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New York City
Department of Environmental Protection
South Richmond Drainage Plan
Conference House Park Watershed

Phase 1B Archaeological Field
Testing of CHP-1 and CHP-2
Conference House Park, Staten Island,
New York
CEQR No. 01DEP004R

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CHP-1 and CHP-2, Conference House Park Watershed

Introduction and Methodology

The New York City Department of Environmental Protection (DEP), as part of the South Richmond Drainage Plan, has proposed improvements for the sanitary collection and storm water management of the Conference House Park Watershed drainage area in Staten Island. In accordance with city and state regulations as well as the standards of the New York City CEQR manual, areas of impact are required to be studied to determine potential archaeological sensitivity and assess the need for further archaeological investigation.

The Phase 1A Cultural Resources Sensitivity Evaluation of the South Richmond Drainage Plans: Conference House Park Watershed, Staten Island, New York (CEQR No. 01DEP004R) was completed by Historical Perspectives, Inc., in 2001. The report, filed with the New York City Landmarks Preservation Commission (LPC), concluded that the Conference House Park location for the introduction of drainage improvements had high sensitivity for potential precontact resources.

The storm water management plan involves the construction and installation of Best Management Practices (BMPs), which includes a forebay and stream restoration project (CHP-1 and CHP-2) located on the south side of Clermont Avenue at its juncture with Finlay Street extending south to Billop Avenue. A Phase 1B archaeological testing strategy was implemented within the area of CHP-1 and CHP-2, within which the DEP is planning to create a small outlet stilling basin just south of Clermont Avenue, re-contour the stream corridor, and install a permanent maintenance access way along the north-east side of the corridor. Archaeological testing to determine the presence or absence of Native American cultural resources was conducted by Historical Perspectives, Inc. within the construction impact footprint between September 24th and October 9th, 2002. Testing protocol was undertaken with the approval of the Landmarks Preservation Commission.

Phase 1B archaeological testing was conducted in accordance with standards as outlined by the New York Archaeological Council Guidelines (1994) and the LPC Guidelines (2002). Testing included the excavation of a total of 90 archaeological shovel test pits measuring 50 by 50 cm and two (2) judgmental shovel test pits measuring 75 by 75 cm. Shovel test pits were positioned along a 10-meter interval transect grid laid over the impact footprint. A total of 25 parallel transect lines oriented mg N 40 deg W were hand-cleared across the area of CHP-1 and CHP-2. Areas within the impact footprint that were disturbed, on steep slopes, or inundated wetlands were selectively tested; in some cases, STPs were repositioned within the CHP-1 and CHP-2 area to avoid said areas. Since the center and southern half of the CHP-1 and CHP-2 area is largely composed of wetlands, testing was predominately focused on the surrounding well-drained banks. In cases where STPs yielded precontact artifacts, array units were placed around the positive STP at 5-meter intervals. Eleven out of the total 90 STPs were array units. Excavations were terminated when sterile deposits were verified, obstacles were encountered, or when deeper excavation was not physically possible.

All excavated soil was screened through one-quarter inch wire mesh, and significant artifacts collected. Materials noted but not necessarily collected included coal, brick, modern construction material and modern trash. Separate excavation forms were completed for each STP, which included descriptions of soil strata and artifacts encountered. At the request of the New York City Department of Parks, general photos were taken of the entire CHP-1 and CHP-2-1 area, including all transects and select excavations were photographed as well (Photos A-P).

Background Research: Potential Precontact Archaeological Resources

Conference House Park is unquestionably one of the most important Native American archaeological sites in New York City. This land, situated near the confluence of two major river drainage systems, the Hudson and Raritan Rivers, was occupied by Native American peoples for thousands of years prior to the arrival of European settlers. Abundant evidence of their occupation has been found on the Conference House grounds, at the end of Hylan Boulevard, on Billopp Ridge and on Burial Ridge (Jacobson 1980; Florance 1982; Baugher et al. 1991). During the summer months, Leni-Lenapé Native Americans raised corn, hunted for deer and birds, fished, and gathered shell fish (Weingartner 1967: 39).

The Conference House is listed on the National Register of Historic Places and is a designated New York City Landmark. In 1982, approximately 33.5 acres of the park was listed on the National Register as the Ward's Point Conservation Area. On April 19, 1992, the Ward's Point Archaeological Site was designated a National Historic Landmark (Grumet 1995:223). The Boundary Justification of the Ward's Point National Register of Historic Places Registration Form (page 19) states:

The Ward's Point site encompasses archeological resources on and immediately adjacent to a bluff locally known as Burial Ridge investigated by archeologists George H. Pepper between 1893 and 1895, Robert D. Wainwright in 1897, Mark Raymond Harrington in 1920, and Jerome Jacobson in 1960.

Inaccessible or unsurveyed known or potential associated resources may exist beyond current nominated property boundaries. Such resources should be considered for inclusion within Ward's Point site boundaries pending changes in survey or accessibility status.

Conference House Park and the surrounding area have long been recognized by both professional and avocational archaeologists as rich in evidence of Native American occupations. From the late nineteenth century through the third quarter of the twentieth century, some fifty reported investigations have taken place in the area (Florance 1982: Table 3). Numerous artifacts have been recovered from the site such as projectile points, stone tools, lithic debitage, ceramic fragments, faunal material, and European-made trade material such as white clay tobacco pipes, and projectile points made of copper, brass, and iron. Cultural features have also been found including hearths, pits, and burials. Some seventy-two Native American burials have been discovered within the park since the mid-nineteenth

century. These dates indicate that the Conference House Park property was occupied by Indian peoples from the Early Archaic period to the early Historic Contact period, i.e. c. 6000 B.C. to 1600s A.D.

The Landmarks Preservation Commission's precontact site records indicate that artifacts of precontact origin were recovered from a site at Hylan Boulevard and Satterlee Street and a site located between Massachusetts and Connecticut Streets to the south of Hylan Boulevard (Boesch 1994:110-111). These artifactual finds consisted of lithic debitage recovered during archaeological shovel testing in the areas indicated.

In summary, the Conference House Park Watershed area has been characterized as highly sensitive for the presence of precontact resources by the New York City Landmarks Preservation Commission (Boesch 1994:22; U.S.G.S. site and sensitivity maps).

Background Research: Potential Historical Resources

Phase 1A documentary research previously indicated no historic period construction within the area of CHP-1 and CHP-2. Details of nearby historic resources or lack thereof within the vicinity of the project area can be found in the Phase 1A report. In summary, there are no historic-period archaeological resources in the CHP-1 and CHP-2 area of the project area to be impacted by construction.

Shell Deposits: Modern or Potential Archaeological Resources

Phase 1A research on CHP-1 and CHP-2 included a walk-over the area of impact, during which several shell outcroppings were identified in wetland areas surrounding the stream or within the streambed (see Photo D). Shells present included mostly oyster and quahog (clam) shell. Phase 1B testing was in part geared to determine the nature of these shell deposits within the area of CHP-1 and CHP-2-1.

Shell beds in the Raritan and Lower New York Bays have been exploited for centuries. Shellfish were a source of food for Native Americans; further, clam shells provided raw material to make wampum (Weingartner 1967: 39). In the area of Ward's Point and in particular, Burial Ridge, clam and oyster shells were commonly found in large quantities in association with Native American habitation debris and burials (Weingartner 1967: 40; Wissler 1909: 11-14). Wissler (Ibid.) specifically notes deposits of shells up to one half-foot thick overlaying Native American burials from Burial Ridge, and some human remains were found mixed in with shell deposits.

During the 19th century, thousands of individuals would come to depend on oystering and clamming for their livelihood, including the Sandy Ground community of free black oyster men (Weingartner 1967: 42; Staten Island Sunday Advance, December 26, 1999; pers. comm. E. Johnson, SIHAS, October 2002). Clams and oysters were raked from the bay, transferred to floats and then moved to fresh water before ferrying then to market. Sandy Ground oyster men processed their hauls east of Wolfe's Pond at Prince's Bay (Ibid.). Pollution in the bay from sewage and industrial waste brought the business to a

halt in 1916, when New York Bay shellfish, carriers of typhoid, were declared unfit for human consumption by the new York City Department of Health (Ibid.).

