC-C-12B. Facing southeast.

Photograph 33: Excavation of TU 18, 7NC-C-12B
in progress. Facing southeast.



STRAT I - 2.5Y4/4 Silt Loam (Root Mass)
STRAT II - 10YR4/4 Mottled with 10YR5/8 Silt Loam (Plowzone)
STRAT III - 10YR5/6 with Gravel and Gray Clay Mottled with 10YR5/8 Silt Loam (Subsoil)

EOE - End of Excavation

Figure 24
Test Unit 14 South Profile
7NC-C-12B
Phase I Identification Survey
Cauffiel Connector Project
New Castle County, Delaware

Photograph 34: Test Unit 14 South Profile, 7NC-C-12B.