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THE NEW YORK CITY

LONG RANGE SLUDGE MANAGEMENT PLAN

GENERIC

ENVIRONMENTAL IMPACT STATEMENT III

REVERE SUGAR SITE, BROOKLYN

PHASE 1A ARCHAEOLOGICAL ASSESSMENT

1991

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HISTORICAL
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REVERE SUGAR SITE, BROOKLYN

PHASE 1A ARCHAEOLOGICAL ASSESSMENT

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PROPOSED REVERE SUGAR SLUDGE MANAGEMENT FACILITY

NEW YORK CITY LONG RANGE SLUDGE MANAGEMENT PLAN (GEIS III)

INTRODUCTION: New York City has entered into a Consent Decree and Enforcement Agreement with the U.S. Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (DEC) to end ocean disposal of its sewage sludge. A Long Range Sludge Management Plan is being developed by the City as part of the agreement. The Plan calls for the development of multiple City sites where dewatered sludge can be processed into sludge products with beneficial reuse technologies.

This phase IA archaeological report is part of the generic Environmental Impact Statement (GEIS III) for the Long Range Plan. Research has included study of both old and current maps, historical accounts, guides to New York, Block and Lot construction data, utility installations, a site file search and a July 1, 1991 visit to the project site.

LOCATION: The Revere Sugar site is in the Red Hook section of Brooklyn. The site is composed of six separate parcels on Blocks 598, 599, 604, 605, and 612, which are located between Coffey, Van Brunt, and Dwight Streets and the Erie Basin. Cross streets through the project site include Van Dyke, Richards and Beard Streets (Figures 1 and 2).

Current street addresses and lot designations for the individual parcels are as follows:

Block 598: 76-104 Van Dyke St., Lots 30-43
77-81 Coffey St., Lot 22

Block 599: 201-209 Richards St., Lot 2
59-67 Coffey St., Lot 2,
43-47 Coffey St., Lot 14
39-41 Coffey St., Lot 17
46-50 Van Dyke St., Lot 17
31-37 Coffey St., Lot 18
154 Dwight St., Lot 18

Block 604: 96-116 Beard St., Lot 16
89-113 Van Dyke St., Lot 16
236-254 Richards St., Lot 16

Block 605: 58-92 Beard St., Lot 1
49-85 Van Dyke St., Lot 1
221-239 Richards St., Lot 1

Block 612: 241-329 and 256-344 Richards St., Lot 150
Outboard of Beard St.

In the following discussions of individual properties/lots, old lot designations will be used as an aid for the reader. Refer to Figure 3 for the current lot designations and Figure 16 for the earlier, or old, lot designations.

CURRENT CONDITION: The Revere Sugar site is, in total, a relatively low and flat 14 acre upland landform with no evidence that it once was a naturally elevated hummock. The elevation of the site is approximately 5 - 9 feet above mean sea level (MSL). There are no active streams or waterways running through the property. No on-site borings were filed with the city's Subsurface Exploration Section but borings from the site vicinity indicate 7 to 10 feet of landfill along Van Brunt at the Beard, Van Dyke and Coffey Street intersections. The "Misc." fill is underlain by a layer of organic silts and peat approximately 5 feet thick (NYC Topographic Bureau, Record of Borings, Red Hook P.C.P., 1963, #397). Further inland and east at Wolcott Street and Dwight Street the landfill overmantle was recorded, in 1971, as 10 - 17 feet thick and included a variety of materials, e.g., cinders, brick, and wood (NYC Topographic Bureau, Record of Borings, Red Hook Branch Library, #701).

The project site currently serves a variety of functions. Both Blocks 598 and 604 host Revere Sugar Corporation warehouses that were originally part of the now defunct Brooklyn Clay Retort and Fire Brick Works. On Block 598, the project site also includes two vacant lots and two other nineteenth century industrial buildings. Besides the nineteenth century Brick Works, Block 604 also houses, along Richards Street, a 1982 Revere Sugar warehouse, and a vacant lot on Beard Street. On Block 599, a corner parcel hosts a two-story red brick light manufacturing/processing complex, the old Smith & Butler drug grinding building that appears to currently be in use for some form of wood preparation. On Block 599, the project site also includes two old industrial buildings, a new warehouse, and a vacant lot. The majority of the project site parcel on Block 605 is a surface parking lot, enclosed by chain-link fencing, with one three-story red brick building fronting on Van Dyke Street. Block 612, which is outboard of Beard Street, supports the Revere Sugar processing and storage complex. See photographs A - G.

The project site neighborhood supports various businesses and organizations, including the Red Hook Gospel Assembly at 72 Van Dyke Street, the "All Purpose Marine Paint Outlet" and Amertech

Industries also on Van Dyke Street and a storage yard for Blanford Construction Company on Coffey Street. At the Van Brunt Street Erie Basin terminus is the 1869 multi-bay, red brick "Warehouse Pier" that is typical of the nineteenth century Brooklyn waterfront.

ASSESSMENT OF ARCHAEOLOGICAL RESOURCE POTENTIAL

The history of the project site in the Red Hook section of Brooklyn is the story of the conversion of a tidally-inundated marsh meadow into a nineteenth century shipping and industrial complex. The vast inundated marshland, interrupted by some hillocks, was a legacy of both pre-glacial tributaries and the last advance of the Wisconsinian glaciation of 10,000 to 12,000 years ago. Long Island is not much more than an enormous sand and gravel deposit - an accumulation from the advance and retreat of the glaciers. The project site is at the western terminus of the Harbor Hill moraine and for 3,000 years was part of an estuarine marshland interrupted by hummocks of gravel and sand (Dickinson, *et al* 1988:4). In the historical evolution of the project site, the land served as a colonial mill complex, a Revolutionary War redoubt, a small residential community, and as a large shipping center. These successive stages of commercial, manufacturing, and residential activities have contributed to the site character.

Prehistoric Overview:

The prehistoric landscape changed as environmental fluctuations caused water tables to rise and lower, rendering some areas available for prehistoric habitation during specific cultural periods, unavailable for habitation during others. Research in the Northeast has determined that prehistoric period habitation and procurement sites tend to be located on well-drained soil within close proximity to fresh water sources, often in naturally sheltered areas. Procurement stations were established in areas of rich ecological diversity and resource availability. Establishing sensitivity for prehistoric remains requires reconstructing the prehistoric landscape and assessing the availability of surrounding resources which would have increased the probability of prehistoric use. Documenting known sites in the area provides an understanding of regional settlement patterns throughout prehistory.

Red Hook's tidal marshes would have been fine resources for the Native Americans of the area. It is generally understood that at the time of European exploration and settlement in the sixteenth and seventeenth centuries, Indians of coastal New Jersey, New York, and Connecticut made seasonal rounds among various physical environments in order to exploit the natural resources. Estuarine marshes like Red Hook provided the local Indians with food resources in the early spring when stored foods had dwindled as well as in the summer when they took advantage of an abundance of shore plants, animals, fish, and shellfish.

Robert S. Grumet's research into Native American place names in New York City identifies lands east and south of the project site, near Gowanus, as "Sassians Maize Land," possibly the planting land of the Upper Delawaran Marechkawieck sachem Seyseys (Grumet 1981:50-51; see Figure 4). Gowanus as part of "the Indian Corn Land" can

be seen on the Copy of an Ancient Map, a map that also illustrates the ponds and hillocks of the project site's Red Hook area (Figure 5).

It is also recognized that Native Americans preferred elevated knoll sites near a large and reliable water resource. Early maps of western Long Island do show elevated knolls within the Red Hook marshland. However, there is no specific evidence, including a site file search at the New York State Office of Parks, Recreation and Historic Preservation (SHPO) and the New York State Museum, to connect the project site with a Native American habitation or resource processing center (See Appendix). Dr. Ralph Solecki's research for the City's Department of Water Resources at Imlay, Pioneer, and Conover Streets, in the project site vicinity, concluded that "there was little chance of finding prehistoric occupation in the area [streetbeds]" and the "fill did not appear to have any historical importance" (Solecki 1976:4-5).

Although we can speculate that the resources and topography of the Red Hook area were exploited by Native Americans, there are three factors that explain why there is no specific site reported for the vicinity of the project site. Very possibly the Red Hook point of land, at the convergence of the East and Hudson Rivers, did not provide enough protection from the very strong northerly winds that blew down the Hudson River and across Buttermilk Channel (Dickinson et al 1989:17). Mid-seventeenth documents attest to the rough waters of Buttermilk Channel (Raber 1984:19). During the historic period, "there were stories of big tides flowing over the peninsula and washing away houses" (Sherman 1965:6). These same rough waters would have precluded the establishment of shellfish beds that need relatively shallow, calm estuarine conditions. Shellfish harvesting was a very important subsistence activity for Native Americans of coastal New York. Gowanus Bay, south of Red Hook and a protected cove area, was renowned in early Colonial times for large and succulent oysters (Dickinson et al 1988:8). By the nineteenth century the ponded, calm mill waters on Red Hook's interior did host oyster beds (Stiles 1869:158-159).

Also very probable is that the large-scale land manipulation visited on Red Hook over the last 300 years obliterated any possible evidence of a Native American presence. As will be described in detail in the following sections, topographic changes, including ponding, channeling, grading, and landfilling, have severely altered the Red Hook land mass and adversely impacted the possibility of prehistoric potential.

Historical Overview:

Colonial Period

In the mid-1600s, as the Dutch farmers settled on western Long Island, Red Hook was a low lying tidal marsh, similar to large parts of Holland. The Dutch settlers were quick to recognize the potential for the development of water powered mills in this area. "There were at least four mills in the Red Hook marshes established between c.1685 and the Revolution, powered by damming creeks or ponds. The first mill was at the current corner of Dikeman and Van Brunt Streets, with the miller's house located nearby. The first record of this mill, operated by the Van Dycks, is a reference in an agreement dated August, 1689" (Raber 1984:19-20). The patriarch of the Van Dyck family, Matthias, passed the Hook holdings, including the original 47 acres of ponded marsh, to his son John (Stiles 1867:61). This original mill appears on the 1767 Ratzer map in what is apparently the area of the proposed sludge project site (Figure 5). The extensive channeling and ponding of the marsh meadows is evident on the Ratzer map (Figure 6) and also later, nineteenth century maps (Figure 7).

Revolutionary War Period

During the August 1776 Battle of Long Island, Red Hook was the location of "an attempt by the Revolutionary Army to stop or at least delay the British invasion of New York. The inner ring of the defending army, under General Washington's command, consisted of a line of fortifications which ran from Wallabout Bay to Gowanus. The Continental Army's line was anchored at Red Hook by Fort Defiance, a redoubt that mounted five guns near what is now the intersection of Conover and Van Dyke Streets" (Raber 1984:22). Raber's interpretation of Fort Defiance's location, one block north, northwest of the sludge project site, is not necessarily easy to confirm with nineteenth century plans of the Battle of Long Island, see Figure 8, Field's Positions and Movements of the British and American Army. Onderdonk's "Map and Plan to Illustrate the Battle of Long Island" appears to place Fort Defiance further to the north and west of the project site (Figure 9). The Brooklyn historian H. R. Stiles described the Fort Defiance earthworks as supporting four 18-pounders that fired en barbette, i.e., not fired through embrasures but simply over the top of the works (Stiles 1867: 62). A nineteenth century sketch of the "Red Hook Fort" supports the description of Fort Defiance as an earthwork redoubt positioned on a promontory overlooking Buttermilk Channel (Brooklyn Historical Society Clippings Files (BHSCF) 1876, Vol. 17:106).

Part of the Battle took place in Gowanus, southeast of the project site. When the main British force, led by General Grant, outflanked the entire American advanced position, Lord Stirling's Continental troops withdrew across Gowanus marsh and creek, seeking the protection of the American lines at Fort Box, a location near

today's intersection of Pacific and Bond Streets, about two miles to the northeast of the project site (Kopper et al 1978:13-14). Early on the morning after the Battle, the British man-of-war, the Roebuck, sailed within range of Fort Defiance and opened fire. "The men of Fort Defiance covered themselves with glory by bringing all the fire of the redoubt to bear on the ship and causing it to retreat to the fleet further down the bay. The American troops, entrenched on the hills of Gowanus, cheered lustily at the success of their brothers-in-arms on the point of Red Hook" (Sherman 1965:12). Defiance's action, plus a strong wind and an ebb tide, kept Admiral Howe's fleet from arriving to support the British land forces (Ibid.:11).

The "numerically superior British army outflanked the Continental Army's defenses and Washington, taking advantage of the failure of the British to rapidly follow up their victory, evacuated those troops that had not deserted or been killed or captured" (Raber 1984:22). An intense fog during the night helped in the secretive movements but Washington wisely maintained both fake camp fires and fake troop movements during the night so the British would not suspect the evacuation (Ostrander, Vol. II, 1894:259).

Nineteenth Century

After the War and John Van Dyck's death (c.1785), his two sons, Nicholas [Claes] and Matthias divided their father's Red Hook estate. It was probably at this time that a second Van Dyck mill was constructed. "Matthias' mill was known as the Ginger Mill from its being used solely in the grinding of that article. While Nicholas' was called the Flour or Tide Mill. The large adjoining mill pond extended to Boomtjes Hook [Bompje's Hook/Bompies Hook]" (Stiles 1869:158-159). This second mill has been tentatively placed between present-day Van Brunt, Richards, Van Dyke and Coffey Streets, which is Block 598 in the project site (Raber 1984:20; Stiles 1867:61).

Red Hook, as described in the early nineteenth century, was an "island" that supported at least 5 mill ponds. The high hillocks in the southern portion of the Hook were covered with locust, poplar, cedar, and sassafras trees. The fast land hosted only six buildings, including the brick "powder house" on one acre at the extreme southwest point of the Hook. The two Van Dyck mills and the nearby small miller's house, or possibly the original Van Dyck homestead, were on the east side of the Hook. The Van Dyck brother's dwelling was on the northern end of the island. The brothers always lived together, Nicholas being a bachelor (Stiles 1869:158-159). It is very possibly this dwelling and a tidal control house, or sluice gate, labeled on an 1834 map as the "Vandyke's Mill," that were located at the narrow mouth of the tidal channel at approximately the modern intersection of Columbia and Irving Streets (Figure 10).