Shells continued to be used into the early 20th century. Notably,

During Mayor Hylan's administration in the 1920s, Hyland Blvd. was cut through to Raritan Bay, and from it a network of streets was laid out, complete with sidewalks...The streets and sidewalks ...have been badly eroded...Oyster shells, a cheap material for road building along the beach-front, were used in the construction of the roads, and these shells are now becoming exposed. At times they are confused with Indian shell heaps... (Weingartner 1967: 41).

The area described above includes the location of CHP-1 and CHP-2. Remnants of sidewalks and streets were observed along the west side of the streambed during Phase 1A reconnaissance.

On-site interviews with DEP officials also confirmed early 20th century development in the area, based on the presence of remnant roads, sidewalks, and an old culvert constructed of granite paving blocks (D. Gumb, pers. comm. 2002; see Photos C, M and N). Current vegetation, including secondary tree growth, indicates the area had been partially cleared within the century. Further regarding the association of shell, disturbance, and recent development, Marcha Johnson from the Parks Commission speculates that inverted soil strats at Conference House Park could be the result of mosquito-control channels dug in the early 20th century. Such channels, she remarked, were a very common practice (M. Johnson, pers. comm. 2002).

While the historical and documentary evidence strongly suggest that the shell outcrops within the CHP-1 and CHP-2 area are of recent origin, given the overall sensitivity of the area for Native American resources plus evidence suggesting 19th century origins, Phase 1B testing was necessary to confirm or deny the significance of the shell.

Environment and Current Conditions

The Conference House Park Watershed is located at the extreme southern end of Staten Island. This watershed is situated within the Coastal Plain physiographic province (Schubert 1968). The underlying geological deposits in the region were laid down during the Cretaceous period some seventy million years ago and are called the Raritan-Magothy formation (Gratacap 1909:175-176). The Raritan formation is composed of gray sands and gravels and silt. The Magothy formation lies on top of the Raritan and consists of a mixture of sand, silt and clay, and layers of coarse sand and gravel. Glacial deposits in turn overlie those of the Cretaceous period and date to about 14,000 years ago. Glacial till and outwash sediments consisting of sands, silts and gravels, deposited by the retreating Wisconsin glacier, form the region's surface features and deposits and are of post-glacial origin (Kraft and Chacko 1978:41). The terminal moraine is characterized by reddish soil and sand with some iron concretions, which overlay strata of glacial clays that range from yellow to grey to black. The clays are extensions of deposits at Kreischerville and Perth Amboy, New Jersey

(Weingartner 1967: 42). Specific soil conditions within the watershed are variable depending on topographic location; they may be sandy and dry or wet, and well-drained or poorly drained.

These reddish terminal moraines are confirmed by a series of soil borings recently taken along Clermont Avenue (NYC DDC 2002, SES Job 3365, Borings 51-55). All borings were placed in current residential streets, however, and the upper levels all consist of fill at least 5 feet deep that overlays the moraine. No original surfaces appear to be present in more recently developed areas.

The topography of the watershed can be characterized as low and flat to gently sloping. The local elevations range from approximately sixty feet above mean sea level near the northeast corner of the watershed to around five feet near Raritan Bay. A small stream enters parkland at the intersection of Finlay Street and Clermont Avenue, flows south-southeast and enters a marsh area adjoining the north side of Billop Avenue. In 1898, this stream was known as "Kingsbury's or Uncle Ed Ward's Brook" (Leng and Davis 1898; Morris 1898 I:362-3). This stream is the focus of CHP-1 and CHP-2 action.

Considerable erosion and storm damage has been noted along the shore in the area of Ward's Point with implications for the CHP-1 and CHP-2 area. Most storm damage reported in the area has been caused by tidal flooding during hurricanes, tropical and extra-tropical storms which have inundated large areas (Betros et al. 1967: 47). Numerous fires have also denuded the area of vegetation for periods of time, causing a higher susceptibility to erosion.

Park lands, which extend along the Arthur Kill and Raritan Bay, make up nearly one-half of the watershed drainage area. Most of the parkland is wooded and undeveloped, the exception being the land immediately surrounding the Billopp or Conference House and wetland and coast-side areas. "Paper" streets extend through portions of the park as indicated by the presence of former sidewalks and curbs.

The CHP-1 and CHP-2 area is a stretch of land lying between Clermont Avenue and Billop Avenue, containing a small stream and adjacent wetland (see Photos A-J). The site is generally wooded in areas surrounding the stream, which opens out to wetlands covered in *phragmites* in the south. However, landscape disturbance is clearly evident along the course of the streambed to the west, where the land was graded and paved in the early 20th century in preparation for development that never occurred.

Results

Required archaeological field testing involving the excavation of ninety-two (92) shovel test pits was conducted between September 24 and October 9, 2002 (Figure 2; Photos K-P). Testing was limited to the area of proposed impact; areas with steep slopes, disturbance, inundated or wetland areas were only selectively tested.

Soil stratigraphy varied across the tested area. In well-drained areas, a dark layer of humus rich topsoil was present over one or more levels of reddish or yellowish brown

silty to sandy clay, beneath which was a hard packed yellowish or strong brown silty clay. These excavations were typically excavated to depths of 40-60 cm. Closer to the wetlands or stream, strata were moist to wet (see, e.g., Photos O and P). Excavations near the stream typically ended with inundated dense dark to light grey clays at depths of up to 110 cm below the surface. Root disturbance from *phragmites* often reached the base of the excavations. Comparatively, root disturbances from secondary tree growth and underbrush on higher ground rarely penetrated the hard packed clay.

Descriptions of all excavated STPs are included in Appendix 1, which lists the depth of all levels, soil type, Munsell soil color, and artifacts collected or noted. Locations of STPs can be found on Figure 2.

Materials recovered ranged from modern 20th century trash and historic ceramics to shell and lithic artifacts. Clear 20th century disturbance was indicated through the presence of such materials as plastic and styrofoam. Historic ceramics were analyzed in the laboratory and date from the 19th to early 20th century (see Appendix 2). Lithics were also analyzed in the laboratory and are listed in Appendix 2 as well. Lithic artifacts consist mainly of chipped stone flakes of grey to black chert, with some quartz and jasper represented. These flakes represent the by-products of stone tool production; however, no stone tools or features were recovered. While lithic artifacts were found in several areas within CHP-1 and CHP-2, most were found in disturbed contexts. Shell was recovered from many STPs and consisted mainly of oyster and clam (quahog) shells with miscellaneous other shells represented in low quantities. Detailed analyses of shell were performed on those STPs that tested positive for lithics and the results are also found in Appendix 2.

What follows are narrative descriptions of STPs grouped by transect and location relative to the stream or wetlands. Given the variability of stratigraphy across the site due to disturbance, fill episodes, and rapid alluviation, the terms "level" or "strata" are used in lieu of assigning "horizons". Strata are too inconsistent across the site to the excavated depths to establish a single, distinct sequence of horizons for the entire CHP-1 and CHP-2 area. Rather, similarities are noted in particular areas, such as the well-drained banks versus inundated wetlands, disturbed or graded areas near the old road or culvert versus possibly less disturbed areas towards the east and west.

Unexcavated STPs were located in inundated or wetland areas or highly disturbed areas. These STPs are noted on Appendix 1 but not mentioned in the following descriptions. An STP is noted by its Transect number and STP number. Please refer to Figure 2 for Transect locations.

Transects 1, 2 and 3

These transects were located just south of the intersection of Clermont Avenue and Finlay Street. A footpath from Clermont Avenue leads south into the CHP-1 and CHP-2 area, with the stream emerging from a storm pipe to the east of the path. Three STPs were located along T1, and T2 and T3 had two STPs each. Each STP had a thick humus layer (10-20 cm deep) followed by silty clay or sand that ended in hardpan at 40-60 cm.

Besides modern material located in the humus layer, only a few shell fragments from T3-1 were recovered from 10-30 cm below the surface.

Transects 4, 4A and 5, east of stream (array)

The STPs on T4, T4A and T5 located east of the stream comprise an array laid out on a 5-meter grid based on Phase 1A reconnaissance. These STPs include T4-1, T4-2, T4-3, T4A-1, T4A-2, T4A-3, T5-1 and T5-2 (see Photo K). Dark humus layers 7-15 cm thick overlay silty sandy clay that ended in compact hardpan at 40-68 cm below the surface. Shell was recovered 10-15 cm in T4A-3 and in the humus layer in T5-1; otherwise only one lithic was recovered from T4-1, Level 2, 15-51 cm below the surface.

In sum, this array did not yield positive STPs except for one lithic in T4-1.

