

Cultural Resources

▶ Discovering New Jersey's Transportation Past
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Digest

Governor Jon Corzine

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Commissioner Kris Kolluri

>location:

old bridge township
middlesex county

>resource types:

archaeological (historic)

>action:

survey/inventory
evaluation of significance
project redesign
data recovery



Old Bridge Township
Middlesex County

The *Cultural Resources Digest*, published by the New Jersey Department of Transportation, summarizes information from professional studies in archaeology, history and historic architecture conducted during the development of transportation projects. Visit us at <http://www.state.nj.us/transportation/works/environment/>

The Morgan Pottery Road Widening Spares 18th-Century Kiln Site



The site of the Morgan pottery was littered with fragments of 18th-century stoneware artifacts when this photograph was taken, about 1950. Most of this material was comprised of kiln debris and unmarketable wares, damaged during firing, called “wasters” [Source: New Jersey State Museum].

Cheesequake, the village in Old Bridge Township with the memorably odd name, today shows no signs of its pivotal place in the history of American stoneware manufacturing. Because of its proximity to extensive beds of high-quality clay located near Cheesequake Creek, in the latter part of the 18th century (and well into the 19th) Cheesequake was home to two potteries manufacturing salt-glazed stoneware. The two potteries—Morgan and Warne & Letts—were among a very small number of similar establishments in the Middle Atlantic region and were among the most important historically for their role in fostering the growth of the domestic stoneware industry.

Besides finished goods, the Morgan family also shipped raw clay to other potteries from Maine to Georgia and as far away as western New York and Canada, contributing to the growth of stoneware production throughout the region.

Archaeological testing carried out in advance of the widening of N.J. Route 34 located one of the stoneware kilns in an area slated for construction. The project was redesigned to minimize its impact on the pottery site, and further archaeological excavations rescued artifacts that otherwise would have been lost. Today the site remains largely intact, invisible to passers-by.

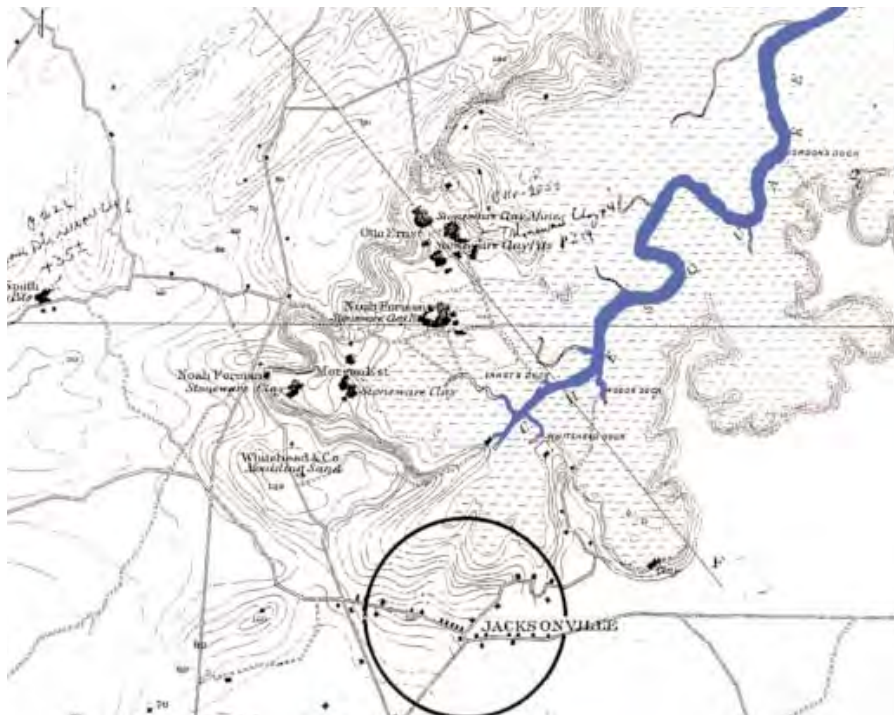
Cradle of American Stoneware

Although stoneware was well known in Europe, the first clear evidence of stoneware manufacture in the American colonies occurs in the 1720s and 1730s, when the first dated pieces appear. By the early 1730s there were two stoneware potteries in Manhattan, a little more than 20 miles from Cheesequake by water. The principal potters there were William Crolius and Johannes Remmey (or Remmi), both recent immigrants from the stoneware-producing Westerwald region of Germany.