Colton's 1839 map shows the northernmost Van Dyck structure but no mills are depicted on the Hook (Figure 7). This lack of mill sites on the map of Red Hook coincides with Matthias' death and the selling of his estate to the Red Hook Building Company in 1834. The Red Hook Building Company was a speculative development that promised the construction of "no less than 500 homes, valued at least at \$1,000 each, on or before the first day of January 1840" (Sherman 1965: Appendix). In preparation for the planned building the hillocks on the Hook were leveled "for the purpose of filling up the neighboring mill ponds, lower ground and drowned marsh" (Stiles 1869:158). Such massive land manipulation surely obliterated any traces of both Native American habitation or processing sites on elevated land and also the Fort Defiance redoubt. Approval for the laying of certain streets, including Van Brunt, Coffey [originally named Partition Street], and Van Dyke, was gained from the Village of Brooklyn (Dikeman 1870:23). This proposed real estate development did not, however, proceed with actual construction and the Van Dyck properties were taken over by Voorhees, Stranahan & Company who organized the well known Atlantic Docks (Stiles 1869:159).

Construction on the Atlantic Docks, or Basin, located between Hamilton Avenue and Pioneer Street five blocks north, northeast of the project site, was begun in 1841 by Daniel Richards and James Stranahan. "The completed project provided a safe harbor on the turbulent Buttermilk Channel, with an enclosed basin modeled on European responses to great tidal fluctuations" (Raber 1984:27). By mid-century as commercial activity along the shoreline increased, Red Hook began to be called South Brooklyn and looked on as more of an extension of the growing urban center (Ibid.:26). In 1851 alone, twelve five-story warehouses were built as Atlantic Dock storehouses on the newly opened Van Brunt Street (Ibid.:27).

The increasing commerce and activity in South Brooklyn created by the Atlantic Docks/Atlantic Basin forever altered the bucolic setting of the project site. In 1848 Daniel Richards petitioned the Brooklyn village council for permission to open 35 streets in the immediate vicinity of the Atlantic Docks (Sherman 1965:20). The plan for these streets and how they were superimposed over the marshland can be seen on Figure 7. Until these streets, including the project streets, were officially opened in 1850 only irregular and often privately-held lanes served the Hook (Brooklyn Borough Commissioner's Map of Street Openings and Closings). As a matter of fact, Washington's retreat after the Battle of Long Island to the waters off of Red Hook followed an old Indian trail known as Red Hook Lane, the major ingress and egress for the peninsula (Sherman 1965:13) that did not receive official village street status until 1819 (Dikeman 1870:23). Beard Street was originally named Elizabeth Street and Coffey was originally Partition Street.

By 1850 the Atlantic Dock was in place and homes and industries were occupying area blocks. But, as can be seen on the 1850 Driggs

Map of the City of Brooklyn (Figure 11), there was no development on the 5 project site blocks. However, by the end of another five years, coinciding with the second massive dock and basin project on Red Hook - the Erie Basin, the project site blocks were hosting stores, dwellings, and manufacturing concerns (Figure 12).

The project site fronts on the Erie Basin - the greatest dredging and breakwater construction project in Brooklyn history (Photograph H). "William Beard and the Robinson brothers, Jeremiah and George, began the Erie Basin in the mid 1850s after about a decade of obtaining rights to offshore areas by purchase or legislative grant. Their holdings...stretched from the foot of Van Brunt Street to Gowanus Creek at Hamilton Avenue. Most of the development rights were to intertidal marsh, or to offshore areas with less than 8 feet of water at (probably) mean tide" (Raber 1984:63). A 2,500 foot scythe-shaped breakwater, an artificial peninsula that shelters the basin from the waters of Upper New York Bay, was built largely of ballast. According to local legend, Beard charged European ships 50 cents per cubic yard for the "privilege" of dumping the rock ballast from overseas ports - thus, a free breakwater (Willensky et al 1988: 614). Beard and Robinson began selling services and building storage and wharf facilities in c.1864 and the Erie Basin served the Union during the Civil War (WPA 1939:466). Construction continued on the basin throughout the century, eventually encompassing 135 acres in total. The construction projects off Richards Street, including Pier A and Pier B and the associated one-story piersheds and five-story masonry storehouses in the sludge project site, probably took place c.1890 (Raber 1984:70).

As the Red Hook peninsula was transformed into a major shipping and warehousing center with the construction of the Atlantic and Erie Basins, inland industrial complexes were built to take advantage of the developing transportation network. Mr. Joseph Kearney Brick, a coal gasification installation expert, was one of the first industrialists to take advantage of the proposed Erie Basin development. In c.1854 Mr. Brick purchased a large tract near the Basin, covering the project site. His experience in Buffalo and Brooklyn with gasification plants and their elliptically-shaped cast-iron retorts, where the coal is distilled to drive off an inflammable gas and tars, led him to develop the first American manufacturing concern for clay retorts (Stiles, Vol. II, 1884:807).

By 1855 Brick's first buildings, the Brooklyn Firebrick Works (hereafter called Works), were erected on project site Block 604, fronting on Van Dyke Street (Figure 12). An engine, kilns, and boilers were all in the same building. Apparently small frame and brick support buildings were in the Works' rear yard.

Perris' 1855 Atlas shows other developments on project site lots of Blocks 598 and 604 (Figure 12). On Block 598 there was a brick building on the corner of Richards and Van Dyke Streets, current

Lot 30; and on Block 604 two brick buildings, one a store and one a combined store/dwelling, were on what is current Lot 16. Blocks 599 and 605 do not appear to have experienced any development by 1855.

Within five short years, the Firebrick Works grew considerably. By 1860 it appears that the Richards Street end of Block 605 was owned by the Firebrick Works, but the only structure on the block, and possibly outside of the project site boundaries is frame and 2 and a half stories. It does not appear to be connected with the Works but is perhaps a dwelling on old Lot 5 (William Perris, 1860 Maps of the City of Brooklyn, second edition, Vol. I:plate 10).

Although Brick died in 1867 the business was continued by his partner, E. D. White until 1877 when another partner, I. N. Stanley was admitted (Stiles, Vol. II, 1884:807). By the mid-1880s the clay retort plant, one of only 12 in the country, included fifty city lots with a Beard Street dock frontage of 120 feet with an 18 foot deep, 230 foot-long slip (Stiles, Vol. II, 1884:806; Figure 13 and Photograph A). Wharfage was necessary not only for shipping out the Works' finished products but also for receiving the New Jersey raw clay essential to the retort manufacturing process.

Street frontage controlled by the Works only thirty years after they opened was: 550 feet on Van Dyke Street, 610 feet on Beard Street, 725 feet on Richards Street, and 237 feet on Coffey Street. The properties maintained by the Works in the mid-1880s on the project site are described below:

The dimensions of the principal buildings, solidly constructed of stone and brick, are as follows: gas retort factory, 90 x 200 ft, one story; fire-brick factory, 100 x 175 ft, two stories; engine and boiler rooms, and carpenter shop, 75 x 100 ft, two stories. The ground floors are all paved with stone flagging, and the entire works are as nearly fire proof as possible, but further protection is secured by means of a powerful steam pump. Ample accommodations are provided for a large number of horses and wagons, and the open spaces between the buildings are utilized for the storage of clay and other materials.

The kilns are of large dimensions. The chimney connected with the retort kilns is 75 ft high; that from the fire-brick factory is 120 ft high. The full complement of hands is about 75.

The gas retorts from these works...are used in all parts of the country.

The fire brick are of all the various shapes required in rolling mills, cupolas, foundries, forges, lime and

cement kilns, etc. Production includes slabs and tiling for the lining of ovens, stoves, grates and furnaces. (Stiles, Vol. II, 1884:806-807).

As the Firebrick Works grew, other project site parcels experienced development also. And, municipal services followed quickly after the initial development of Red Hook's waterfront. By 1862 a private horse railway ran between the Hamilton Avenue ferry and Erie Basin (Raber 1984:30). The line that ran along Van Brunt was eventually replaced by the Crosstown trolley (BHSCF, Vol. 68:83). Perhaps the "car depot" that occupied project site Block 599, Lots 39 and 40 in 1886, current Lot 2 (Figure 14) was part of this municipal transit system.

Municipal water mains were installed along Van Brunt Street by 1869 (Figure 15). The Borough Sewer Department records are incomplete and only provided nineteenth century individual lot hook-ups for parcels immediately outside of the project site. These hook-ups, which are probably comparable to the actual project site hook-ups, date to the mid-1870s. Block 612 connections date to "before 1886" and on Blocks 604 and 605 on the project site, "old" sewer connections were replaced by WPA workers in the twentieth century. We can assume that the proximity of New York Bay provided an outlet for much of the household garbage/debris and human waste prior to the availability of municipal sewers.

The project site lots continued to develop, in part because of the Firebrick Works. By the time Dripps' 1869 Atlas was published an additional building, possibly a residence, was on the project site - Block 605, old Lot 4 (Figure 15). Interestingly, the Block 605 c.1860 dwelling mentioned above does not appear on the Dripps' illustration only nine years later. This absence may be a cartographic mistake since the 1886 Robinson Atlas shows a structure on both old Lots 4 and 5 (Figure 14).

By 1869 the waterfront Block 612 had not attained its current size, but by 1886 the Block shape was basically as it is today, with the covered pier shed and multi-storied "Stores" on the northwest side of Richards Street still in the control of the Estate of William Beard. Robinson's 1886 Atlas shows no development on the project site portion of Block 599 except for the "car depot" on the corner of Coffey and Richards, current Lot 2, referred to above. On this Atlas, Block 604 project site lots are totally covered with the Firebrick Works. However, Block 598 appears to host eight structures with Van Dyke frontage that are not connected to the Works.

As the century closed, the project site lots on Block 599 had been altered. The Hyde 1898 Atlas shows corner (old) Lot 46/current Lot 2 to be completely covered with a structure. And, what appear to be dwellings are on current Lots 14 and 17 (Figure 16).

Twentieth Century

Over the next ninety years, Red Hook continued to grow and change, and eventually it fell into decline. The Firebrick Works continued on the site, with the Works' boundaries slightly changing over time, until at least 1939. Dominating the waterfront and eventually moving into a portion of the Works' complex, c.1915, was a sugar refinery, originally the American Molasses Company of New York. For a full discussion of the twentieth century industrial history of the project site, see Thomas Flagg's (1991) report for the Sludge Management Facility: Revere Sugar Site.

Red Hook was the site of an early residential and social reform project, housing 9,500 people in "twenty-nine bulwarks of sobriety and good will" (NYC Municipal References Neighborhood Files/Red Hook 1940:n.p.). The 25 six-story residential buildings, the Red Hook Houses, offered subsidized housing to "slum dwellers" in a joint city and federal effort to initiate slum clearance in Manhattan (Ibid.). The Houses are northeast of the project site.

As of 1945 the project site area supported a variety of industrial complexes. It was actually during World War II that many of the community businesses prospered significantly. For example, the c.1858 Todd Shipyard, at the end of Dwight Street adjacent to a project site block, had as many as 40,000 employees working round-the-clock shifts seven days a week (NYC Municipal References Neighborhood Files/Red Hook 1983:n.p.). Other businesses in the community included the Pioneer Iron Works, a saltpeter works in addition to the one on the project site [Block 598], a Rosin Yard, and Savarese Macaroni all on Van Brunt Street. A vaseline factory was on Clinton Street, 5 blocks southeast of the project site. A variety of galvanizing, printing, engineering shops, and a "spar yard," a cooperage, and a "stopper" company were in the project site neighborhood in the mid-1940s (BHSCF Vol. 69: 20).

Red Hook's industrial and commercial demise can be traced, in part, to the construction of the Gowanus Expressway, c.1951, that sliced the neighborhood diagonally. The later Brooklyn-Queens Expressway cut the area again, north-south, leaving the Columbia Street area, which had been the main shopping center, severed from the rest of the Hook and slowly dying (NYC Municipal References Neighborhood Files/Red Hook 1981:B1).

ARCHAEOLOGICAL POTENTIAL:

The following discussion of archaeological potential will focus on the entire site prior to nineteenth century lotting and then will focus on individual block and lot properties for the assessment of nineteenth and twentieth century sensitivity.

Prehistoric Period

Native Americans did occupy portions of western Long Island for thousands of years. Settlement pattern data indicates that southern New York prehistoric peoples preferred habitation sites that were elevated, well-drained and protected parcels, usually located near large-scale water resources. A portion of the project site landform, prior to the 1850s, would have been accessible for Archaic and Woodland Period exploitation. All of the project site would have been above sea level during the earlier Paleo-Indian Period. It is very possible that Native Americans did camp, plant corn fields, and harvest shellfish on the five sludge site blocks. However, as outlined above, the project site, starting with the earliest Dutch settlers until the second half of the nineteenth century when the streets were regulated and the Erie Basin completed, has experienced massive land manipulation. Particularly significant when assessing the potential for prehistoric remains are the accounts of leveling Red Hook's hillocks - the exact locales that would have hosted prehistoric sites of any size. In consideration of these topographic changes over time, further research on prehistoric archaeological potential is not warranted.

Colonial and Revolutionary War Periods

The early mills of Red Hook and the Hook's Fort Defiance are undeniably important elements in the history and development of Brooklyn. However, for the same reasons enumerated above, it is estimated that remnants of neither the Van Dyck homestead(s) and/or mills nor the redoubt earthworks would have survived the 1835-1885 "modernizing" of the peninsula that involved large-scale land movements.

Nineteenth and Twentieth Century Industrial Development

Block 598

No development is recorded on the block until after 1850.