Transects 4 and 5, west of stream

STPs west of the stream include T4-4, T4-5, T5-4 and T5-5. In both STPs along T4, evidence was recovered of 20th century construction in the form of the remains of an asphalt road near the surface in T4-4 and a concrete curb approximately 0.5 m east of T4-5. T4-4 was excavated to reveal a layer of cinder, rocks and tar as well as some small shell fragments. Beneath the road was a layer of hard-packed sand that ended at hard-packed clay. T4-5 also had a layer of hard-packed sand mixed with a few shell fragments over hard-packed clay. T5-4 and T5-5 had thick humus layers mixed with some modern trash over dark yellowish brown to strong brown silty clay. Modern material and shell were found in this layer. T5-4 ended at 60 cm at compact silty red clay while T5-5 ended at 35 cm at a compact silty clay layer with gravel.

Transects 6, 6A, 7, 7A and 8, east of stream (array)

These transects comprised part of the original transect grid as well as an array excavated in response to finds in the original STPs. T6-1 (Photo L) and T6-2 both had humus layers less than 10 cm thick. T6-1 was littered on the surface with modern glass; a clearing in the woods to the immediate north of the STP has apparently been used with some regularity by locals and would account for the trash. In T6-1, two flakes, along with historic ceramics, shell and coal, were recovered from Levels 2 and 3 each, reaching a maximum depth of 34 cm. In T6-2, four flakes were recovered from a maximum depth of 35 cm, along with historic ceramics, shell, and coal. These excavations ended at hard-packed clay at depths of 60-60 cm below the surface. Shell was recovered in T6-1 in the strata below the lithics.

T6A-1 was excavated to a total depth of 60 cm. Beneath the 8-cm humus layer, 10 lithics were found from 20-40 cm below the surface along with shell and historic ceramics.

T7-1, T7-J, and T7-2 had humus layers from 7-13 cm thick. In T7-1, the subsequent yellowish brown layer yielded 12 lithics mixed with shell and glass. From 30-60 cm below the surface, T7-1 was sterile, compact silty sand. In T7-J, 1 lithic was recovered along with shell and a ceramic to a depth of 32 cm. From 32-56 cm, the soil was compact sandy silt, ending in sterile hardpan. T7-2 yielded three lithics and some shell in

soft silt from 7-13 cm below the surface, below which sterile hardpan was reached as well as a boulder obstruction at 25 cm below the surface.

T7A-1 had a thick humus layer above a layer of sandy silt from 13-24 cm, which contained shell, four lithics and a possible hammerstone. In a denser, sandy silt that reached 47 cm below the previous layer, a brick fragment was recovered. The fine, compact silty sand located 10-50 cm below the surface in T8-1 contained shell and one flake before reaching hardpan. T8-2 contained a .22 caliber shell case in the 15 cm thick humus layer; below that, two flakes, shell and a ceramic fragment were recovered in a layer reaching 55 cm. T8-3 was located close to the stream in lower, wetter soils, whereas other STPs were located on higher ground. Stratigraphy was indistinct, no humus layer was visible, and no materials were recovered from T8-3.

In sum, lithics were consistently recovered from this array. However, they were often recovered with modern or historic period artifacts, and minimally were recovered with shell. In one case, lithics were recovered above modern materials.

Transects 6, 7 and 8, west of stream

T6-3 had five separate identifiable strata, variants of silty sand beneath a humus layer. One lithic was recovered in yellowish brown silty sand immediately beneath the humus layer, 14-20 cm below surface. Subsequent strata ranged from dark grey to brown. No other artifacts were recovered, and the STP ended at 65 cm below the surface.

T6-4 had a layer of road fill consisting of angular grey rocks with sand from 12-27 cm (Photo M). Shell was recovered from the same level. This STP ended at 46 cm below surface at compact silty clay. T7-3 had a similar fill level from 10-40 cm below surface; brown bottle glass was also recovered from the same level. Lenses of old humus were buried beneath the fill, reaching sterile yellowish clay by 60 cm below the surface.

T7-4 was located within 6 m of the old sidewalk and 10 m of the old culvert. Within a dark olive brown layer from 14-36 cm, shell and ceramics were recovered. This also may have been fill comparable to that seen in T6-4 and T7-3. Below this, an old organic layer was encountered. The STP ended at 62 cm in compact clay.

In the first 30 cm of T8-4, one lithic was recovered along with modern materials and one bone (a caudal vertebrae or tail bone, possibly that of a dog). This STP was located between the culvert and the old road. At the base of the STP at 60 cm, decomposing wood chunks were observed. T8-5 was located up against the old sidewalk curb (Photo N). Beneath the humus, 8-24 cm appears to be one fill episode, with shell mixed in. From 24-46 cm, another layer of fill was observed, with concrete chunks encountered at the base and the bottom of the curb.

Transects 9, 10 and 11, east of stream

T9-1 only yielded one shell fragment just beneath the humus layer, which ended at 13 cm below surface. The STP ended at 60 cm below the surface in moist, sandy, gravelly silt.

T9-2 was located only 2.5 m east of the stream where visible shell outcrops are seen in the streambed. Stratigraphic changes are not sharply defined. Shell, as well as modern material, was recovered from the humus root zone. In the layer beneath, shell began to be recovered in large quantities, along with glass, anthracite coal and slag. The STP was excavated to 80 cm below surface. Shell was still being recovered, but density was dropping near the base of the level. A total of two lbs of shell was recovered.

T10-1 and T10-2 yielded only one shell fragment between them, located just beneath the humus layer in T10-1. T10-1 reached hard silty sandy clay by 40 cm. T10-2, located close to the stream in the lower, wetter area, had six distinct strata, reaching an old organic layer from 50-53 cm. The water table was reached at 70 cm; no artifacts were recovered from this STP.

T11-0(J) was a judgmental STP measuring 75 x 75 cm placed at the western edge of the CHP-1 and CHP-2 area. The area was above the stream on better-drained, higher ground. Shell was recovered from the 8 cm humus layer. Beneath the humus, shell and one lithic were recovered in a layer of silty sand. In the subsequent layer, nails and shell were located at around 30 cm below the surface below which was sterile. The STP was excavated to 65 cm below surface.

T11-1 yielded shell in the level immediately beneath the humus level, in dark greyish brown sandy clay 13-25 cm below the surface. No further artifacts were encountered and the STP ended at sterile hardpan 40 cm below the surface. T11-2 was located immediately east of the stream. After a 5 cm humus layer, the rest of the STP was a very moist sandy silt, within which ceramics and a glass marble were located. At the very base of the STP, 50 cm below surface, an old tire and decayed plywood were reached. The stratum above these items appears to be rapidly deposited alluvium.

Transects 9, 10 and 11, west of stream

T9-3 was located just west of the stream where shell outcroppings are visible in the streambed. After an initial 20 cm of humus and sandy silt with no artifacts, shell was encountered in very high densities. A total of 26 lbs of shell were recovered, along with glass fragments, a glass stopper, coal, and a fragment of brick at the base of the shell at 45 cm below the surface. From 45-49 cm, an old organic layer was revealed. Beneath this level, more shell, glass and coal were recovered from 49-60 cm beneath the surface, but in very low quantities.

T9-4 was located within 1.5 m of the old sidewalk. Only one shell fragment was recovered from the 5 cm humus level. Beneath the humus, sterile compact fill was recovered, similar to that recovered in previous STPs associated with the sidewalk curb.

Located just west of the stream, T10-3 had a thin humus level, a dark brown silty clay level, and an old organic layer found from 22-29 cm below the surface (Photo O). Immediately beneath the buried organic layer, 11 lbs of shell was recovered from 29-75 cm below the surface. Mixed with the shell were pieces of glass, coal, styrofoam, metal, brick, and historical ceramics. As the water table was reached at 49 cm below the

surface, further excavation was not possible. Chunks of grey clay were beginning to emerge at the base of the unit.

T10-4 had yet even higher shell densities. A humus layer of 6 cm lay above a brown layer of clayey silt mixed with modern trash, below which the buried organic layer was encountered at 31-34 cm below surface. Beneath this was a sandy silty clay with no artifacts. At 55 cm below the surface, 29 lbs of shell were recovered in a matrix of sandy silty clay, where approximately 90 % of the deposit was composed of shell. Mixed in with the shell were fragments of glass, coal and possible slag. The water table was reached at 79 cm, where clumps of grey clay were emerging as shell densities were beginning to decrease.