Cheesequake would become an epicenter of the colonial stoneware industry. It was blessed with abundant high-quality clay nearby, convenient waterways for the shipment of finished products, and proximity to New York's markets and skilled labor. Timber fuel to fire the kilns was widely available in the vicinity.

Into this nearly ideal environment (from a potter's perspective), an industry was transplanted from Europe. In the nature of pre-industrial cottage industries, strong ties bound the participants to each other and to the place. Potters' families intermarried, operated vacant works for their neighbors or relatives, hired the children of friends and relatives and partnered in various business ventures (stoneware and otherwise). In the case of the Cheesequake potters, these linkages eventually spread like ripples on a pond through central New Jersey and Manhattan, but also as far as other potting centers such as Troy, New York.

No buildings survive in Cheesequake that are associated with the two potteries that once flourished there, and no plaques mark their sites, but together the Morgan and Warne & Letts factories, and the potters who worked



This geological map drawn in 1875 shows the relationship of Cheesequake (then called Jacksonville, circled) and Cheesequake Creek. Stoneware clay occurs in the valley sides northwest of the creek [Source: Barton, J.K., Map of the Clay District of Middlesex County].

there and then moved on to open new potteries elsewhere, played a key role in the development of the American stoneware industry.

* * *

The south bank of Raritan Bay is known to geologists as the Raritan Formation, comprised of beds of clay and sand with names like the South Amboy Clay, peach blossom clay and the Woodbridge Clay (depending on characteristics such as coarseness). Outcrops of South Amboy Clay, in sloping beds up to 30 feet thick, lie close to the bay and Cheesequake Creek, and these were to become one of the main sources of raw material for the stoneware industry. Initially the clay was only used locally, but as transportation improved, it was shipped throughout the Mid-Atlantic region and beyond, ultimately as far as the southern colonies, upstate New York, New England and Canada.

About Stoneware

Stoneware is a dense, highly-fired type of pottery. Firing typically is at 1,200° to 1,400°C (about 2,200° to 2,550°F), at which temperatures the clay vitrifies. The result is a hard, non-porous pottery that is particularly suitable for food storage. Vessels—crocks, jugs, tankards, pitchers—are usually gray- or brown-bodied, and decoration can be applied and/or incised. Either type of decoration is typically blue, brown or purple (from cobalt, iron or manganese respectively). Salt glaze, achieved by throwing common salt into the kiln during firing, results in a hard, glossy glaze with a slightly pitted, "orange peel" texture.

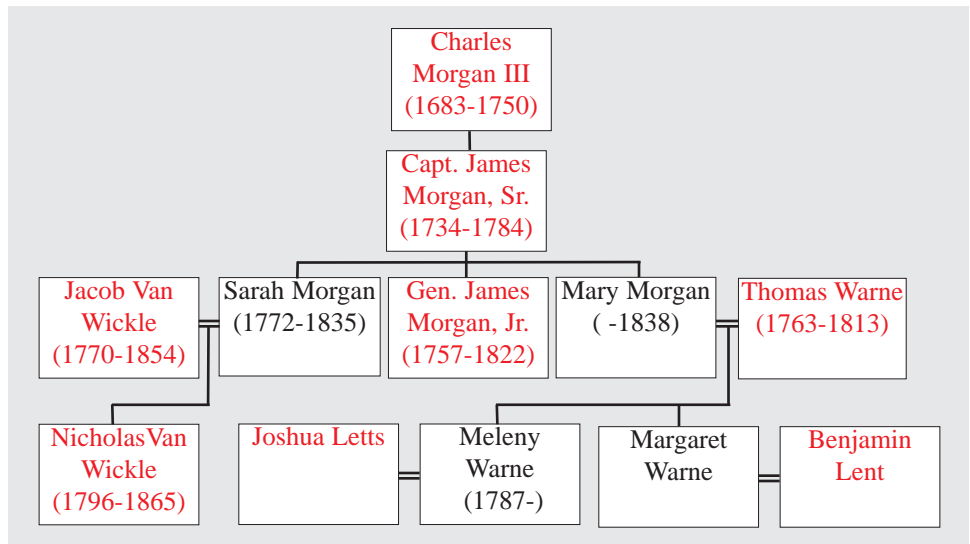
Brown stoneware was developed in Germany in the 13th century and was being exported to England by the 14th. These goods were followed by blue and gray stoneware, also German, developed in the 16th century and also exported to England. By the end of the 17th century and through much of the 18th, this type of stoneware was being produced in England, France and Holland and would have been familiar to most-colonists emigrating to America.