Lot 30 is the first lot developed, by 1855 hosting two small buildings, one brick (Figure 12).

By 1860 Lot 30 is still the sole project site lot to be developed - hosting a one-story brick structure covering the entire parcel and three, small two-story brick structures at the rear of the lot. The same configuration is apparent on Dripps' 1869 map (Figure 15). From first development, this lot was part of the Brooklyn Firebrick Works and is currently occupied by the original Works' structure, described by the New York City Landmarks Preservation Commission as a "125 foot square building designed in the characteristic basilica warehouse form" (NYCLPC n.d.:n.p.; Photograph C).

Potentially sensitive from a structural perspective as a standing document to the first phase of industrial development in South Brooklyn in the mid-nineteenth century, this particular parcel is not considered archaeologically sensitive because the parcel functioned as a warehouse and, therefore holds very little promise for significant archaeological visibility. Archaeological visibility is based on the possibility that cultural material or patterns of cultural processes can still be recovered/discerned in subsurface strata. The simple warehousing, or storing, of materials is not likely to yield a significant amount of cultural detritus to assist us in understanding more fully the clay retort and fire brick manufacturing process.

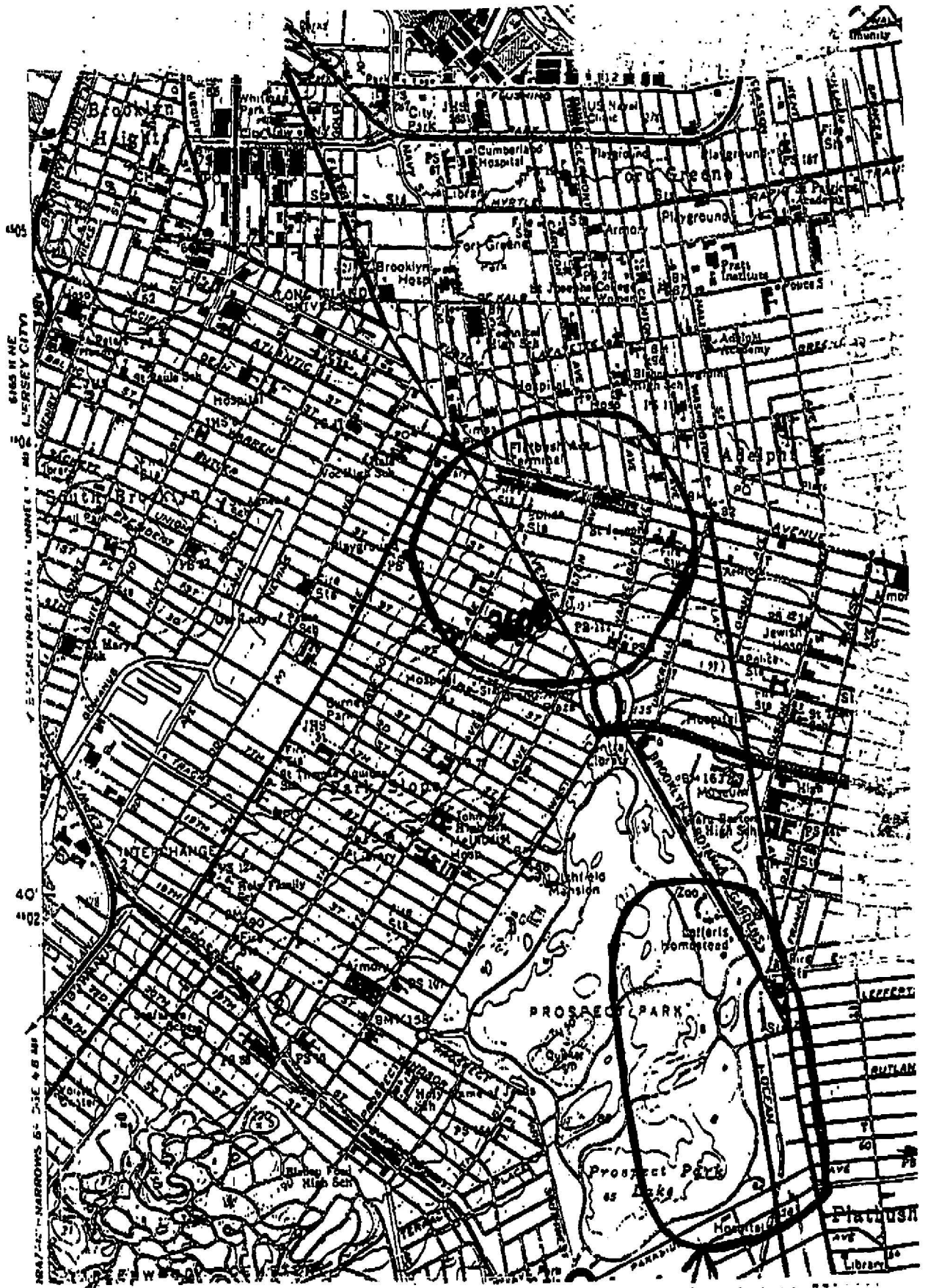
In 1886 (Figure 14), the extreme northern section of what is now Lot 30 (lot not mapped with a specific lot number) hosted a structure, perhaps a dwelling but in later atlases it serves as an office for the Works, which is the way it is seemingly portrayed in the c.1884 Figure 13.

Lots 39, 43, and 44 all have structures built on them by 1886. And, these structures appear to be two- and three-story dwellings, one labeled a shed or outbuilding.

The small, individual buildings on what are now Lots 40 and 43 were gone by 1903 (Figure 17), replaced with large-scale processing plants - H. Guitkes Fish and Knowles Bros. Saltpetre, respectively. Lot 39 retained the three-story dwelling, with a store on the first floor, into this century.

The saltpetre and fish packing plants were not long lived. By 1915, Guitkes had been replaced by B. Hess, Dealer in Metals

U.S.G.S. Topo: Brooklyn Quad



and the Knowles Bros. building was unlabeled by the 1920 Hyde Atlas but was a "Soap Powder Mfg." by the 1939 Sanborn (Vol. 1, plate 19).

Lot 22, 87 Coffey Street, was undeveloped land until after 1904. By 1915 it was used as a coal shed. The same structural configuration was labeled an "old brick shed" by the 1939 Sanborn (Vol. 1, plate 19).

All dwellings on Block 598 were constructed after the availability of municipal water and sewer, precluding the possibility of backyard, or homelot, features that would have archaeological potential. It is not recommended that further archaeological consideration be given to the twentieth century, relatively short-lived processing plants on Block 598.

Block 599

No development is recorded on the block until after 1860. As a matter of fact, the 1860 Perris Map of the City of Brooklyn labels the block as swamp land.

A portion of Lot 2, by 1886 (Figure 14), hosts a "car depot" which was most likely a garage and light preventive maintenance garage/stables for the horse-drawn transit system. [Note should be taken of the c.1939 BQT Crosstown Trolley Terminal located one block immediately west of Block 599, i.e., Block 605. This Terminal is, like the "car depot," also situated on the northeast corner of the block.]

By 1898 an unlabeled brick building has replaced the depot and is covering the lot. This is perhaps the extant, two-story masonry structure that by 1903 was used by "Senten & Green Metal Signs," in 1904 billed as "The Savage Mfg. Co.: Metal Signs & Tin Boxes," and later, 1915, is recorded on the Sanborn insurance maps as "Smith & Butler Drug Grinding" which by the 1939 and 1951 Sanborns is shown as "E. M. Butler Drug Grinding" (Photograph D).

Lot 14 is not developed until after 1886. A two-story, two-family frame dwelling stands on the property for less than 35 years - being demolished in 1920 for the construction (Brooklyn Buildings Department Permit NB#7725) of a one-story "public garage". The 1920 permit describes the character of the lot as "filled in ground over 20 years".

Lot 17 is first built on in 1890 by the Krishmann family. Their plans, dated 5/6/1890, describe a stone and brick foundation on 12" x 12" brick piers/frame structure/"cellar under all" that is designed for six-family occupation (Brooklyn Building Department).

Lot 18 is not developed until after 1904 when the Hyde Atlas shows the L-shaped parcel as vacant. The 1915 Sanborn insurance map does place two small one-story light manufacturing structures in the rear yard of a Coffey Street dwelling. This small amount of development on Lot 18 was removed by 1939 (Sanborn) when a "garage" with a stone floor covers the entire lot.

All dwellings on Block 599 were constructed after the availability of municipal water and sewer, precluding the possibility of backyard, or homelot, features that would have archaeological potential. Garage/depot facilities do not possess a great degree of archaeological visibility and further analysis of Lot 2 and 18 is not recommended. Further archaeological consideration for the twentieth century metal sign/drug grinding complex on Lot 2 is not recommended. It is not anticipated that substantive subsurface deposits for these processes are extant on the site and, therefore, further archaeological analysis would not contribute to our understanding of Red Hook's commercial development.

Block 604

Residential and industrial development occurs on the block between 1850 (Figure 11) and 1855 (Figure 12). What is now designated as Lot 16 was, before the turn of the century, divided into several smaller parcels. In order to understand the individual lot histories, refer to Figure 16 for old lot numbers.

Current Lot 16:

Old Lot 21 hosted a frame, light manufacturing building by 1855, which was quickly replaced by, or incorporated into (by 1860), a substantial, brick, two-story Firebrick Works building. Shown on the successive Sanborn insurance maps (1904 - 1939), the building - part with a stone and brick floor and part one-story with an earthen floor - served as a "moulding and pressing room." Kilns and a heating furnace were located on the premises. The building was taken over by the American Molasses company and into the 1950s, still with a partial "earth floor," was used for storage. In approximately 1982 this structure was torn down and the current one-story Revere Sugar warehouse erected.

Old Lots 22 - 29 (approximate correspondence between old and current lot lines) were originally developed, by 1855 (Figure 12), as the Works manufacturing center - supporting the kilns, engine and boilers (Photograph A). By 1860 the Works had grown greatly, including the addition of a one-story frame office on what appears to correspond to old Lot 22. However, on some atlases old Lots 22 and 23 appear to have remained vacant until c.1900 when the two-story masonry Brick Works building covered the entire parcel. Regardless, by 1904 the Works standing stone and brick structure (Photograph A), had incorporated old lots 22 and 23 into the much larger, stone-floored building. The 1904 Sanborn labels the Van Dyke Street frontage as the "Tile Room."

Old Lots 17 - 19 were waterfront lots, developed early (1855, Figure 12) as brick and frame dwellings, one apparently with a store on the first floor. These structures, two-and-a-half and three stories high, were in place for approximately fifteen years before municipal water and sewers were available. It is very possible, considering the proximity of New York Bay and the widespread practice (regardless of localities and health codes) of private disposal into public waterways, that these homelots never hosted backyard privies but perhaps cisterns and wells. Cisterns and wells, filled with 15 years of household debris and then sealed by subsequent construction could yield informative data on the Hook's burgeoning nineteenth century neighborhood.

That portion of Lot 16 occupied by original Works structures is potentially sensitive from a structural perspective as a standing document to the first phase of industrial development in South Brooklyn in the mid-nineteenth century. Additionally, since the Works' mixing, moulding, and firing processes were conducted on this block, Lot 16 must be considered archaeologically sensitive. If sludge facility plans should proceed to request the demolition of any of the standing structures, including the 1982 warehouse on the corner of Beard and Richards Street, further archaeological analysis is recommended. It is very possible that evidence of the first clay retort manufacturing center in America is retrievable and would assist us in understanding more fully the development and technological evolution of the clay retort and fire brick manufacturing process.

Block 605

Current Lot 1 covers many older and smaller individual lots. In order to understand the individual lot histories that reflect the development of the total block, Lot 1 will be discussed according to nineteenth century lot designations. Refer to Figure 17, the 1903 Hyde Atlas for old lot numbers.

Current Lot 1

One residence (two and a half-story, frame with rear extension) was built on the block's Beard Street frontage between 1855 and 1860 (based on a comparison of Perris' 1855, Figure 12, and 1860 Atlases - 1860 version not reproduced in this report). It is extremely difficult to say with certainty which lot this structure falls on but it appears to be old Lot 44, corresponding to the 1886, 1898, and 1903 structure on that parcel. However, Dripps 1869 (Figure 15) only shows one structure on what was to become Lot 1 - on old Lot 11, facing Van Dyke Street.

Old Lot 11, 69 Van Dyke Street, experienced several early building episodes. The two small c.1886 structures on the lot were replaced by an 1895 new three-story building on a pile foundation (Brooklyn Buildings Department Permit #735). This building is shown on the 1898 Hyde (Figure 16). Alteration permits to this building were granted in 1899 and 1908 and in 1938, when massive underground tanks were installed (#368-8). Serving as a paint factory from c.1913 to c.1950 - the Rahtjens American Composition Company, a certificate of occupancy as a motor vehicle repair shop was granted in 1954 (#141314). Currently, the c.1895 structure is the only extant building on the Block 605 project site.

Old Lot 44, fronting on Beard Street, hosted a c.1860 structure that seems to have survived until after 1950. In 1903/04 it is listed as a three-story, with one- and two-story rear extensions, ship smith/machinist. By 1915 the property had been taken over by the abutting paint factory and was used for storage through 1939 when it was called the Red Hand Compositions Co., Inc. The building was torn down between 1951 and 1990.

Old Lot 12 had up to nine small, one-story open sheds, offices, and a coal bin erected between 1886 and 1904. The first identified lot function, 1903, is as the McDonald Lumber Yard on the northwest half of the lot. Sanborn's 1904 insurance map details both halves of old Lot 12, McDonald Lumber and J. & F. Kelly Dock Builders & Contractors, on the southeastern half. By 1915 the entire old Lot 12 is covered with a lumber yard/shed/piles owned by McDonald and a second firm Fowler & Silverhorn. The 1939 Sanborn provides no identifying information on old Lot 12. Old Lot 12 had been transformed

into its current usage - a parking field - by the publication of the 1951 Sanborn. In 1951 only remnants of the previous function survived - "used lumber" and a "coal pile."