T11-3 was located about 3 m west of the stream in the beginning of wetlands. Deposits were wet and sticky, with higher clay contents than surrounding, higher STPs. Shell was recovered in lower quantities down to 70 cm below the surface; coal and glass were also recovered. The water table was encountered at 70 cm, but the STP was excavated up to 100 cm below the surface. No artifacts were encountered, and the clay became very thick and dark grey.

T11-4 had modern materials in the initial 32 cm, after which a mottled brown sterile deposit was encountered. An old organic layer was found between 39-42 cm below the surface, below which was a very dark grey clayey silt with no artifacts. Excavation of T11-4 was terminated at 55 cm below the surface.

Notably, the dense shell deposit in T9-3 was located above a buried organic level, opposite that of T10-3, whose shell deposit was located below a buried organic level and T10-4, where shell was located beneath a silty deposit under the buried organic level. T11-4 also shows the old organic level but no shell.

Transects 12, 13 and 14, east of stream

STP T12-1 and T12-2 were located up on the bank away from the stream in an area that appears to have been the location of relatively recent illicit housing. T12-1 yielded much modern material from the 10 cm humus layer. In the subsequent layer from 10-17 cm below the surface, shell, glass, metal and five lithics were recovered. From 17-40 cm, a compact yellowish brown layer yielded no artifacts.

Remains of a charred frame platform and stairway erected among three trees are strewn around the surface of T12-2 as well as an old metal drum used as a stove, much broken glass and so on. Shell and coal were recovered from the 6 cm humus layer; shell was also recovered from the silty sand layer beneath the humus. Sterile hardpan was reached 32-40 cm.

T12-3 was located on lower ground immediately adjacent to the stream. Strata were indistinct for the first 50 cm, where no artifacts were recovered in the wet silty sand. No artifacts were recovered from the final layer 50-60 cm below the surface, after which the water table was reached.

T13-1 was located on higher ground; shell was encountered in the 10 cm humus layer and also in the subsequent 10-35 cm layer, along with brick. Heavy roots made excavation beyond 40 cm impossible, although the last 5 cm were sterile. T14-1 had to be offset from the original transect plan to avoid wetland/stream areas; the excavation was placed on high ground. No artifacts were found in the 8 cm humus level. Little shell was recovered from the second, sandy silt level 8-34 cm below the surface. The last level of yellowish brown silty clay was sterile, and excavation was terminated at 50 cm below surface.

Transects 12, 13, 13A and 14, west of stream

T12-4 was located in low ground near the stream. Materials were recovered from a dark greyish brown layer from 29-52 cm below surface, including historic ceramic and modern debris. Above this layer was a wet, alluvial deposit; below this layer was a sterile dark grey clay. T12-5 was offset in order to sample higher ground. Shell was recovered from a disturbed context; concrete was reached at the base of the level with shell, at 25 cm below surface. Beneath this, layers of mottled clayey silt from 27-41 cm and strong brown silt with clay from 41-48 cm were sterile.

T13-4 had fairly high concentrations of shell throughout several non-distinct strata. A total of 10 lbs of shell were recovered from 10-70 cm below the surface, with plastic observed in Level 2 (10-25 cm). While subtle soil changes were noted within this STP from dark grey to brown silty clay, the layers of shell were not distinct and appear to have been deposited fairly consistently through time. The shell was consistently denser toward the bottom of the STP. The water table was reached at 67 cm below the surface.

T13-5 and 13-6 each yielded a little shell as well as modern material. T13-5 yielded shell mixed with modern metal from 10-55 cm below the surface, after which had yellowish brown clay was reached. T13-6 was offset west along the transect to avoid a tree. A little shell and glass was recovered from the 5 cm humus layer, beneath which a layer of sandy gravelly fill was encountered with a lens of angular grey cobbles at 20 cm. This level appears to be fill associated with old road construction as seen previously.

T13A-J was a judgmental STP measuring 75 x 75 cm placed up on the western bank. The STP was excavated through 5 cm of humus, 5-30 cm of compact silty sand, and 30-50 cm of mottled silty sand. No artifacts were recovered.

T14-3 was placed in the middle of the low area surrounding the stream. Modern materials including plastic and wood were recovered from a 27 cm deep humus level, followed by a 5 cm thick sterile layer. Between 32-37 cm, some shell was recovered from mottled clayey silt. Denser shell was located in the stratum below, 37-69 cm below the surface. Specifically, shell was recovered from the eastern section of the STP from 47-66 cm below the surface. An historic ceramic was recovered at the top of the shell and standing water was reached at 67 cm below the surface.

T14-5 was offset 1.5 m west along the transect in order to test higher ground. One ceramic was recovered at 20 cm below the surface; in the subsequent layer 25-48 cm below the surface, shell, ceramic and one lithic at 40 cm were recovered. The shell stopped above compact sandy silt. The excavation was terminated at 53 cm below surface in sterile soil. T14-6 was excavated to 52 cm below the surface. An historic ceramic and slag were recovered from a layer of mottled grey brown clayey silt located 8-35 cm.

Transect 15, 16 and 17, east of wetlands

These three STPs were located up on the bank above the wetlands. T15-1 yielded shell from a dark silty sandy layer between 25-35 cm below the surface, after which the excavation was terminated due to root obstruction. No other artifacts were recovered from this STP. T16-1 was offset further east along the transect to avoid wetlands. Under a 16 cm thick humus root zone, a compact dark reddish deposit was excavated to a depth of 60 cm below the surface which yielded only a piece of plastic at 20 cm below the surface. T17-1 was located closer to the wetlands, and consisted of a 10 cm humus layer over a mottled wet sandy layer 10-25 cm below the surface. The ultimate stratum consisted of a compact dark reddish deposit like that in T16-1; excavation was entirely sterile.

Transect 15, 15A, 16, 16A, and 17, west of wetlands (array)

T15-4 and 15-5 both yielded lithics, as did T16-6 and T17-5. Array STPs were then excavated to further investigate the area.

T15-4 was offset further southwest along the transect to avoid wetlands. After a sterile 15 cm humus layer, a 30 cm dark brown moist layer was excavated which contained both shell and six lithics. In the subsequent layer, which was a clayey soil with gravel, only shell was recovered in quantities that diminished with depth. The excavation was terminated at 66 cm below the surface after reaching sterile gravelly soil.

T15-5 was located up on the higher, well-drained banks above the wetlands, yet deposits were still moist. After a 5 cm thick humus layer, two distinct strata were encountered that contained artifacts. In a dark brown fine sandy silt 5-26 cm below the surface, shell, three lithics and historic ceramics were recovered. Below this, in a medium sandy silt 26-76 cm below the surface, three lithics and shell were recovered. The last shell fragment was recovered at 72 cm below the surface. A sterile, strong brown, coarse sandy silt was encountered below this; the excavation was terminated at 88 cm below the surface.

T15A-1 was established between T15-5 and T16-5. Under a 15 cm thick humus layer a dark greyish brown layer was encountered 15-40 cm below the surface which contained shell and one small flake. A layer of sterile, strong brown, silty sand was encountered beneath this, similar to T15-5, and the excavation was terminated at 60 cm below the surface.

T16-5 yielded more lithics than any other STP. No artifacts were found in the 7 cm thick humus layer. Nine lithics and some shell were recovered from a dark yellowish brown silty layer 7-33 cm below the surface. The stratum below was a strong brown clayey silt with red mottling and gravel emerging at the end. Shell and four lithics were recovered from the very top of this level, which rapidly became more compact by 55 cm when the excavation was terminated.

T16-1(J) was excavated as part of the array around T16-5. Located at the base of the slope that grades up out of the wetlands, this STP yielded 9 lbs of shell as well as modern metal in the first 33 cm. Stratigraphy was indistinct in this layer, with about 90 % shell mixed with humus and roots grading into sandy soil beneath. Beneath this, from 33-54 cm, a very dark sandy clayey soil with grey clay chunks yielded 15 lbs of shell as well as two lithics. This layer appears to represent an earlier, slower alluvial deposition of shell; the shell is concentrated at the base of the level and many of the shells are filled with pure grey clay. Beneath this layer was a brown, very sandy layer with gravel and pebbles, yielding a small amount of shell from the top of the level only. This excavation was terminated at 100 cm below the surface.

T16A-1 as part of the array was located up on the banks away from the wetlands. Only a few shell fragments were recovered from a dark grey brown layer 5-30 cm below the surface. The excavation was terminated at 60 cm below the surface in compact strong brown sterile soil.