One large expanse of South Amboy Clay would come to be known as the Morgan Clay Bank. Charles Morgan purchased this tract, near Cheesequake Creek, in 1710, and 20 years later he purchased additional clay-bearing land farther upstream. Charles Morgan was not a potter, so it is presumed that his interest in these lands was in the mining and sale of clay, rather than the production of pottery. If the Manhattan potters were using South Amboy Clay for their stoneware, it is likely that it came from the Morgan Clay Bank.

Charles Morgan died in 1750. His son Captain James Morgan apparently established the Morgan pottery in Cheesequake around 1770; in that year he mortgaged the land where the factory would later stand, possibly to raise the necessary capital. Sherds bearing dates in the mid-1770s have been found at the site, and Morgan later submitted a claim for damages to the kiln inflicted by the British in 1779.

Like his father, James Morgan was primarily a businessman rather than a potter. Apparently his role was that of pottery owner, supplying clay, employing skilled potters and marketing the finished products. He also experimented with incorporating some lower-quality clays, such as peach blossom, into the stoneware. Based on the types of stoneware produced, and the styles of surface treatment and decoration, some of the Morgan potters were apparently trained in the German tradition and may have come to Cheesequake via the Crolius or Remmey potteries in New York City. Because of the proximity of Manhattan to Cheesequake, it is not impossible that members of the Crolius or Remmey families may have had a more direct association with the Morgan pottery, and in this context it is tantalizing to note the appearance of a William Crolius in the tax rolls for South Amboy Township between 1786 and 1790.

Captain James Morgan's son, also James but referred to as General James Morgan, inherited the pottery from his father in 1784. He sold it in 1801, apparently marking the end of the Morgan pottery, although not the end of the family's involvement with stoneware and Cheesequake. General James Morgan had a hand in another stoneware pottery in Troy, New York, that was in

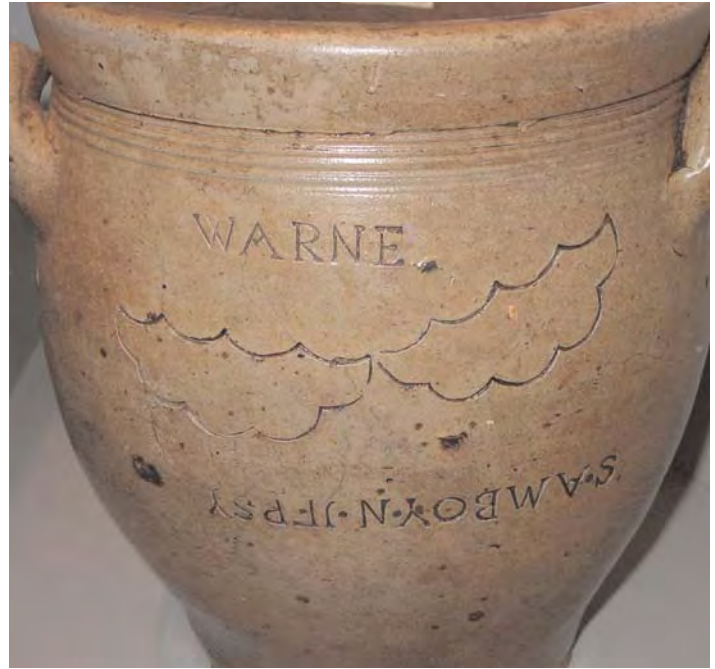


This partial family tree of the Morgan and Warne families shows some of the relationships among the potters of Cheesequake over four generations. Individuals known or believed to have been active in pottery manufacture are shown in red.

operation in 1801, and was a partner in the well-known Morgan-Van Wickle pottery established nearby in what is now Old Bridge, New Jersey in 1805. Jacob Van Wickle, one of Morgan's partners, was married to Sarah Morgan, James Morgan's sister. The other partner was Branch Green, a native of Troy, New York who had arrived in Old Bridge by 1803.