Old Lot 1 remained undeveloped into the twentieth century. It is not until 1915 that the Sanborn insurance maps record development on the large lot: a bowling alley, three one-story sheds/buildings, and a store with a dwelling above on the corner of Richards and Beard Streets. By 1939 a store is located on the northeast corner at the Richards and Van Dyke Street intersection and the three shed/buildings are gone, replaced by the B.Q.T. Crosstown Trolley Terminal.

The potential for homelot archaeology is problematical. The 1860 Perris Atlas shows what appears to be old Lot 44 developed into a probable dwelling site. However, the 1869 Dripps does not show the building. By 1886 old Lot 44 is once again depicted with a building but this is approximately ten years after the records indicate the neighborhood buildings were generally connected to the municipal sewer. To date it has been impossible to verify the exact year of the first construction on old Lot 44 and, therefore, it is extremely difficult to assess the potential sensitivity for homelot features. Even if we accept the earliest possible construction date and that pre-dates municipal sewer installations, two factors argue against the likelihood of in situ archaeological resources on old Lot 44. One, subsequent construction of an engine room on the rear portion of the lot (Sanborn 1904) would suggest heavy foundation construction that would impact subsurface materials. And, two, the proximity of New York Bay and the widespread practice (regardless of legalities and health codes) of private disposal into public waterways suggests that in situ resources might be limited. We do not recommend any further archaeological consideration for homelots on Block 605. Also, it is not recommended that further archaeological consideration be given to the twentieth century paint processing and lumber storage yard on Block 605.

Block 612

Lot 150 of Block 612 is a landfill and platform creation begun in the mid-1850s and not completed to its present configuration until about 1880, as part of the construction of the Erie Basin.

As of 1855 the New York Bay shoreline was within feet of the Beard streetbed. By 1869 Lot 150 had been filled to the Bulkhead line, leaving boat slips on either side of the new land. Piers A and B were not constructed as of 1869 but "Beard's Covered Piers" were in place by 1886. Construction on the landfilled lot followed the general shipping and warehousing needs of South Brooklyn, including coal yards and pockets and warehouses. Starting in approximately 1915 the sugar industry dominated Block 612, first the American Molasses Company, followed by Sucrest and currently Revere Sugar controls the block and also properties on adjacent project site blocks.

Thomas Flagg's "Cultural Resource Evaluation, Revere Sugar Site" (June 1991) reviews in detail the potential industrial archaeology of Block 612. His conclusions specify certain structures as significant and potentially eligible for nomination to the National Register. Although there are no subsurface resources of potential significance on Block 612, Mr. Flagg's assessment of industrial sensitivity warrants further archaeological consideration of the extant complex. In addition, "the lower cribwork components, some of the building foundations set in fill material, and the precise nature of bulkhead and breakwater fill materials should be regarded as significant: they are fundamental to Erie Basin construction, and may include important new information on cribwork design" (Raber 1984:91). Erie Basin and the surrounding area were important in the history of Brooklyn's waterfront, and the integrity of its substructures make it potentially significant.

CONCLUSIONS AND RECOMMENDATIONS

The project site blocks, in proximity to New York Bay and the inundated marshlands of Red Hook, undoubtedly experienced a degree of Native American exploitation. Records indicate that some of the borough's earliest Dutch settlers claimed the water and tidal power of the Bay and Buttermilk Channel to build processing mills on and near the project site blocks. Also, during the Revolutionary War period, the western portion of the Hook hosted an earthen redoubt, Fort Defiance, whose guns assisted in the Colonial retreat after the Battle of Long Island. It is not anticipated, however, that significant subsurface deposits of these three historical periods have survived in situ. The massive land manipulation that occurred on the Hook and the project site blocks, starting in earnest during the 1850s, removed from today's landscape the hillocks, millponds and raceways that would have yielded potentially sensitive prehistoric and historical materials from these three eras.

During the mid-1800s there were new and equally exciting cultural manifestations on the project site blocks. The Erie Basin is a massive statement of waterfront manipulation. The greatest dredging and breakwater construction project in Brooklyn history, the Basin was designed to meet the shipping demands of the last century. As reported in Raber et al. (1984) the Erie Basin cribwork - a rare nineteenth century functioning example - is potentially significant. Although various piers and wharves have been examined in New York City to date, information on specific aspects of early piers and wharves, such as joinery, is still considered insufficient. Based on the recent conclusions of the Assay Site fieldwork (Klein 1990), we recommend that if the proposed sludge facility impacts the Erie Basin cribwork, limited examination/photo recordation of the exposed cribwork be incorporated into the pre-construction schedule.

The Brooklyn Fire Brick Works was the first manufacturer of clay retorts in America at a time when coal gas illumination was spreading throughout the country. The Works was successful very early and maintained its facilities on the project site block for many decades. The Works' stone and brick buildings, including the chimneys, dominate the streetscape of the inboard project site blocks. Currently these structures are being considered for New York City Landmark status. We recommend that these structures be retained in their entirety, if at all possible. If, however, the Works' buildings are to be impacted by the sludge facility project, we recommend a Historic American Engineering Record-quality recordation of the Works properties on Blocks 589 and 604, including subsurface archaeological field investigations on Block 604.

As the Works was just getting underway and the neighborhood character was beginning to form in the late 1850s, there were three structures - probably dwellings - that shared Block 604 with the

clay retort manufacturing complex on current Lot 16 and old Lots 17 - 19, possibly 20. These structures, two-and-a-half and three stories high, were in place for approximately fifteen years before municipal water and sewers were available. It is very possible, considering the proximity of New York Bay and the widespread practice (regardless of legalities and health codes) of private disposal into public waterways, that these homelots never hosted substantial backyard features (e.g. privies, cisterns, and wells) that could yield informative data on the Hook's burgeoning nineteenth century neighborhood. However, a conservative approach would be to assume the presence of such features. Later construction along this Beard Street frontage for the Works' mixing, pattern and engine/pump rooms may not have destroyed any earlier, buried backyard features because the Works' buildings apparently did not have below-grade rooms. At this time, we do not recommend further consideration of these possible homelot resources, as they would lie beneath the extant Works' buildings and it is our recommendation that the Works' building not be destroyed. If the Works' buildings are to be lost and an archaeological field investigation is required to assess the industrial component of the project site lots, we would recommend that at that time the field director ascertain the presence/absence of these tentative homelot features.

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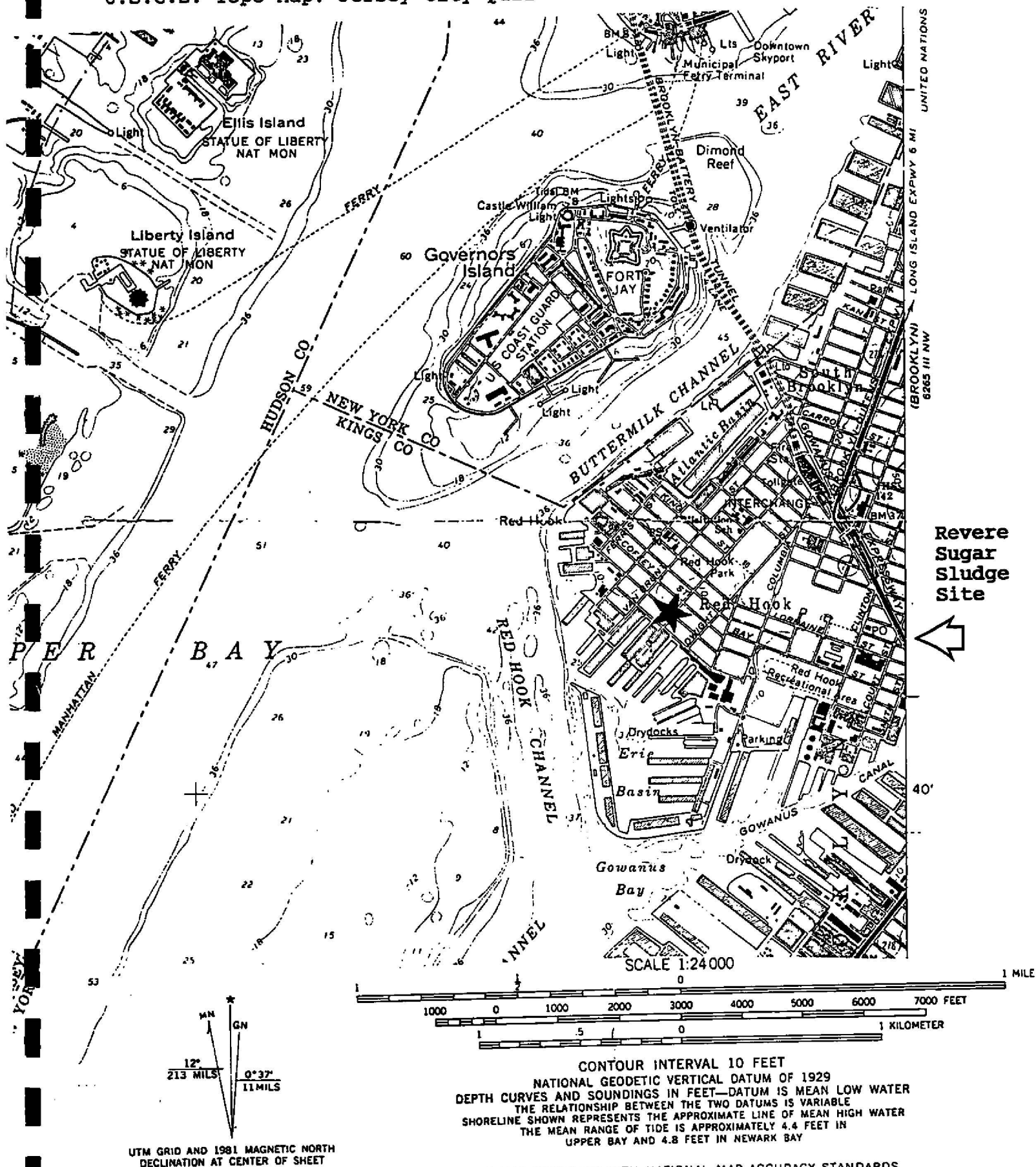
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FIGURE 1

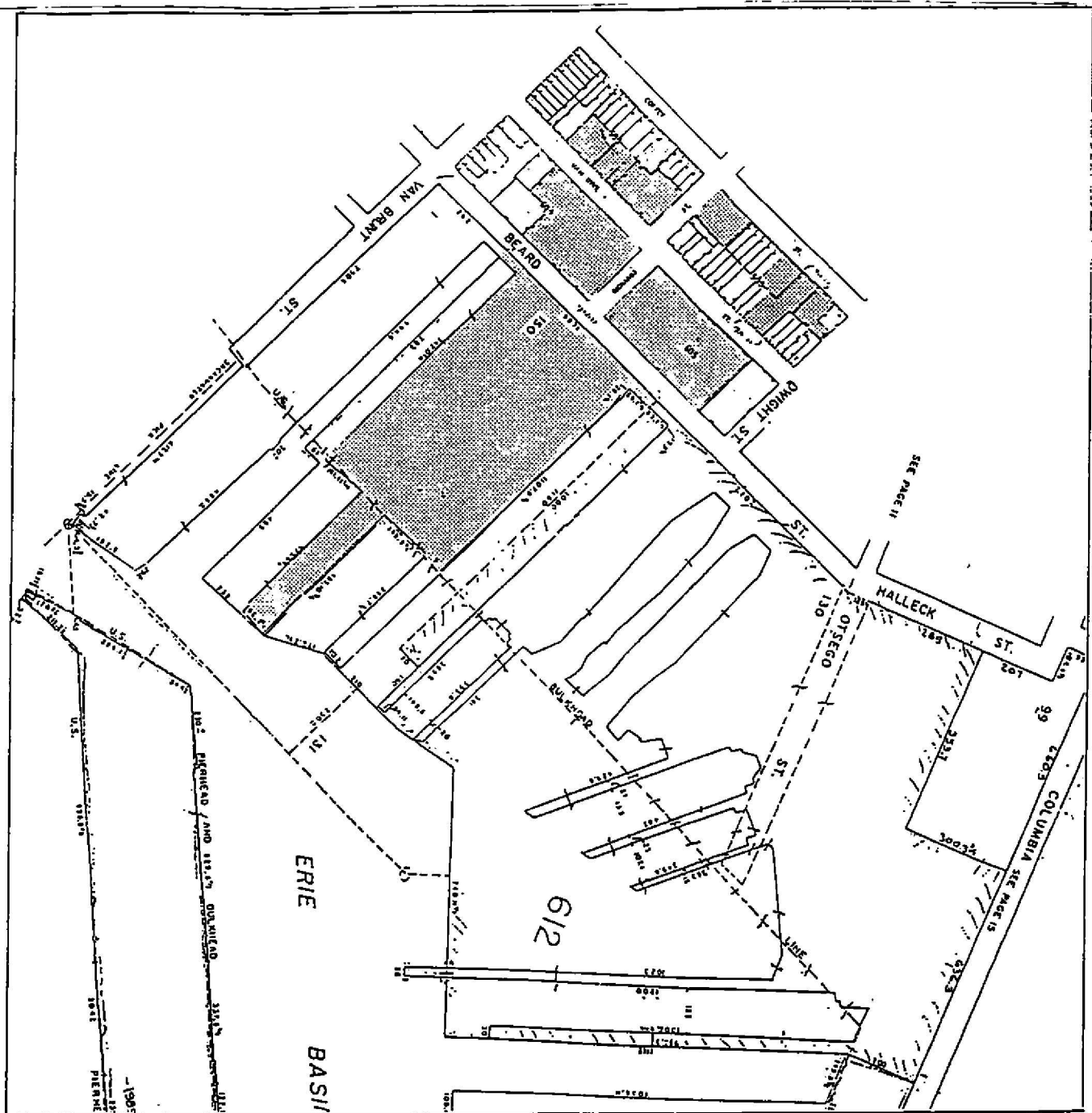
U.S.G.S. Topo Map: Jersey City Quad



THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

FIGURE 2

Revere Sugar Sludge Site Locational Map



SITE: Block 598 Lot 22,30,39,40,43
 Block 599 Lot 2,14,17,18
 Block 604 Lot 16
 Block 605 Lot 1
 Block 612 Lot 150

SOURCE: 1970 TAX BLOCK & LOT MAP

NEW YORK CITY DEPARTMENT
 OF ENVIRONMENTAL PROTECTION

SLUDGE MANAGEMENT PLAN

BROOKLYN SITE 1; REVERE SUGAR
 TAX MAP

0 200 400 FT.