STP T17-5 was also located up on the banks above the wetlands. Under a 7 cm humus layer, mixed artifacts including one shell, one lithic, and a .22 caliber shell casing were recovered from a dark yellowish brown layer 7-29 cm below the surface. Beneath this layer was a sterile, compact, strong brown layer; excavation was terminated at 45 cm below the surface.

This array yielded the most lithics from potentially undisturbed contexts. While some lithics were found in contexts with historical materials, some were found with only shell, which may or may not be modern.

Transect 18, 19 and 20, east of wetlands

None of these three STPS (T18-1, T19-1 and T20-1) yielded artifacts. In this area east of the stream, there is little gradient and hence, there appears to be much alluvial deposits. T18-1 was offset to avoid the wetlands, but nonetheless reached the water table at 63 cm below the surface. Below a 10 cm humus root layer was a 50 cm stratum of reddish yellow medium sand mixed with layers of grey and red. The final 10 cm of the STP was a very dark grey silty clay with decomposing organic material. The excavation extended below the water table to a depth of 70 cm below the surface.

T19-1 was excavated to a total depth of 75 cm at which the water table was reached. Five strata, including the humus layer, were encountered, including sandy or silty clay in shades of red, yellow, and grey. Modern trash was present around the STP, but no artifacts were encountered. T20-1 again had five strata, nearly mirroring T19-1. This

STP was excavated to a total depth of 70 cm, but no artifacts were encountered. These strata appear to be rapidly deposited alluvium.

Transect 18, 19 and 20, west of wetlands

T18-4 was near T17-5, located in a raised area where the wetlands constrict before opening out to the south. Under a 7 cm humus layer, shell, one lithic, and modern wood was recovered or noted in a dark yellowish brown layer from 7-20 cm. Beneath this, a sterile, brown, coarse sandy silt was excavated to a depth of 42 cm.

T19-6 and 19-7 were located further south along the transect as the wetlands expand towards Billop Avenue. T19-6, located at the edge of the wetlands, was excavated to a total depth of 60 cm, at which micaceous grey clay was recovered. Little shell was found at the top of a layer of clayey silt 19-50 cm below the surface. Alluvial wetland sediment was present throughout the STP. In contrast, T19-7 was located up on higher ground above the wetlands, at the very edge of the CHP-1 and CHP-2 area. In a 6 cm humus layer, shell and two lithics were recovered. Beneath this, in a dark yellowish brown clayey sandy silt, a mixture of materials was recovered, including two lithics, shell, bird bone, and glass. The following level, a strong brown fine clayey sand, yielded two lithics and shell from approximately 50 cm below the surface, beneath which the level was sterile. This excavation was terminated at 70 cm below the surface.

T20-7 was located in an area slightly lower than T19-7. Two strata were revealed in this excavation; a humus zone and a strong brown compact layer. One shell fragment was recovered from the humus and one more from the very top of the strong brown layer, which becomes very hard, dry and sterile. This excavation was terminated at 45 cm below the surface.

Transect 21, 22, 23 and 24, west of wetlands

STPs T21-1, 22-1, 23-1 and 24-1 were all located either west of the wetlands or at the juncture of the tree line and *phragmites*. Modern trash was recovered from the first 45 cm (humus layer and sandy silt layer) of T21-1, after which a grey and yellowish brown layer was encountered which was sterile. This excavation was terminated at 53 cm below the surface. T22-1 yielded glass and shell from the humus layer (0-10 cm), and shell was recovered from the subsequent two layers, a dark grey layer 10-18 cm below the surface and a dark greyish brown layer that was excavated to a depth of 43 cm. These appear to be alluvial deposits.

STP T23-1 was similar to T19-1 and T20-1 in that it has six layers of red, yellow and greyish silty sand. However, shell and glass were recovered from Level 4 (15-25 cm below surface) and shell fragments from Level 6 (45-60 cm below surface). This STP was located in the vicinity of an abandoned, overgrown path extending north from Billop Avenue which is the likely location of a former road. Several of these strata possibly represent fill.

STP T24-1 was located at the junction of the tree line and *phragmites*, and the soil was very moist. Modern trash was recovered from the 15 cm humus layer as well as the

following dark yellowish brown layer of silty sand, 15-23 cm. The subsequent layer of silty sand was mottled with clumps of white clay and was sterile; this excavation was terminated at 50 cm below the surface.

Transect 21, 22 and 23, in wetlands

Several STPs were located in or on the edges of the wetlands to determine if there were older cultural remains below recent wetland deposits. T21-3 was located in the center of the wetlands, at its broadest extent within the area of CHP-1 and CHP-2. Four distinct strata were encountered, all were moist to inundated. The first layer was a very dark greyish brown soil 17 cm thick within which a piece of plastic was recovered. A black layer was then encountered, 17-25 cm. A piece of coal was recovered from the following brown level, 25-73 cm below the surface. Finally, a dark grey layer was encountered and the water table was reached at 94 cm below the surface. This excavation was terminated 100 cm below the surface with no other materials recovered.

T21-6 was located at the southwest edge of the wetlands within the CHP-1 and CHP-2 area. Under a 12 cm humus zone, a strong brown silty clay was encountered 12-63 cm below the surface. Glass was recovered from the top of this level, while scattered shell fragments were recovered from 20-40 cm. Another strong brown layer, which was sterile, was encountered from 63-90 cm, at which the water table was reached. Below this, a dark grey clay with a little red clay was excavated for another 10 cm. Notably, dense *phragmites* roots extend from the surface to the base of this excavation, a potential source of disturbance. The deposit appears to be alluvial build-up along the edge of Billop Avenue, which is elevated several meters above the lowest part of the wetlands.

T22-5 was located at the southern end of the CHP-1 and CHP-2 area where the wetlands meet Billop Avenue. Under a 6 cm layer of humus in which shell was recovered, a continuous deposit of dark yellowish brown clayey sandy silt was excavated to a total depth of 110 cm below the surface. The water table was not reached in this excavation, but the soil becomes moist at 60 cm and lumps of dark grey clay were beginning to be recovered at 105 cm. Shell, two lithics, and a ceramic fragment were recovered from this STP, the ceramic recovered from 94 cm below the surface. *Phragmites* roots were pervasive throughout this STP.

T23-4 was also located at the southern end of the CHP-1 and CHP-2 area, east of T22-5. This STP is located near what appears to be an old ditch or trench associated with a drainpipe that runs under Billop Avenue and is likely disturbed. A 20 cm layer of very dark greyish brown silty sand was excavated above a 3 cm thick humus layer. Shell, styrofoam and brick was recovered between these two levels. A strong brown layer was encountered 23-30 cm below the surface, beneath which was a very dark greyish brown layer with shell fragments. The excavation was terminated when the water table was reached at 90 cm below the surface. Again, these appear to be alluvial deposits with fill.

Transect 20A, 21 and 22, east of wetlands (array)

As T21-7 tested positive for lithic artifacts, T20A-1 was established as part of an array. T20A-1, slightly offset to avoid two trees, yielded only shell fragments in the 7 cm

humus layer, beneath which a sterile, strong brown silty sand was excavated to a depth of 50 cm below the surface.

T21-7, located up on higher ground above the wetlands, yielded shell, two lithics, and a ceramic in the 8 cm humus layer. Beneath this, shell and one lithic were recovered from a layer of dark brown silt, 8-27 cm. The final excavated layer was a strong brown clayey silt with fine sand; shell was recovered from the very top of the level, which became more compact with reddish mottling. The excavation was terminated at 65 cm below the surface.

T21-8 was established as part of the array around T21-7 and is located in the extreme southwest corner of the CHP-1 and CHP-2 area. Shell was recovered from the 4 cm thick humus layer. Two lithics, foam rubber, and 3 lbs of shell were recovered from the subsequent dark yellowish brown layer 4-20 cm below the surface, with the shell recovered from the east half, from 13.5-20 cm. The final layer was strong brown, coarse sandy silt, which was excavated to a depth of 60 cm, terminated due to rock obstruction. One lithic was recovered from 50 cm below the surface and shell fragments were scattered throughout the level.