Around the time the Morgan pottery closed, Thomas Warne established another stoneware pottery at Cheesequake across the street from the Morgan works. By 1804 Joshua Letts had joined the business, which then became Warne & Letts. Warne & Letts produced goods similar (but not identical) to Morgan's. Warne, who was a potter by trade, was married to Mary Morgan, another sister of General James Morgan, and he may have learned the craft at the Morgan pottery in the 1780s. The ties among the pottery families were strengthened in 1805, when Letts married Warne's daughter.

Thomas Warne died in 1813, and within the next two years Joshua Letts and his partner's widow, Mary Morgan Warne, had sold the pottery to her brother, General James Morgan. General James Morgan owned the Warne & Letts pottery at the time of his death in 1822, and operations were intermittent for the next several years. Letts may have continued on, renting from General James Morgan. There is circumstantial evidence that Joseph Henry Remmey may have been operating it around 1820, although this has not been proven. Remmey lived in South Amboy at the time, apparently moving there after his grandfather closed the old Remmey pottery in Manhattan. Benjamin Lent is also a



Stoneware storage jars from the Morgan and Warne & Letts potteries, dating from the late 18th century and early 19th century respectively. The Morgan piece (left) illustrates the “double watchspring” design, applied in cobalt blue slip. The Warne & Letts decoration (right) was inscribed into the green unfired clay [Sources: Ketchum, 1991 p. 77; Hunter Research, Inc.].

name associated with the site in the late 1820s; shards marked "B. Lent" have been found there. Lent was the son of a pottery owner from Troy, New York (where Morgan clay was being sold around the turn of the 19th century). Like Joshua Letts, he was a son-in-law of Thomas Warne, having married one of Warne's daughters. At the time of its closure in 1835, the Warne & Letts pottery was owned by Charles Morgan (a son of General James Morgan). This closing marked the end of nearly three-quarters of a century of stoneware manufacture in Cheesequake.

The Morgan and Warne & Letts Wares

Both the Morgan and the Warne & Letts potteries took full advantage of stoneware's characteristic impermeability: jugs and food storage vessels apparently comprised the majority of their wares. Both also produced chamber pots.

Decoration on both potteries' wares is consistent with the German stoneware tradition, although there are discernible differences between them. Both made extensive use of brushed-on slip decoration (applied as tinted, liquefied clay) and incised motifs on the upper body, shoulder and neck of the vessels. The preferred color for brushwork was blue, derived from cobalt oxide, although a wider range of colors including greens, browns and purples (from copper and iron oxides and

manganese dioxide) was used by Warne & Letts. Both potteries commonly used the technique of highlighting incised decoration with brushed color slip infill.

Morgan wares were often decorated with various floral motifs in blue, but the most recognizable motif is the blue so-called "watch spring," a thin linear spiral design. By contrast, Warne & Letts wares, unlike Morgan's (and most other potteries'), were surface-decorated using stamped and rouletted treatments, sometimes accompanied by brushed and incised decoration. This use of carved dies and cogwheels to produce uniform ornamentation represents a shift in stoneware manufacture away from the small-scale cottage industry of the 18th century towards faster, larger-scale and more standardized operations.

Twentieth-Century Archaeological Investigations

The site of the Morgan pottery had been extensively excavated by collectors and antiquarians early in the 20th century. However, it was not until improvements became necessary at the intersection of N.J. Route 34 and Cottrell Road that systematic archaeological investigations took place. Preliminary testing in early 1992 of the areas where construction would occur indicated the likely presence of significant subsurface remains. More extensive testing the same year was accompanied by

Historical Archaeology and Pottery Sites

Pottery sites from the historical period, like other narrowly focused industrial sites (such as blacksmith shops), can be expected to yield certain broadly predictable classes of artifacts. In the case of a pottery, these include *kiln debris*, *kiln furniture* and *wasters*.

All fired pottery is fired in a kiln, essentially an oven in which it is baked. *Kiln debris* is the remains of the construction or operation of a kiln, such as salt-glazed brick fragments, charcoal, or a hard-burned floor surface.