FIGURE 3

Revere Sugar Sludge Site
1990 Sanborn Lot Designations for Blocks 598, 599, 604 and 605

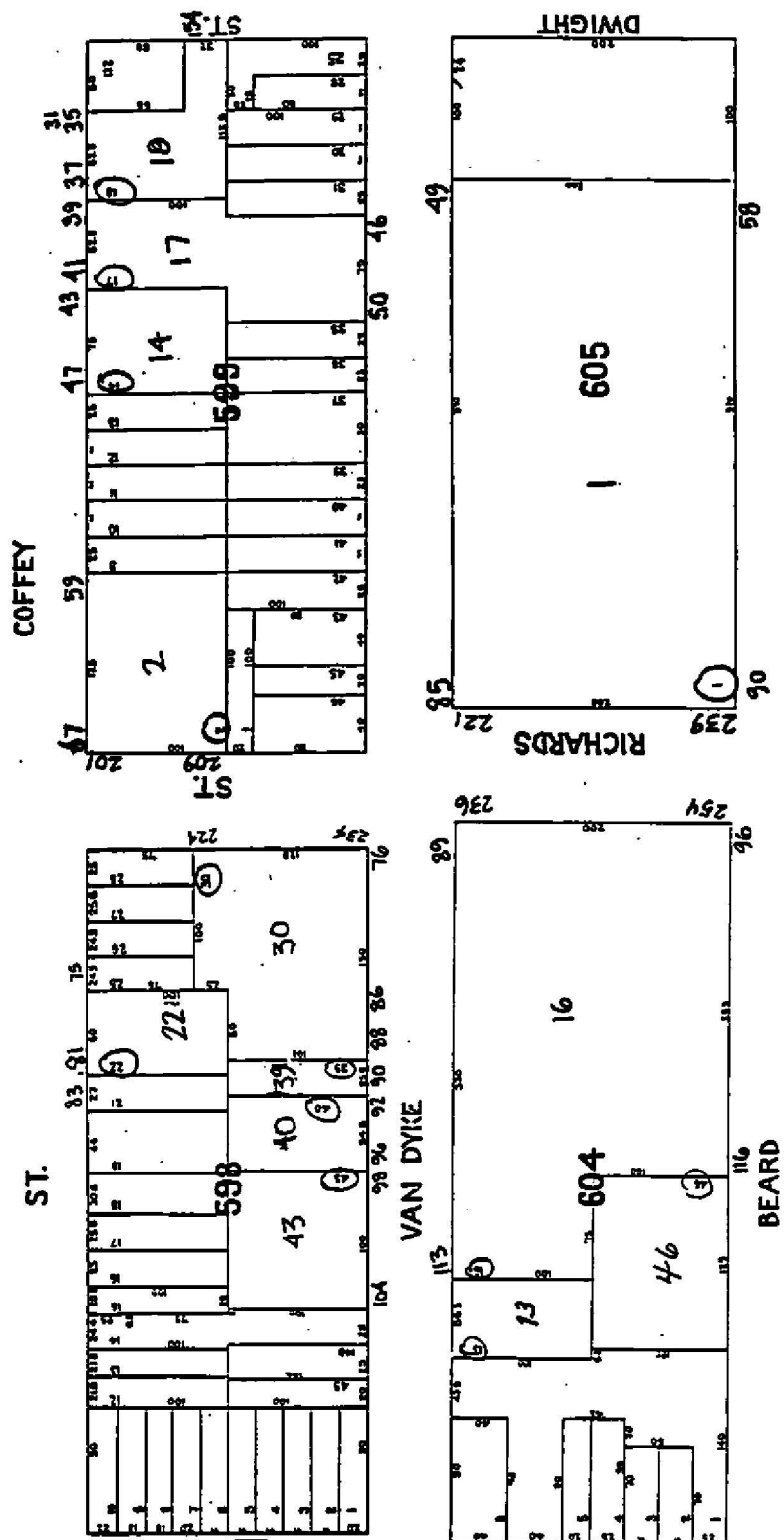
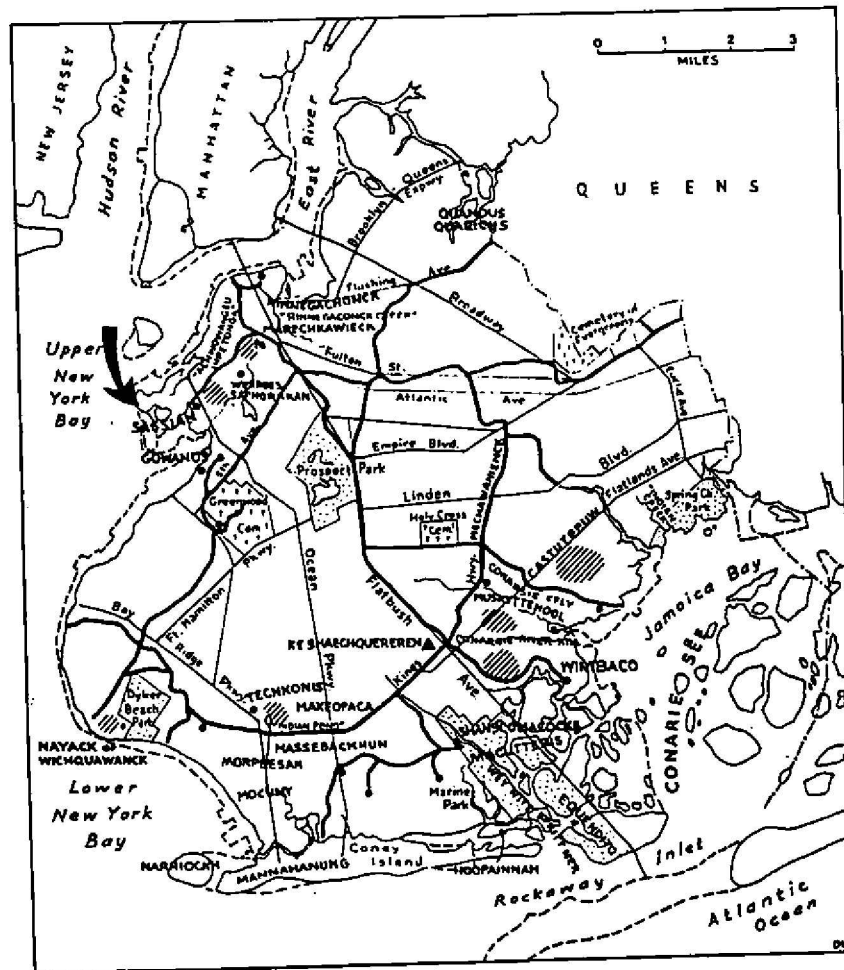


FIGURE 4

Indian Trails and Settlements in New York City: Brooklyn
 Photocopied from Grument 1981:70.



LEGEND FOR FIVE BOROUGH MAPS

- TRAIL (AFTER BOLTON 1922)
- ▨ PLANTING AREAS AND OLD FIELDS
- TENEMAS INDIAN NAMES OF LOCAL ORIGIN
- "ABIK" NAMES NOT OF LOCAL ORIGIN
- HABITATION SITE
- ▭ PRESENT-DAY CITY PARKS
- - - MODERN SHORELINE
- [] CEMETERY

Note the arrows that are indicating Indian corn fields, hillocks, and mill ponds on Red Hook.

in possession of a descendant of the
HANNES OR HANS BERGEN
whose house is located thereon.

made by, T. G. BERGEN.

The writing marked * is not on the original.
No date or Surveyors name on the Map but
probably made prior to 1750.

Scale reduced one half.

FIGURE 6

Photocopy of Ratzer Map, 1766-1767

□ Approximate location of Revere Sugar Sludge Site
Note Van Dyck Mill.

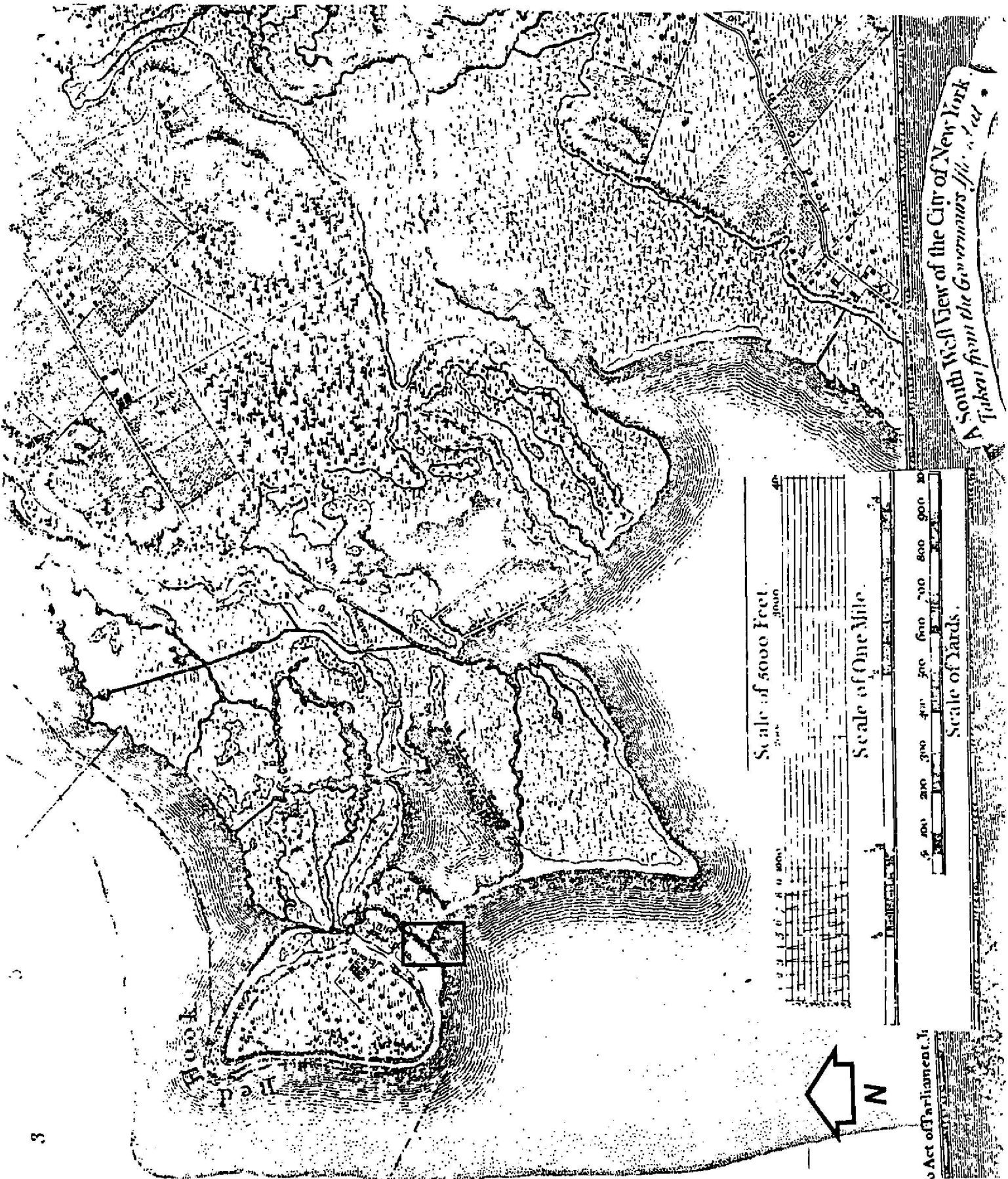
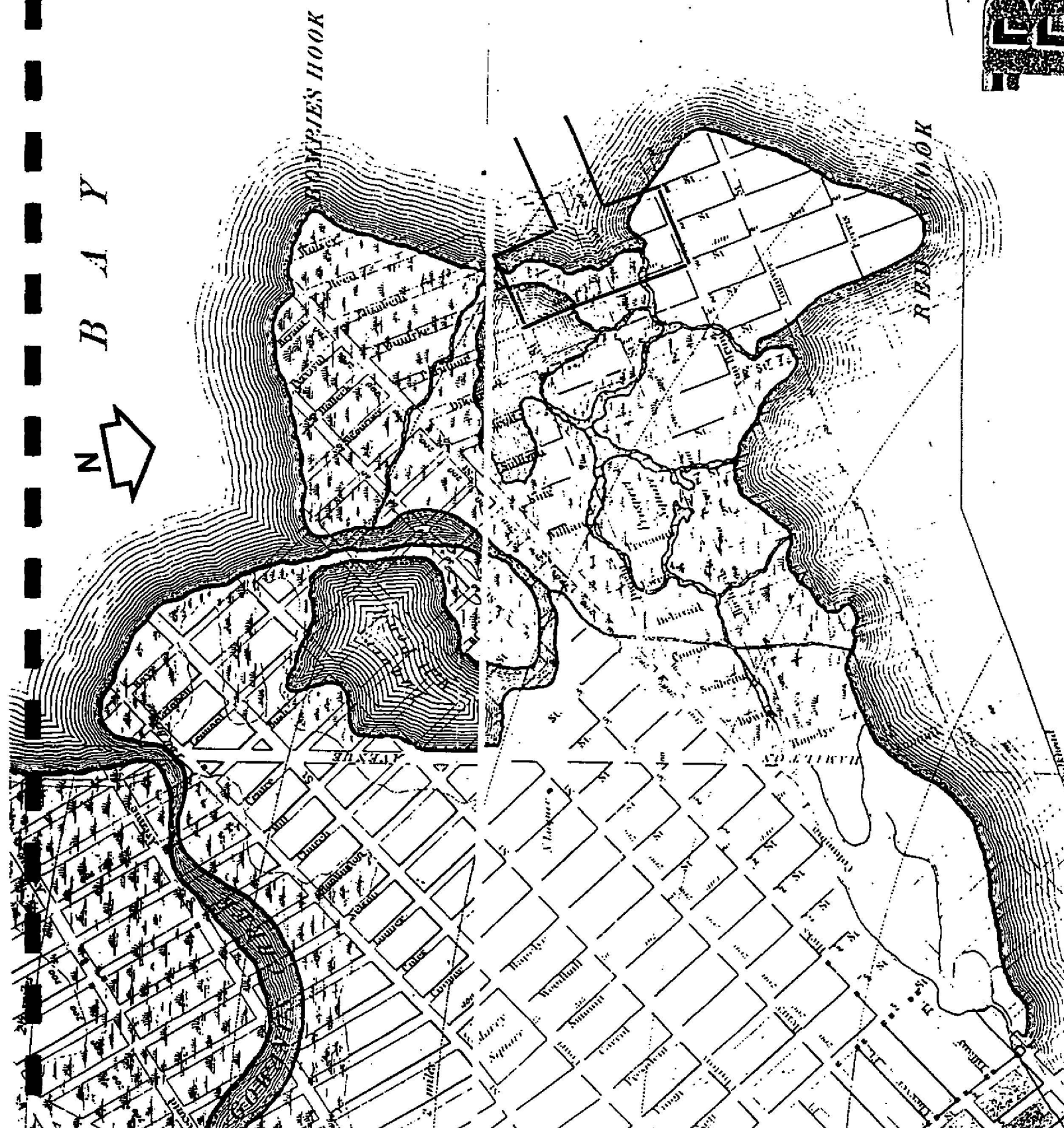