Transect 22 and 25, along Billop Avenue

Two STPs were located just off of Billop Avenue. Both T22-6, located in the southwest area of CHP-1 and CHP-2, and T25-2 in the southeast, had much modern trash on the surface and in the top layer of humus which was mixed with considerable sand. In T22-6, the next layer yielded shell, two lithics, and modern trash, mixed with chunks of tar and asphalt. From 16-60 cm, a dark yellowish brown clayey silt was encountered. This layer was very compact on top and sterile; it probably represents fill associated with the construction of Billop Avenue. T25-2 had broken glazed household tiles and shell in the top layer. The following layer was a compact sandy clay which was excavated to a depth of 49 cm. At the intersection of the two levels, ceramic fragments, one lithic, and shell fragments were recovered. Again, the compact layer appears to be road construction fill. The recovery of lithics suggests a possible nearby precontact deposit, but the presence of modern trash as well clearly demonstrates the secondary or disturbed nature of these deposits.

Summary of Results

Out of 92 STPs excavated, 16 were found to be sterile, containing no modern, historic or precontact objects or features. These STPs were found largely along the eastern edge of CHP-1 and CHP-2. Another seven (7) STPs, again found largely within the eastern half of CHP-1 and CHP-2, yielded only modern materials, such as glass, metal, brick, plastic, rubber, styrofoam, etc. (not including shell, see discussion below).

Remains of a road extending south from the intersection of Clermont Avenue and Finlay Street into CHP-1 and CHP-2 were evident through segments of concrete sidewalk, curbs, and old asphalt. Further research indicates that the area of Conference House Park

underwent initial development in the 1920s under the administration of Mayor Hylan (Weingartner 1967: 41). Grading for the road is evident in the current topographic map of the CHP-1 and CHP-2 area, particularly on the west side (see Figure 2), although there is also visible evidence of grading on the east side as well. A 1911 topographic map of the area, prior to the construction of Finlay Street and the extension of Billop Avenue (then Depew Avenue), shows no evidence for grading at that time (Figure 3).

A culvert constructed of granite paving blocks is still present along the east side of the 1920s road. This appears to be a WPA-era (1930s) construction (pers. comm. C. Saunders, D. Gumb, M. Johnson, 2002), and grading is evident in the area of the culvert as well (see Figure 2). Several test pits in the immediate vicinity of the road and culvert in the northern and very southern areas of CHP-1 and CHP-2 revealed what appears to be sterile sandy fill with angular grey cobbles and, in some places, chunks of asphalt and tar (see STPs T4-4, T6-4, T7-3, T7-4, T8-4, T8-5, T9-4, T10-2, T12-5, T13-6, Appendix 1).

A total of 63 STPs yielded shell. Five STPs yielded very high densities of shell; these were located exclusively in the northern wetland and stream areas of CHP-1 and CHP-2, between Transects 9 and 16 on the west side of the stream, along the trajectory of the old road. Notably, either later historic period or modern debris was recovered from every STP with high shell density. Also, a total of 32 out of the 63 STPs with shell also had evidence of modern materials. Based on their proximity to the old road and presence of modern materials, these shell outcrops appear to be purposeful fill deposits, associated with the construction of the old road and/or the culvert during the early 20th century. Early 20th century mosquito control channels were constructed using shell and could also have contributed to the recovered deposits (pers. comm. M. Johnson, 2002). There is no direct evidence that the shell recovered from CHP-1 and CHP-2 was positively associated with Native Americans or 19th century oystering activity.

It is notable, however, that shell was not recovered directly under asphalt or concrete sidewalks; neither was shell recovered in crushed form, as might be expected if it was used as road fill. Many shells in dense deposits were recovered in large fragments, and in less dense deposits the shells were often decomposing. We can only speculate at this time that the dense shell locations could represent collection points, or perhaps mosquito-control channels. While other, less dense shell remains may be the result of recent redeposition by alluvial action, it is not possible to assign all other recovered shell a modern origin.

Further, six (6) excavations in the vicinity of the stream, culvert or the old road in the north half of CHP-1 and CHP-2 revealed an old buried humus layer which appears to be evidence of an earlier surface that was covered over. Organic lenses averaging less than 5 cm in thickness were found ranging from 22 to 53 cm below the surface, and excavations up to 46 cm below the buried organic layers revealed sterile alluvial deposits, low amounts of modern material, and in one case, a dense shell deposit. One excavation with a buried humus layer had a scattered shell deposit present above the buried organic layer. Alluvial processes appear to be responsible for many deposits present across CHP-1 and CHP-2, including the redeposition of shell.

Areas of excavation within the wetlands towards the south side of CHP-1 and CHP-2 where trees and catbriar give way to *phragmites* yielded few remains. Several excavations in the middle of the wetlands reached one meter or more below the ground surface. Standing water was reached in most cases, where moist, bioturbated soils gave way to dense clays. Where the north side of CHP-1 and CHP-2 shows more discrete alluvial or fill deposits, the south side of CHP-1 and CHP-2 within the wetlands shows thicker, more uniform deposits. The presence of modern trash such as plywood and in one case old tire tread under up to 40 cm of non-stratified soil along the edge of the wetlands indicates that the wetlands alluvium has perhaps in some cases accumulated rapidly. Comparing topographic maps of the area before and after the construction of Billop Avenue, it is apparent that the south end of the CHP-1 and CHP-2 area has been silted in, with alluvial pond sediments building up against Billop Avenue (compare Figure 2 and Figure 3).

Both the east and west sides of CHP-1 and CHP-2 slope up from the stream and wetlands, and these elevated, more well-drained areas do not appear to have been substantially graded in the past. Notably, higher, well-drained areas are known to have been preferred occupation areas for Native Americans. Particularly, the elevated northeast and southwest sides of CHP-1 and CHP-2 yielded the most precontact artifacts, which consisted exclusively of lithic material. The lithic artifacts include chert flakes, debitage from the production of stone tools, and one possible hammerstone. No finished products, such as projectile points or bifaces were recovered. A total of 28 STPs yielded lithic materials, none in high density. A cluster of ten (10) STPs located away from the stream in the northeast of CHP-1 and CHP-2 yielded chert flakes and the possible hammerstone. The second area of lithic recovery, on the elevated banks in the southwest of CHP-1 and CHP-2, was more dispersed but less compromised.

Of all STPs with lithics, 25 also yielded shell, and 19 yielded historic or modern materials, indicating that nearly all lithics were recovered from disturbed or secondary contexts. Five (5) of the STPs that contained lithics and shell but no historic or modern materials were located between Transects 14 and 18 on the west side of CHP-1 and CHP-2, but closer to the wetlands than the elevated banks.

The ubiquity of modern debris over the entire surface and throughout deposits within the zone of CHP-1 and CHP-2 is evidence of pervasive continuing disturbances, largely caused by the movement of water and subsequent redepositing of alluvium, especially in lower sections of the site around the old culvert and stream, and in the wetlands. Large deposits of shell seen in the stream and in the wetlands are mixed with both historic and modern material and appear to have been deposited as fill. But the ubiquity of shell in lesser quantities over the entire area is evidence of the degree to which these deposits have been dispersed over a relatively short period of time.

Elevated areas on the east and west sides of CHP-1 and CHP-2 appear to have not been substantially graded and did yield precontact artifacts in low quantities. However, the

presence of shell, historic and modern debris along with these precontact artifacts indicates that these areas have also experienced disturbance, probably through alluvial movement and 20th century construction. This is best exemplified in the two STPs adjacent to Billop Avenue, where precontact lithics were recovered in the same strata as historic and modern trash, located on top of 20th century road fill.

The possibility remains that less-disturbed archaeological resources exist further east or west of CHP-1 and CHP-2, beyond areas of 20th century disturbance, and outside of the proposed area of impact. While lithic materials were recovered mainly from disturbed contexts, there is reason to believe their original provenience is local (i.e. nearby).

CHP-1 and CHP-2 Project Revision

As noted in the Phase 1A study, Conference House Park is highly sensitive for precontact resources. It is possible that the precontact artifacts recovered from the CHP-1 and CHP-2 area were redeposited from the protected parkland that abuts the originally proposed CHP-1 and CHP-2 area of impact (Figure 2). On the basis of the archaeological testing results, Historical Perspectives suggested to DEP's project engineers that re-design of the CHP-1 and CHP-2 impact in the southwest, elevated edge – the area of recovery at Transects 15 and 16 – be seriously considered. Figure 4 (as supplied by Hazen & Sawyer, December 2002) depicts the revised limits of disturbance in the area of Transects 15 and 16 on the west side of the stream corridor. This revision clearly moves grading activities away from the most potentially sensitive area of the CHP-1 and CHP-2 corridor.