When the green (unfired) wares are stacked in the kiln, unfired pieces of clay called *kiln furniture* are placed under and between them for support and to allow for even firing. Depending on their shape or function, the various types of kiln furniture have names like pads, trivets saggars or wads. Used once and discarded, kiln furniture can rapidly accumulate at an active pottery.

Wasters are wares that were fired but were discarded because they were not of marketable quality. They provide valuable clues as to what was being made at a particular pottery and how it was decorated. Test vessels are a specialized type of waster. They were placed near a hole in the kiln, plugged by a brick that was periodically removed to inspect progress of the firing. Vessels near the hole would be damaged by the fluctuating temperature, so an already-spoiled vessel of about the same thickness and size as the rest of the load was placed there.

detailed documentary research into the history of the Morgan and Warne & Letts potteries and the individuals associated with them.

These efforts definitively located the site of the Morgan pottery, as well as either the primary Warne & Letts pottery or an ancillary dump site. Shovel tests in areas previously collected encountered an abundance of salt-glazed stoneware sherds and kiln furniture, sometimes in layers several inches thick. Also present were brick fragments, some bearing a heavy salt glaze. The latter were clearly part of the kiln, the brick receiving another coat of glaze with each firing.

During the second phase of testing, three excavation units were opened at the Morgan site to understand more fully the nature and significance of the remains. The first of these revealed the curving brick perimeter wall of a kiln, within which was a three- to four-foot thick deposit of charred sandy clay with brick rubble and kiln debris. The brick wall was about one foot thick, constructed of irregular bricks and bonded with clay.

A heavily salt-glazed arch, probably one of several, was bonded into the wall and clearly served as a radial support for an upper kiln chamber; a fragment of what may have been a mortared floor for this chamber was roughly level with the top of the arch. Removal of all debris within the kiln revealed an intensely burned clay floor impregnated with charcoal. Clearly, this was the firebox beneath the firing chamber.

A second excavation unit, about 10 feet away and slightly uphill from the first, yielded a layer of stoneware wasters, kiln furniture fragments and kiln debris, beneath

which was a dry-laid ironstone foundation, aligned toward the firebox located in the first excavation unit. One side of the foundation—obviously the inside—had clearly been subjected to intense heat due to the condition of the stone. Inside the foundation was a densely-packed layer of wasters and kiln rubble extending down to undisturbed subsoil.

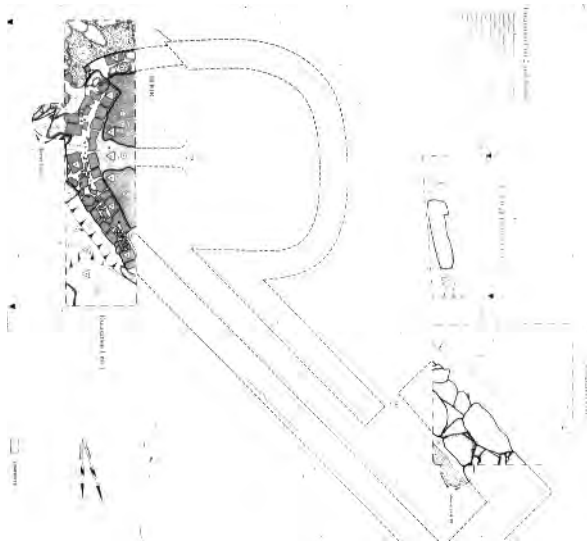
The foundation was the remains of a flue structure attached to the kiln on its uphill side so as to maximize the updraft effect during firing. Systematic probing with a steel rod in the area between the two excavation units revealed the general outline of the flue and possibly that of the unexcavated area of the kiln.

Since the Warne & Letts site would not be affected by the roadway project, the recovery of artifacts was not as systematic nor as extensive as at the Morgan site. Warne & Letts artifacts were recovered for comparison

with those from the Morgan site, but under these circumstances, valid statistical comparisons of the assemblages were not possible because the Warne & Letts artifacts did not constitute a representative sample of the site.

Physical confirmation of the survival of the Morgan kiln so close to the proposed construction zone warranted reconsideration of the road widening project. As originally envisioned, N.J. Route 34 was to have been widened by building an earthen slope adjacent to the existing road. This slope would have extended several dozen feet out from the present edge of the road, and would have been constructed using heavy equipment. Given the inherent fragility of a pottery site and the like-

“Shovel tests...encountered an abundance of salt-glazed stoneware sherds and kiln furniture, sometimes in layers several inches thick.”