FIGURE 7

Photocopy: J. H. Colton's Map of the City of Brooklyn
1839
The 1840 Census Ward Map.

□ Approximate boundaries of Revere Sugar Sludge Site
Note the ponding and channeling.



Photocopy: H. Onderdonk's Revolutionary Incidents of Suffolk and Kings Counties, 1849.

Note letter "g" - Fort Defiance location.

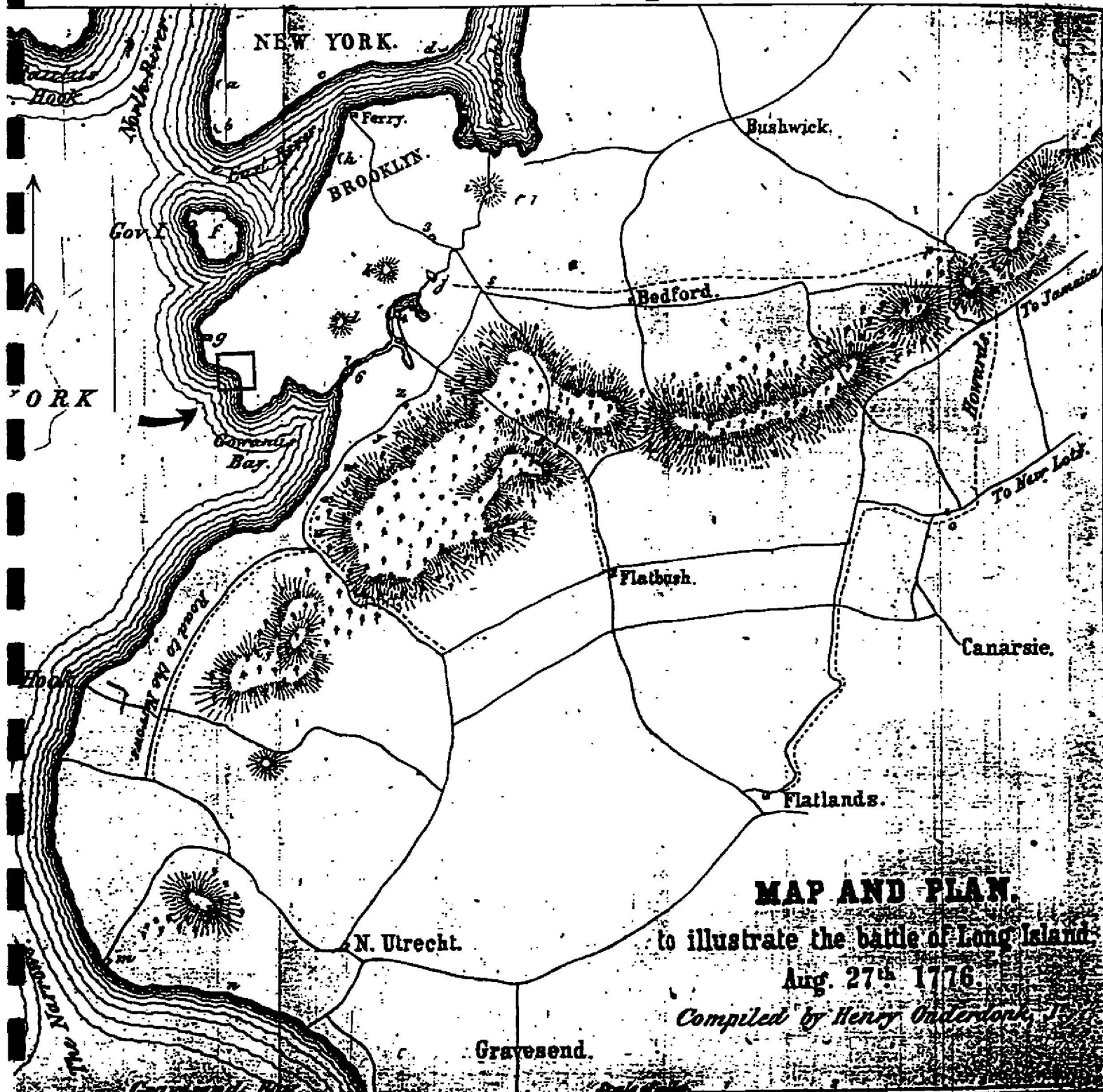
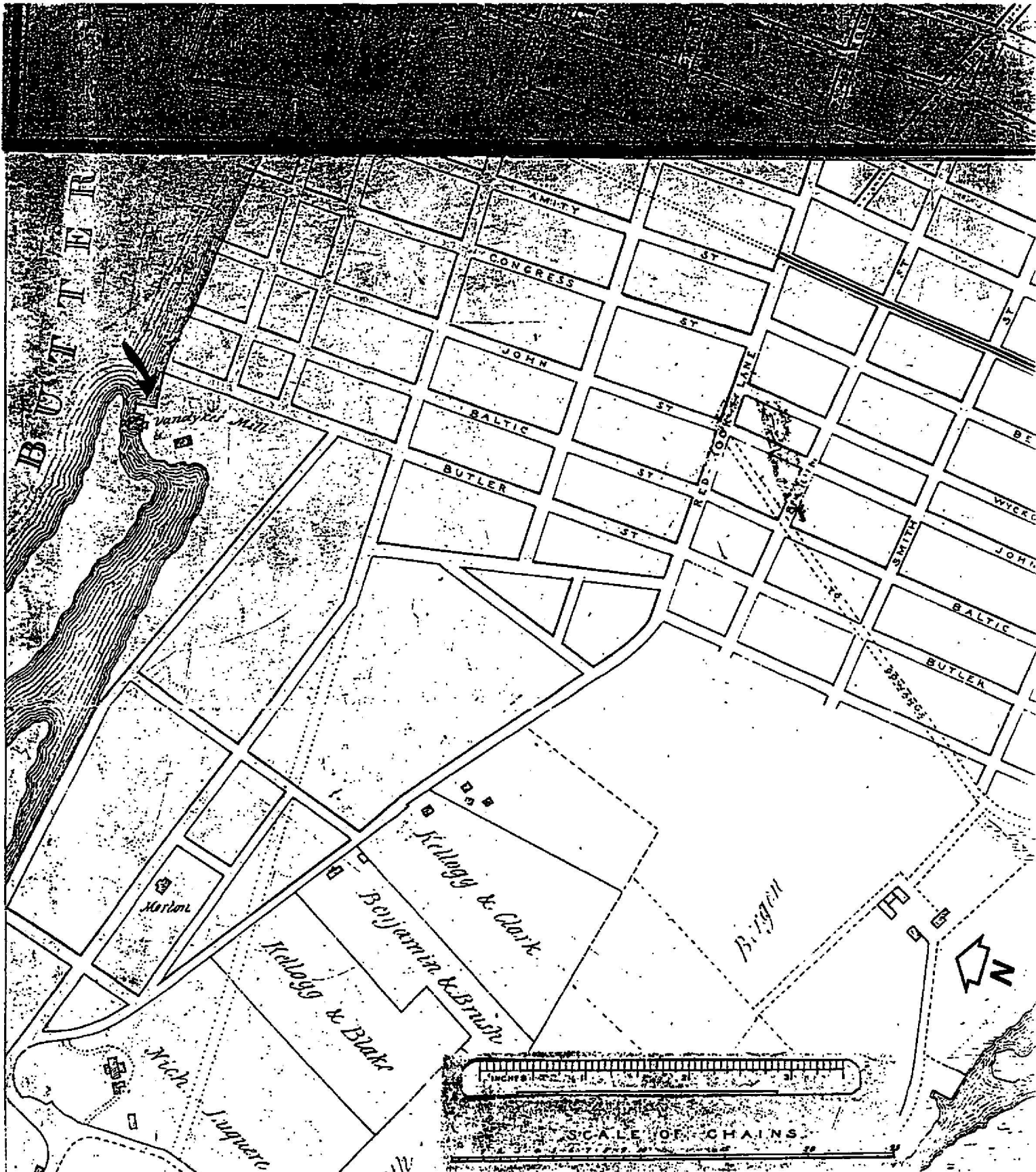


FIGURE 10

Photocopy: Alex Martin, Map of Brooklyn, 1834
1830 Census Ward Map

Revere Sugar Sludge Site not shown on the map.
Note Vandyke's Mill at approximate intersection of today's Columbia
and Irving Streets.



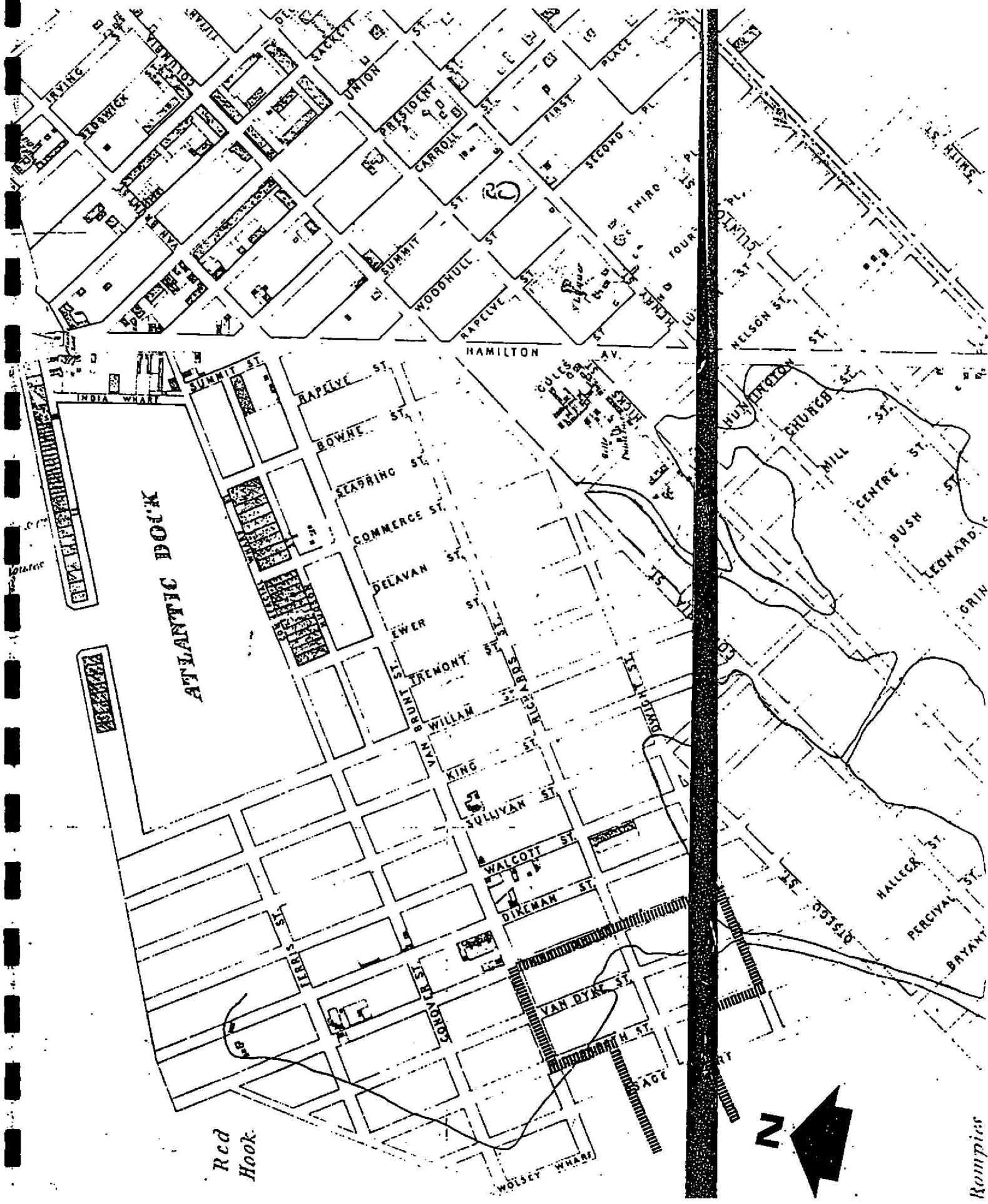


FIGURE 12

William Perris, 1855 Map of the City of Brooklyn
Vol. 2, Plate 35.
Approximate Boundaries