Conclusions

The field investigations clearly revealed evidence for pervasive disturbances throughout the CHP-1 and CHP-2 area. It appears that land areas are less disturbed the further they are from the stream and wetlands, and undisturbed land areas may exist just outside of the CHP-1 and CHP-2 footprint to the east and west on elevated land. It is quite possible that the precontact lithic artifacts recovered from the east and west sides of the CHP-1 and CHP-2 area were redeposited by natural forces of alluviation from nearby areas. A potentially sensitive archaeological zone is a well-drained land area on the west side of CHP-1 and CHP-2 southwest of the culvert (Transects 15 and 16). This potentially sensitive archaeological zone has already been removed from the limits of disturbance; it now falls within the protected bounds of City Park land.

As the test results indicate that the non-CHP-1 and CHP-2, elevated land areas away from the disturbed stream corridor are possibly sensitive for precontact materials, measures should be instituted to protect these zones from accidental intrusion or disturbance during the proposed DEP improvements. Recommended action involves the installation of a visual and physical barrier separating tested from non-tested potentially sensitive areas prior to grading and other development activities. The installation of the barrier should

be coordinated with an archaeologist from HPI who is familiar with the completed CHP-1 and CHP-2 archaeological investigation.

As a function of their on-going responsibilities for Conference House Park, the NYC Parks Department prohibits any earth-moving activities within the Park bounds without prior consideration for archaeological resources. Any intact precontact resources in the elevated land areas east and west of the DEP's CHP-1 and CHP-2 stream corridor improvements will be protected through the Parks Department.

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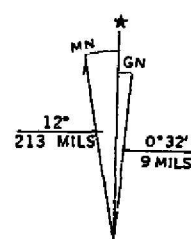
Mapped, edited, and published by the Geological Survey
Revised in cooperation with New York Department
of Transportation

Control by USGS, NOS/NOAA, and USCE

Planimetry by photogrammetric methods from aerial photographs and from NOS
charts T-5105, T-5106, T-5107, T-5108, T-5109, T-5110 and T-8540

Topography in New York by photogrammetric methods from aerial photographs
1954. Field checked 1955. Topography in New Jersey by planetable surveys 1955
Revised from aerial photographs taken 1966. Field checked 1966

Selected hydrographic data compiled from NOS charts 285 (1966), 286 (1966),
and 369 (1967). This information is not intended for navigational purposes



UTM GRID AND 1981 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

Figure 1: Portion of U.S.G.S. map Arthur Kill NY - NJ quadrangle showing location of
project area (Scale 1:24000).

ASPINWALL STREET

CLERMONT AVENUE

FINLAY STREET

BLOCK 7924

BLOCK 7925

BLOCK 7934

12' WIDE PERMANENT
MAINTENANCE ACCESS
WAY (445 L.F. ±)
W/ GARVEL
SEE DWG. D

(3) 60"W x 38"H
ELLIP. RCP

HEADWALL
SEE DWG. S

OUTLET STILLING BASIN
W/ NATURAL FIELD
STONES TO EL. 8.31
BOT. EL. 3.00

ARCHAEOLOGICAL TESTING

- T Transect
- Transect Interval Test
- Sensitive Locus Test
- Judgmental Test
- Unexcavated due to inundation or other disturbance

WARNING
IT IS A VIOLATION OF SECTION 2206.2 OF THE NEW YORK STATE
EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE
PROVISION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN
ANY MANNER ANY PLANS, SPECIFICATIONS, PLANS OR REPORTS IN WHICH
THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN
INDIVIDUAL ALTERS SUCH PLANS, SPECIFICATIONS, PLANS OR REPORTS,
THE INDIVIDUAL SHALL BE SUBJECT TO THE PENALTIES OF THE LAW.
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DESIGNED
DRAWN J.A.F.
CHECKED R.D.S.
SECT. CHIEF
PROJ. ENGR. S.M.

SCALE
1"=20'-0"
CAD REF
BMP-1E1

HAZEN AND SAWYER
Environmental Engineers & Scientists

HAZEN AND SAWYER, P.C. • 498 SEVENTH AVENUE • NEW YORK, NEW YORK 10018

APPROVED FOR THE CITY OF NEW YORK

PROJECT MANAGER



CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER AND SEWER OPERATIONS
CAPITAL PROJECT SE-1 AND SE-100
STORM WATER AND SANITARY DRAINAGE
MANAGEMENT PLAN FOR SOUTH RICHMOND
STATEN ISLAND, NEW YORK

STORM WATER AND SANITARY DRAINAGE PLAN
CONFERENCE HOUSE PARK DRAINAGE AREA

EXISTING SITE PLAN
SHEET 1

DATE JUNE 2002
SHEET OF
DWG. NO. C-2

NO.	DATE	ISSUED FOR	BY

06/17/02 JAF

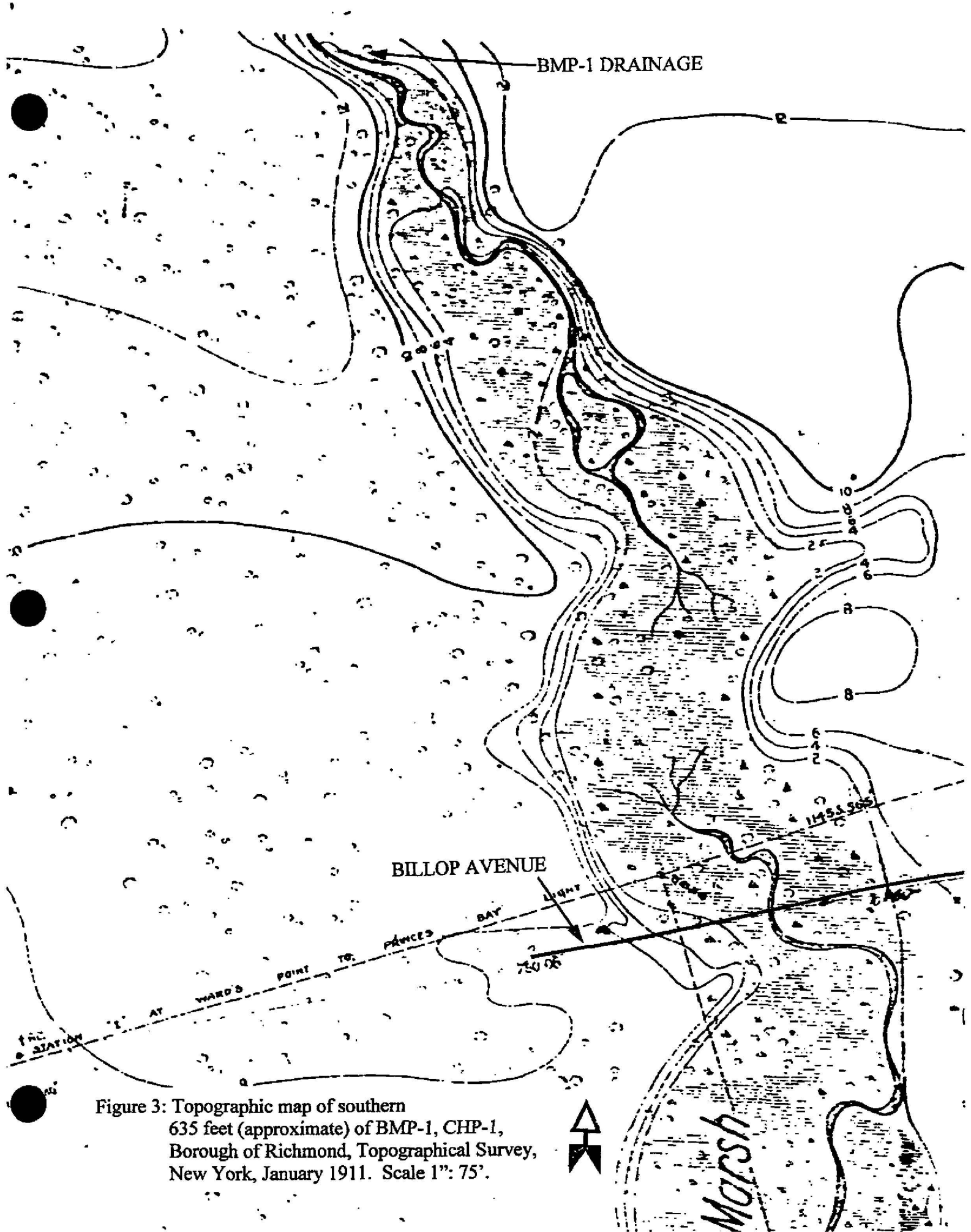


Figure 3: Topographic map of southern
635 feet (approximate) of BMP-1, CHP-1,
Borough of Richmond, Topographical Survey,
New York, January 1911. Scale 1": 75'.