(Above) Plan view of the Morgan Kiln in Cheesequake, 1992. The detailed drawing at top left is the area actually excavated, showing the foundation of the kiln; the dotted line indicates the likely location of the remainder of the foundation as revealed by probing. The flue extends toward the lower right. (Left) The excavated foundation of the kiln, corresponding to the detailed drawing [Source: Hunter Research, Inc.].

likelihood of severe damage, the entire kiln site would have to be systematically excavated in advance of construction.

But there was a better solution. The road could be widened, with minimal impact on the kiln site, by replacing the slope with a vertical retaining wall. While data recovery would still be necessary, the project's footprint (and the cost of data recovery in time and dollars) would be greatly reduced. The project design was revised using this new scheme.

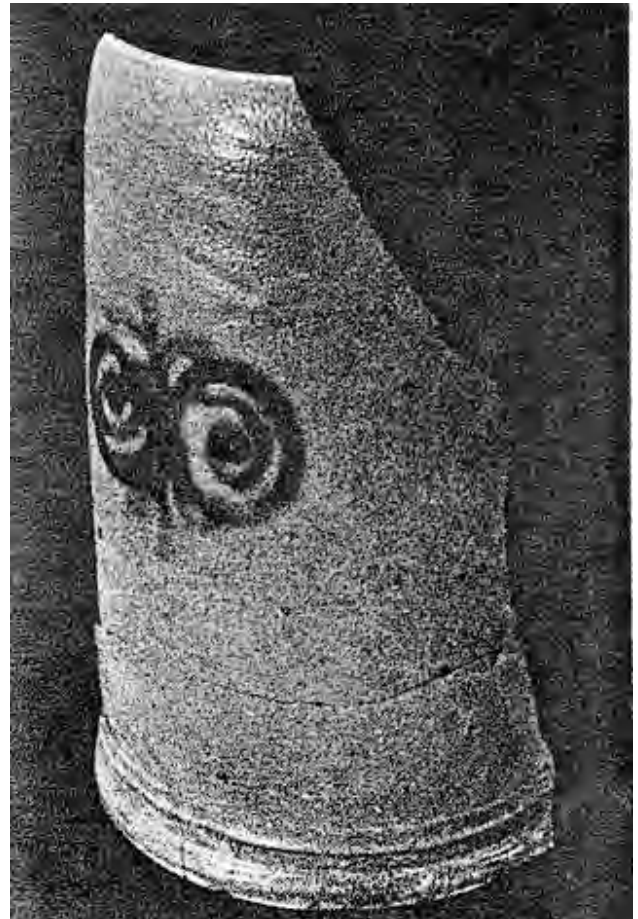
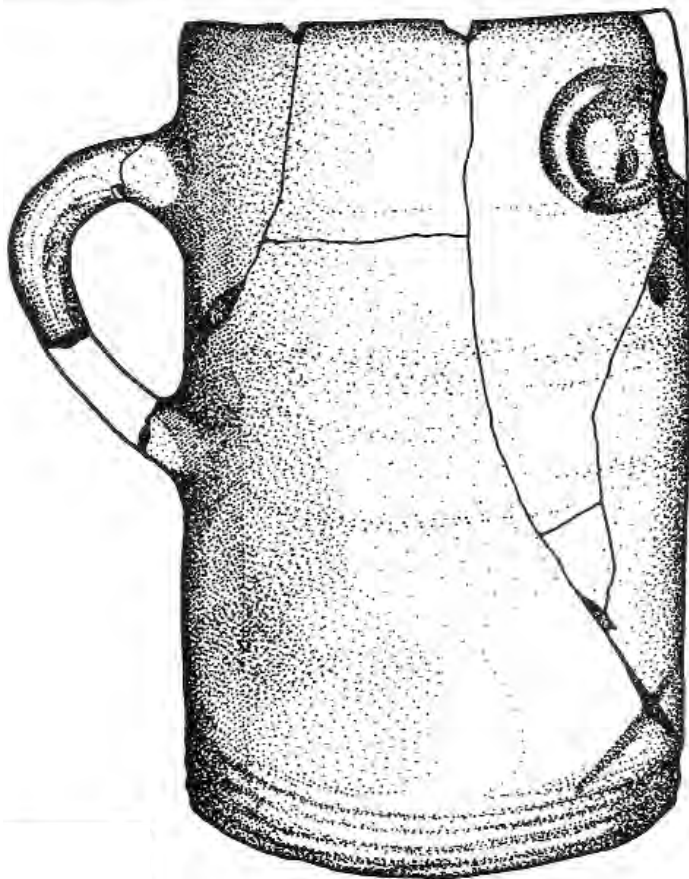
The portion of the site to be affected by the construction was now limited to the footing of the retaining wall, about 10 feet wide and 60 feet long. A program of data recovery was devised in which 12 five-foot square excavations would be opened, in a checkerboard pattern centered on the centerline of the wall. This pattern was ultimately modified slightly to avoid obstructions such as tree stumps.