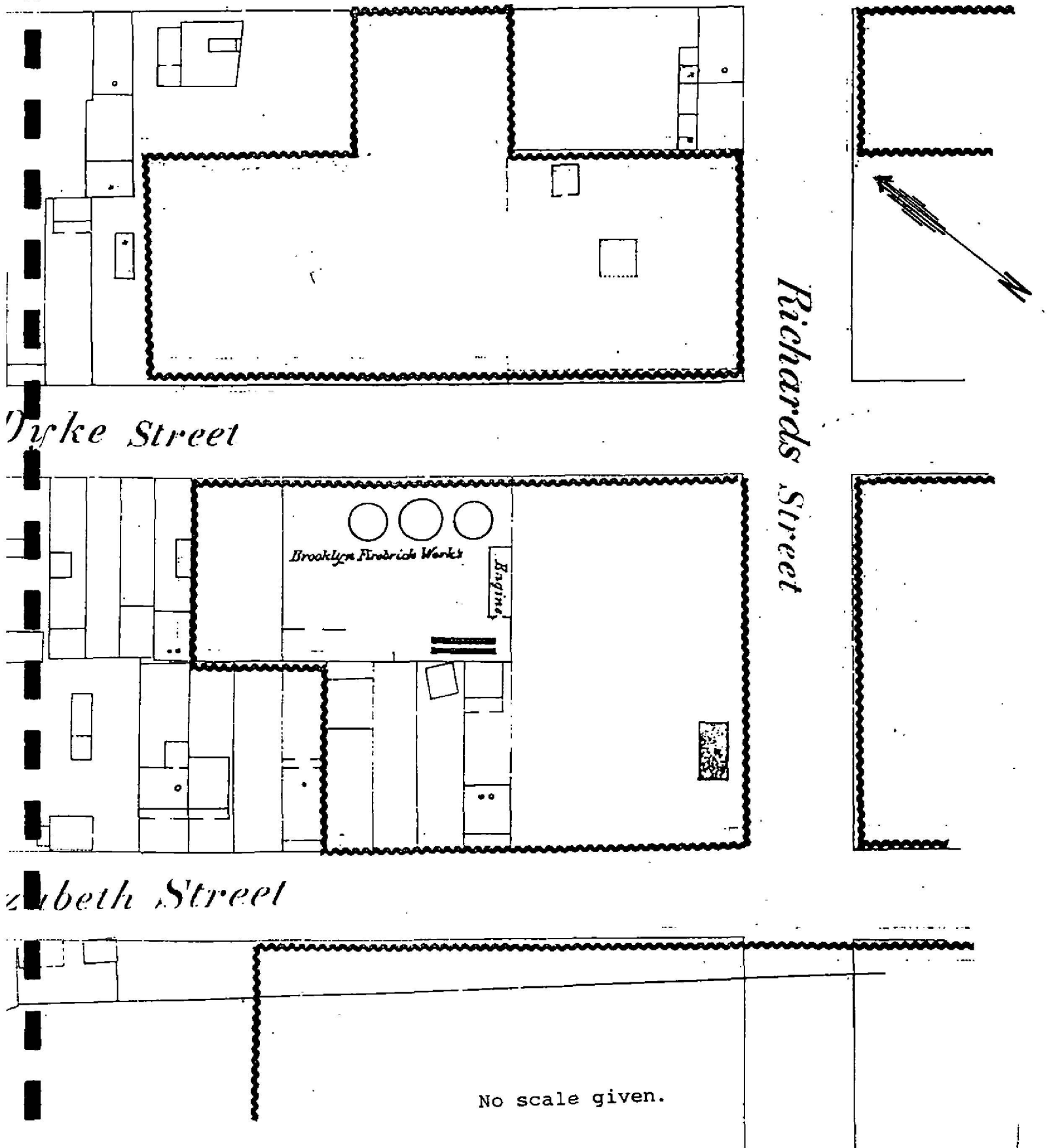
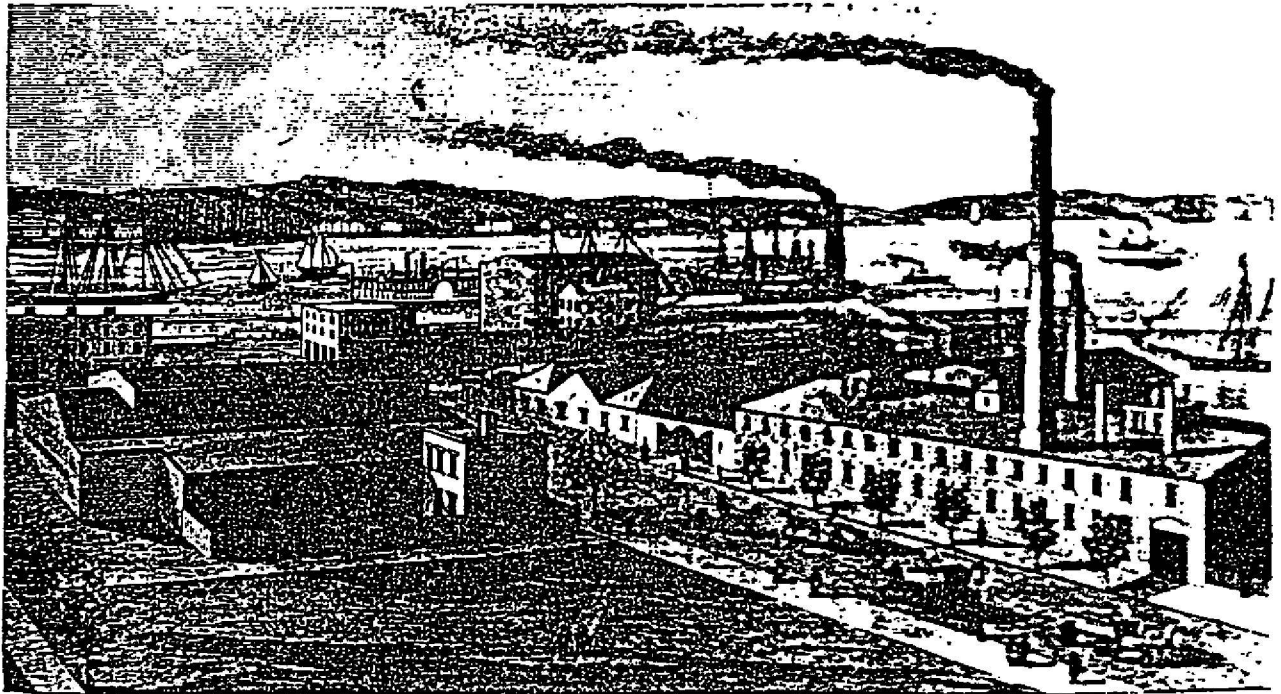


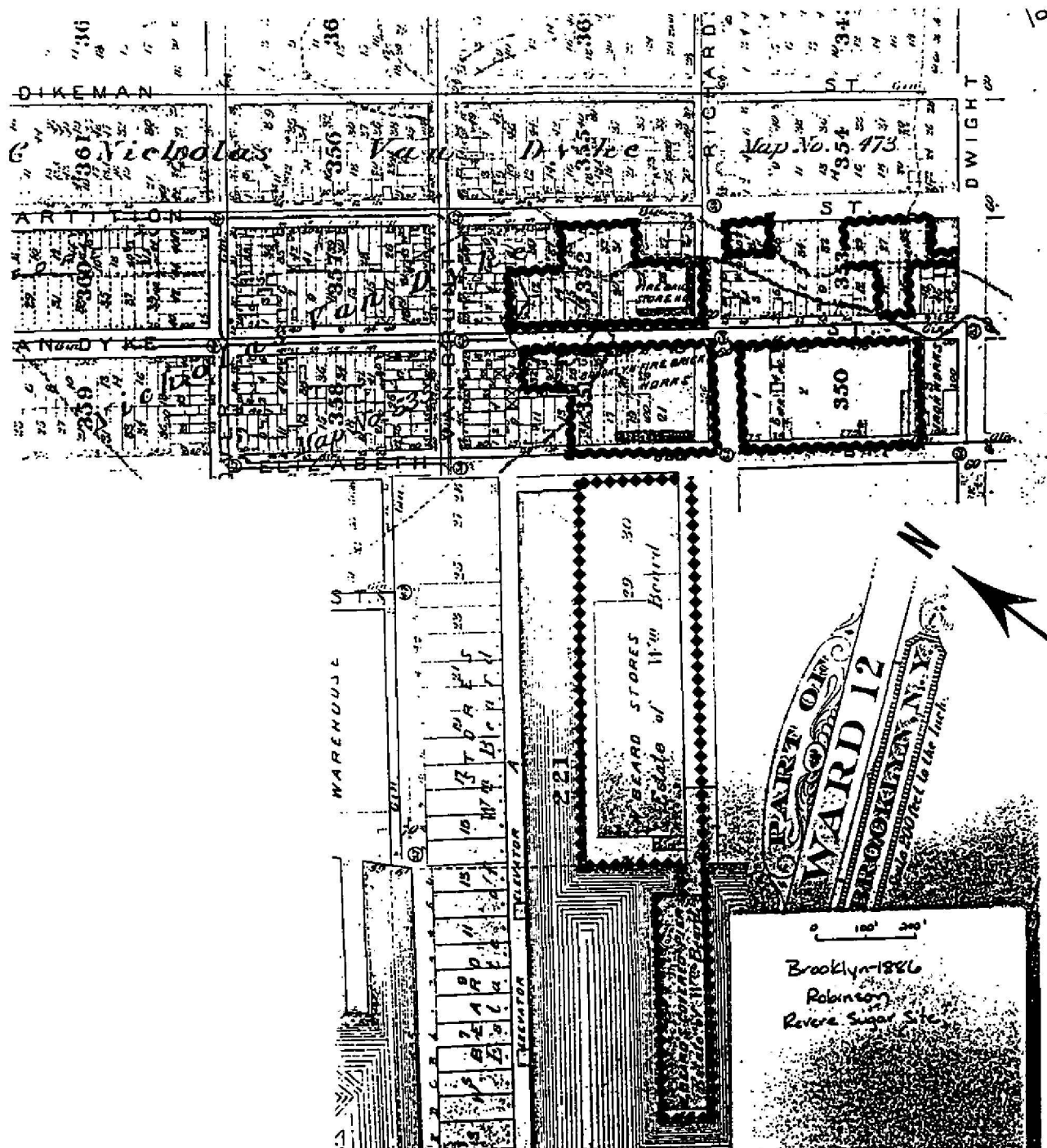
FIGURE 13

Brooklyn Clay Retort and Fire Brick Works
Photocopied from Stiles 1884, Vol. II, p.806.



BROOKLYN CLAY RETORT AND FIRE BRICK WORKS

FIGURE 14



Dripps, 1869
Photocopied from photograph.

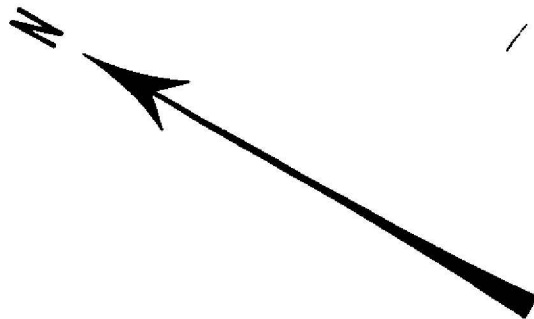
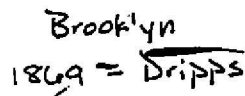
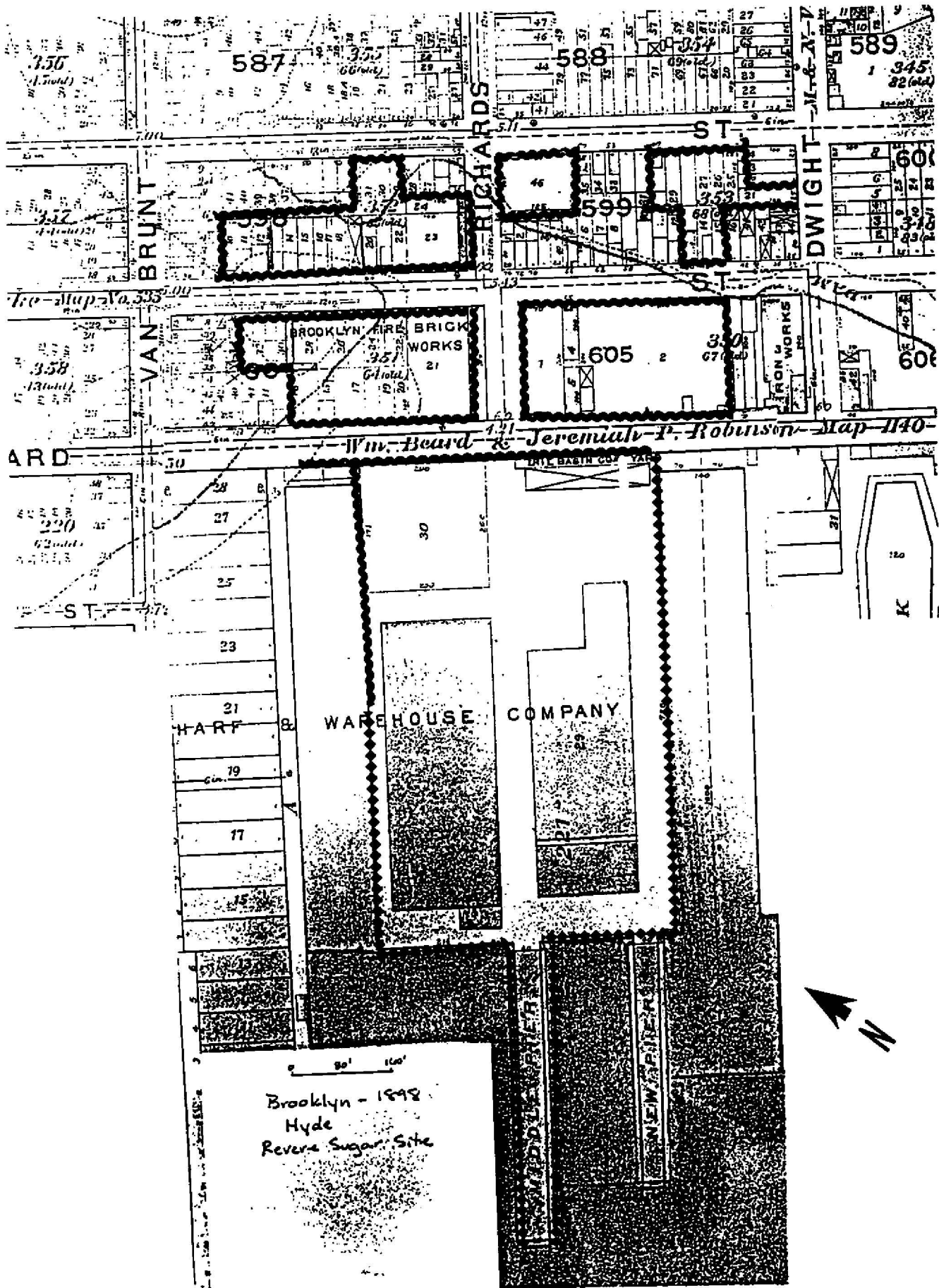