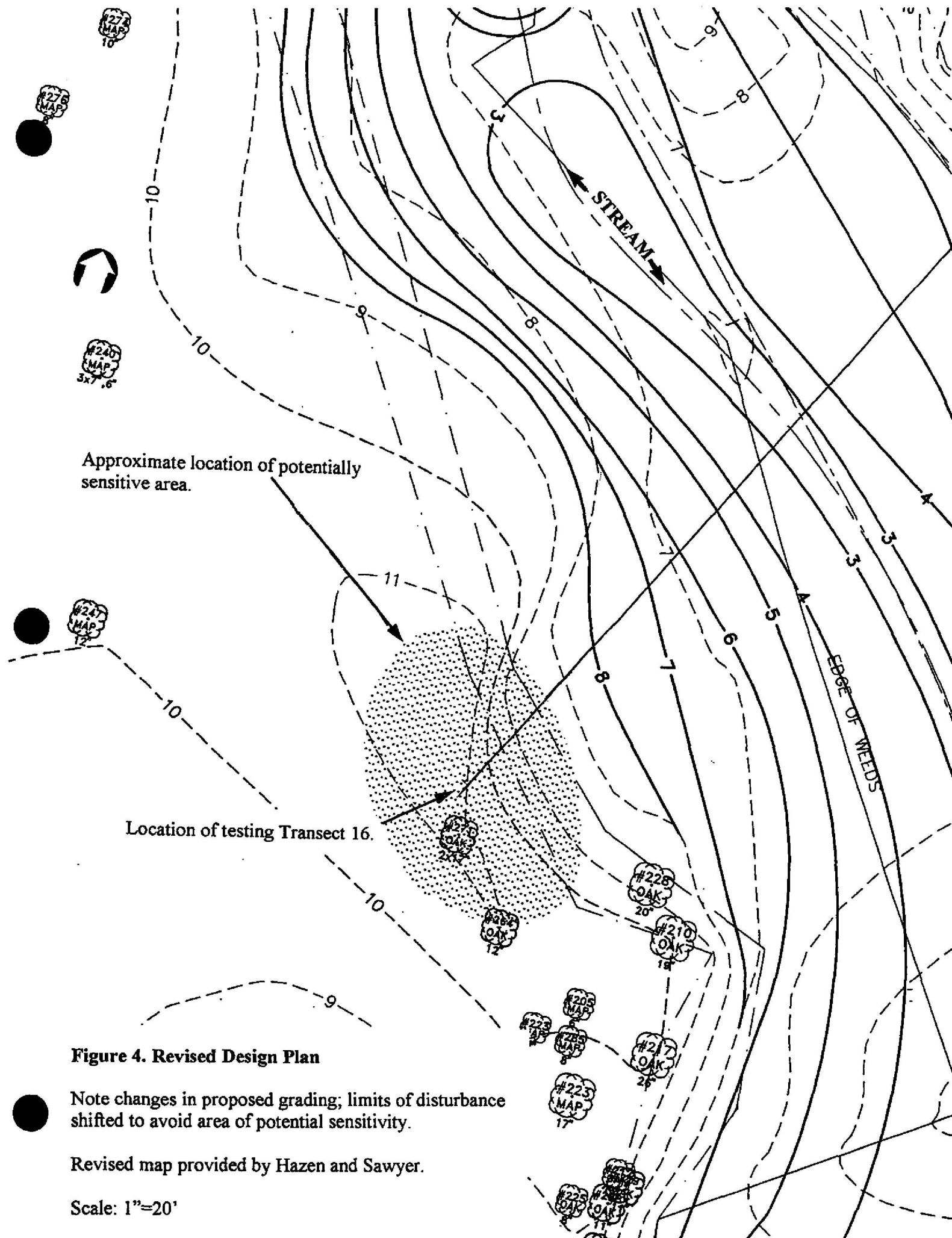


Figure 4. Revised Design Plan

Note changes in proposed grading; limits of disturbance shifted to avoid area of potential sensitivity.

Revised map provided by Hazen and Sawyer.

Scale: 1"=20'



Photo A: Looking South along BMP-1 from Clermont Ave. and Finley St.



Photo B: Looking Northeast along Transect 3, through clearing.



Photo C: Looking Northeast along Transect 7, culvert visible.



Photo D: Shell deposits in Northeast side of stream, along Transect 9.



Photo E: Looking South towards Billop Ave. from Transect 9 (mid-BMP), stream on left side of photo.



Photo F: Looking Southwest along Transect 13; *phragmites* across stream.



Photo G: Looking South towards Billop Ave. from Transect 16, STP 2, at stream.



Photo H: Looking Southeast along Transect 18.



Photo I: Looking South along BMP-1 from Transect 22, STP 5, almost to Billop Ave.,
note dense *phragmites*.



Photo J: Looking North at BMP-1 from Billop Ave.



Photo K:
Transect 4A,
STP 2 Excavation
(all sterile).

Photo L: Transect 6, STP 1 Excavation (positive for lithics, but disturbed).

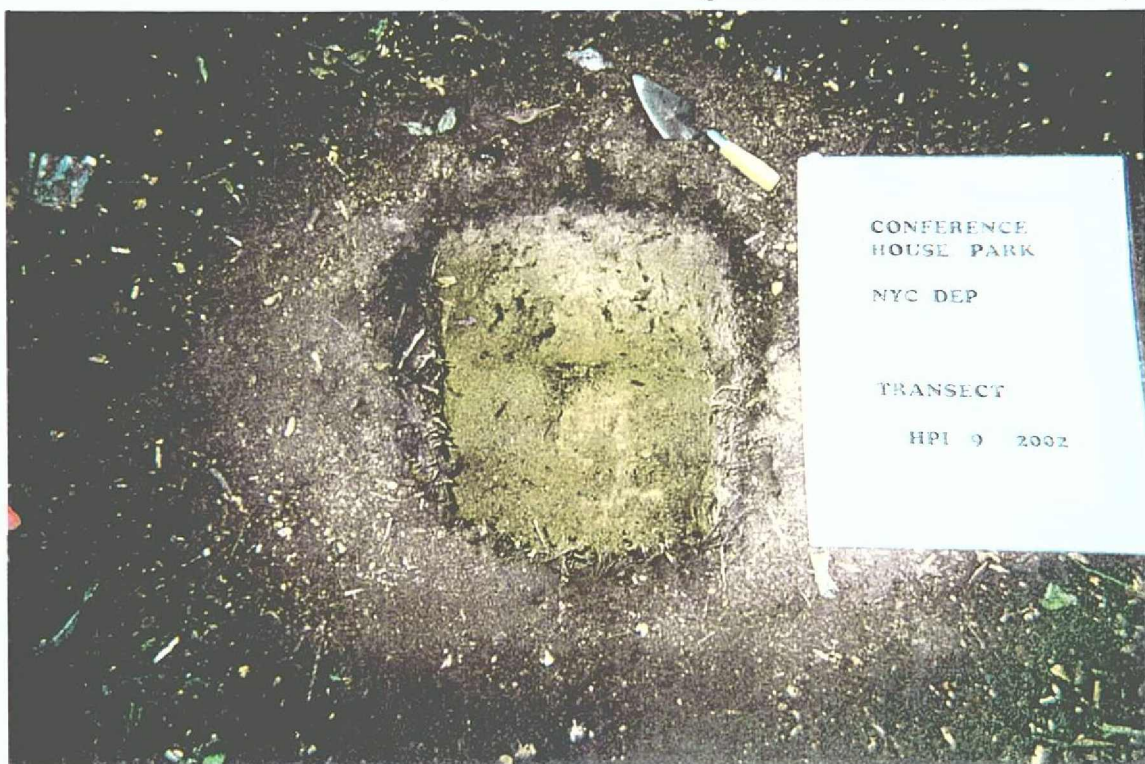




Photo M: Transect 6, STP 4 Excavation (remains of road fill present).



Photo N: Transect 8,
STP 5 Excavation
(concrete curb shown,
fill above sterile soil).



Photo O: Transect 10, STP 3 Excavation.