The information gleaned from the data recovery excavations complemented and extended what was already known about the Morgan kiln from the previous work. Again, the principal types of artifacts were kiln debris (upper and lower kiln chamber brick fragments), kiln

furniture, saggars and stoneware waster sherds from crocks, crock lids, jugs, jars, chamber pots, bowls, pitchers, mugs and colanders.

Kiln furniture was voluminous, and about two-thirds of the items recovered were pre-made; the rest were makeshift clay wads. The sherds recovered were mostly from storage vessels, as had been the case in the earlier investigations. Decorated surfaces were brushed cobalt blue oxide or trailed slip; sherds bearing incised decoration were scarce. Of the 44 sherds with decorative motifs recovered during both phases of excavations, 42 employed the Morgan "watch spring"; the other two were floral and checkerboard (one each).

Sixteen sherds were cross-mended to produce 70% of a one-pint mug, probably made in the late 18th century. It has a cobalt blue slip double watch spring decoration located opposite the handle. This is very similar to a mug recovered at Raritan Landing, a colonial port located a short distance upstream on the Raritan River, suggesting that Morgan wares may be marketed and/or shipped from there. That vessel, although slightly smaller, also has a cobalt blue double watch spring opposite the handle.



Left: Drawing of a cross-mended one-pint mug reconstructed from sherds recovered from the Morgan kiln site. The double watch-spring design is prominent. Right: A similar vessel was recovered at Raritan Landing, near New Brunswick [Sources: left, Hunter Research, Inc.; right, Grossman, J.G. et al, Raritan Landing: The Archaeology of a Buried Port].

What Was Learned

The research done in conjunction with the first archaeological investigation confirmed the Morgan pottery's pivotal role in the emergence of the American stoneware industry in the late colonial and early federal periods. The subsurface investigations located a kiln, the heart of the operation, at that time one of only two substantially intact stoneware kilns of its type and period to have been discovered in the Middle Atlantic region. Since the Cheesequake excavations two other 18th-century stoneware kilns have been discovered in Trenton, both associated with James Rhodes. Only one other well-preserved 18th-century stoneware kiln is known in the former American colonies, in Yorktown, Virginia.

The early archaeological investigations verified that the Morgan site was in fact in a location that would be affected by the road project, with the result that the widening was redesigned to minimize the impact. The final excavations, within the footprint of the retaining wall, showed that that the core of the kiln site had been

avoided, and the artifacts recovered added to the assemblage of known wares produced during the ownership of Captain James Morgan.

What Happens to the Artifacts?

A typical archaeological investigation can yield from a few dozen to many thousands of artifacts, depending on the size and complexity of the area of inquiry and the intensity of the study. Some types of material, such as bricks, mortar or coal ash, are noted in the field as to quantity, provenience and location, then usually discarded. Inherently informative types of artifacts, such as stone tools, ceramics and coins, are labeled as to their provenience, then taken to an archaeological laboratory where they are cleaned, numbered and catalogued into a database. Some choice artifacts may undergo conservation, especially those that might eventually be displayed in a museum. Information about the artifacts is included in the written report prepared by archaeologists after they have finished their field and laboratory studies.