FIGURE 16

Hyde, 1898



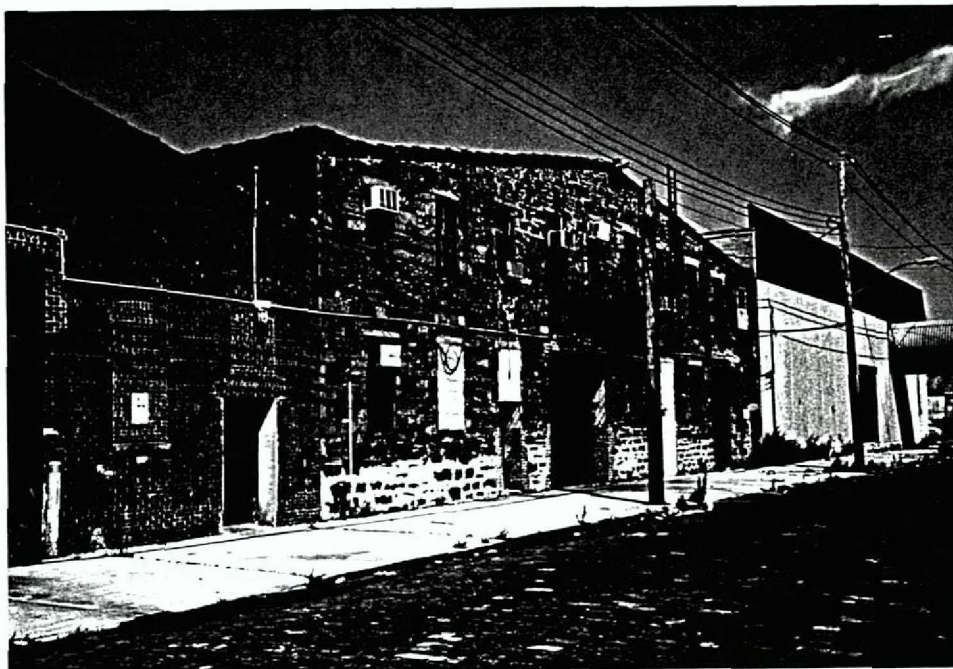
Photograph A

Revere Sugar Site: Block 604, Lot 16
Brooklyn Firebrick Works
view: north to south, Van Dyke Street
Compare 1991 photograph to Figure 13.



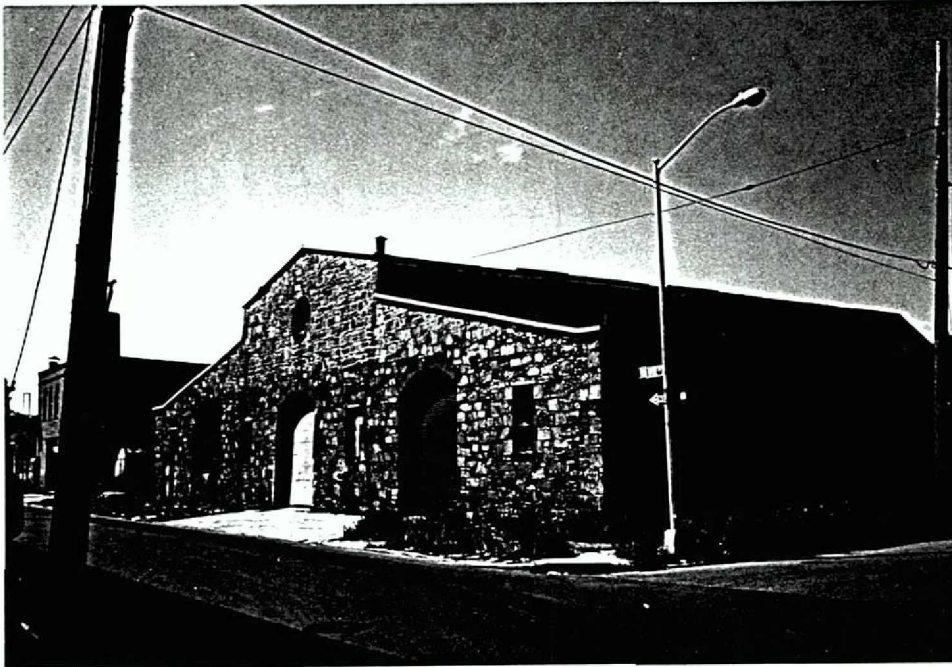
Photograph B

Revere Sugar Site: Block 604, Lot 16
Brooklyn Firebrick Works, c.1982 Revere Sugar building on right
view: north to south, Beard Street



Photograph C

Revere Sugar Site: Block 598, Lot 30
Brooklyn Firebrick Works
view: southwest to northeast, intersection of Van Dyke and Richards
Streets



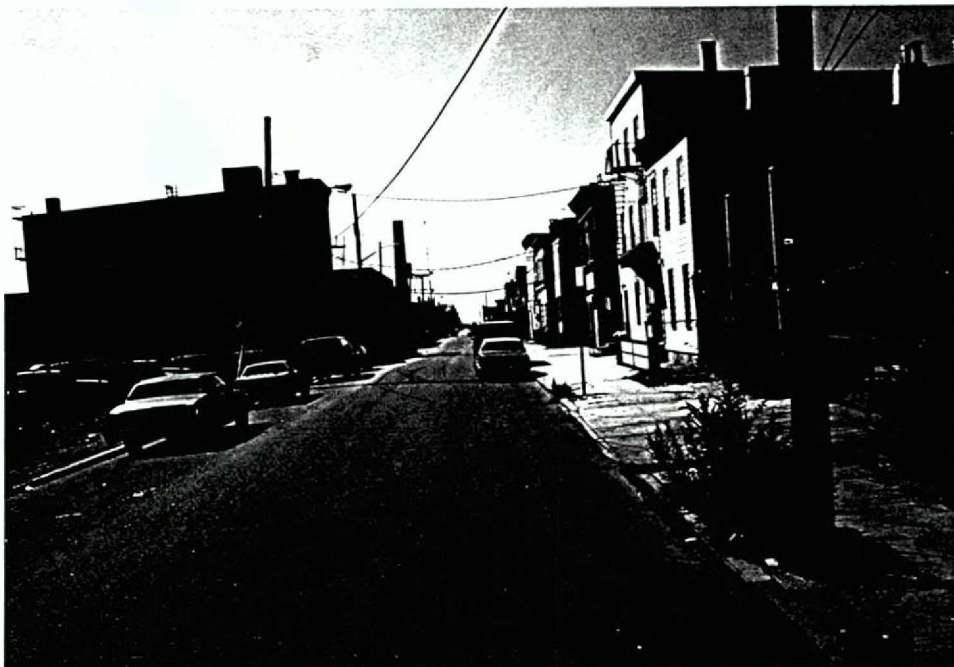
Photograph D

Revere Sugar Site: Block 599, Lot 2
view: southeast to northwest, from Coffey Street roadbed



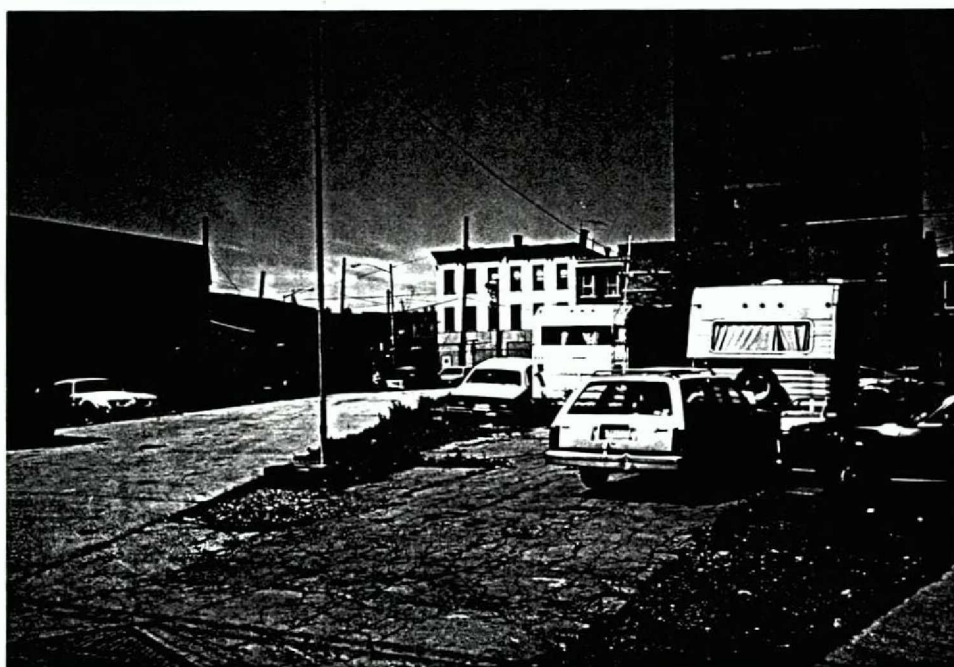
Photograph E

Revere Sugar Site
Coffey Street
view: south to north



Photograph F

Revere Sugar Site: Block 605, Lot 1 - northwest corner
view: west to east
Note rear of 69 Van Dyke Street building.



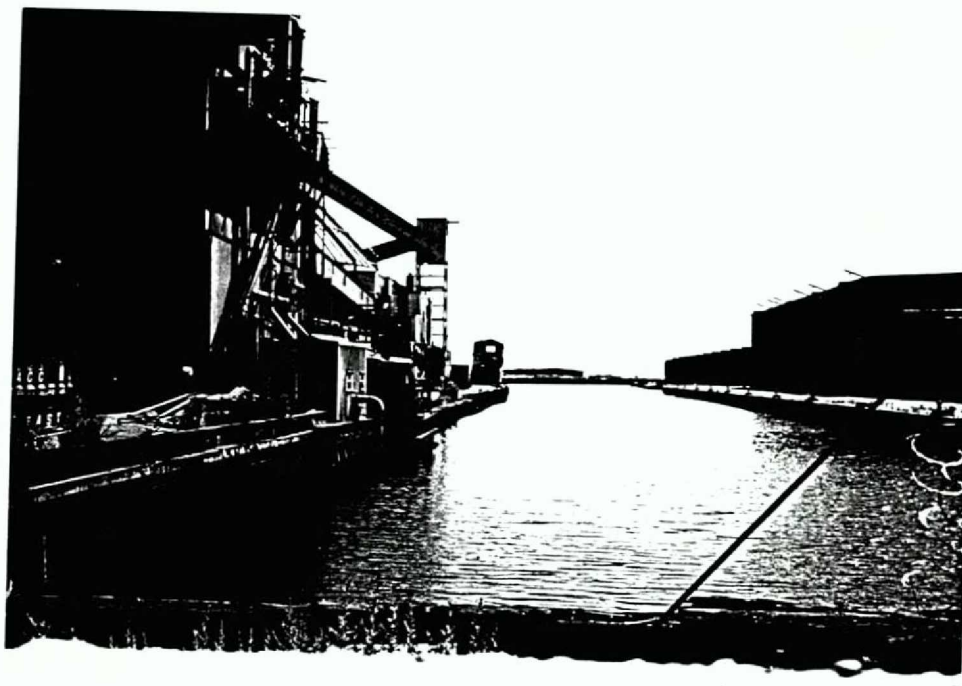
Photograph G

Revere Sugar Site: Block 605, Lot 1 in foreground
and Revere Sugar complex (Block 612) in
background
view: east to west, from Van Dyke Streetbed



Photograph H

Revere Sugar Site: Block 612, Lot 150
extreme northern edge and Erie Basin slip
view: east to west, from Beard Street
Note "Warehouse Pier" on the extreme right.



APPENDIX

RESULTS OF NEW YORK STATE MUSEUM
SITE FILE SEARCH

Revere Sugar Sludge Site, Jersey City Quad...no sites identified.

Revere Sugar Sludge Site, adjoining Brooklyn Quad... two sites identified in the Prospect Park area, far removed from the project site. See attached map.

NY Museum #3606: Arthur Parker (1920) campsite

NY Museum #3612: Arthur Parker (1920) shell midden