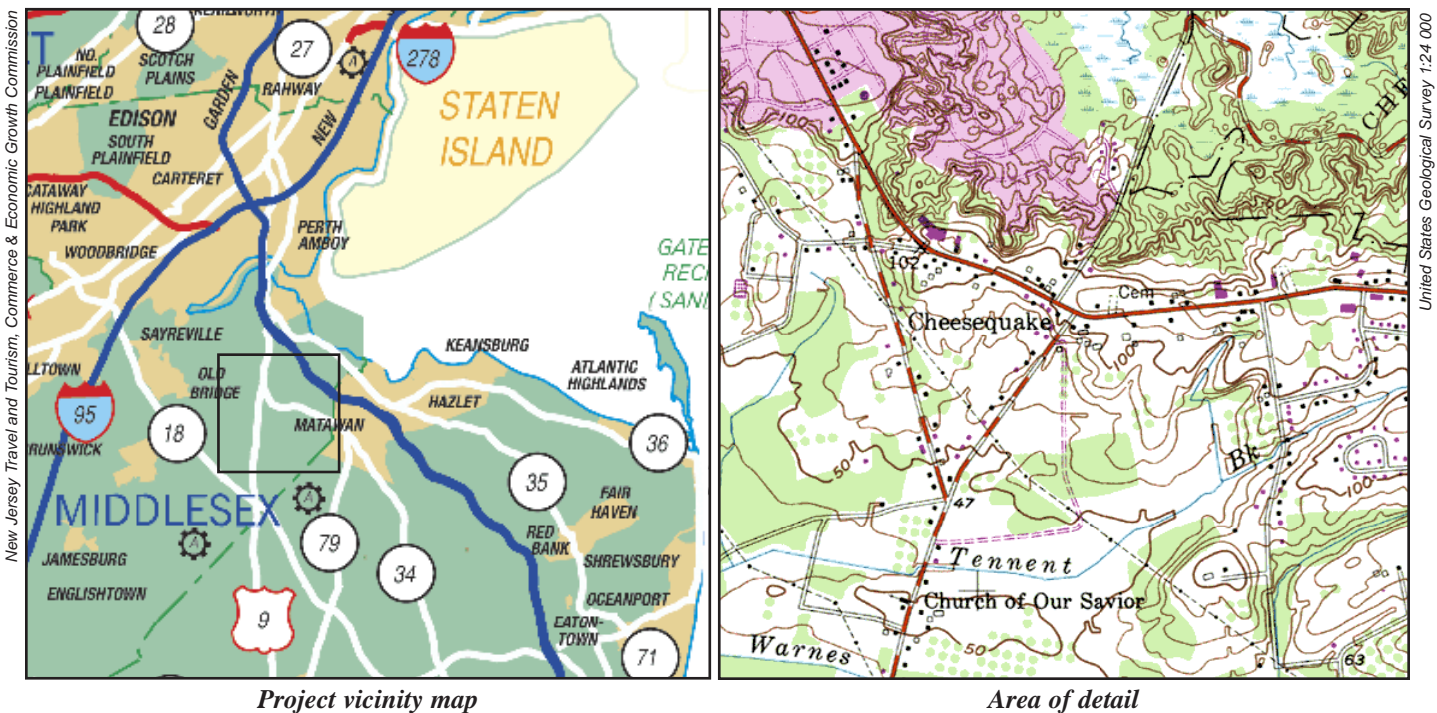
When a report is complete, the artifacts are packed in museum-quality storage cabinets and delivered, with a complete written inventory, to the New Jersey State Museum for long-term care, display and/or future research. Alternatively, NJDOT has in the past transferred custody of artifacts to a responsible local organization (such as a historical society) at their request for safekeeping and display.

Project: Intersection Improvements, N.J. Route 34 and Cottrell Road
Location: Old Bridge Township, Middlesex County
Date: 1992, 1997
Consultant: Hunter Research, Inc., 120 West State Street, Trenton, NJ 08608

For More Information...

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Additional information on transportation projects and historic preservation is available from the Division of Environmental Resources, New Jersey Department of Transportation (<http://www.state.nj.us/transportation/works/environment/overview.htm>), the Federal Highway Administration (<http://www.fhwa.dot.gov/environment/archaeology/index.htm>), the New Jersey Historic Preservation Office (<http://www.state.nj.us/dep/hpo/2protection/njrreview.htm>), and the Advisory Council on Historic Preservation (<http://www.achp.gov/work106.html>).



Project vicinity map

Area of detail