ASSESSMENT OF ARCHAEOLOGICAL SENSITIVITY

ERIE BASIN SITE

LONG RANGE SLUDGE MANAGEMENT PLAN

GEIS III

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Prepared by:

Allee King Rosen & Fleming, Inc.
117 East 29th Street
New York, NY 10016

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A. INTRODUCTION

This report addresses the potential for archaeological sensitivity on one of the sites proposed for New York City's Long-Range Sludge Management Plan. This site, known as the Erie Basin site, is located in the Red Hook section of Brooklyn — on Block 612, Lot 300, on the manmade, hook-shaped outer breakwater enclosing Erie Basin, a manmade harbor (see Figure 1 for site location). The breakwater is surrounded by water except at its northern end, where it connects to the upland at Columbia Street. A background history of the site is presented below, followed by an assessment of the site's archaeological sensitivity and a summary of the potential for project impacts. As detailed below, the breakwater's cribwork construction is unique and historically significant in the Port of New York, and its construction techniques and fill material may be potentially archaeologically sensitive, but the proposed project is not expected to affect these features.

B. ENVIRONMENTAL CONDITIONS

The upland portion of the Erie Basin site is 8 to 9 feet above mean sea level (MSL). The surrounding basin is dredged to a depth of 30 to 40 feet to allow access to the bulkheads by large ships. Borings taken at the end of Columbia Street in 1966 showed fill material consisting of broken brick, meadow mat, and soils approximately 10 feet deep. Below this fill was approximately 10 feet of soft silts and sands. Water table levels were recorded as low as 8.5 feet below MSL, although groundwater levels are generally expected to be near MSL and tidally influenced. No borings were available farther out on the breakwater; the possible construction techniques and fill materials there are discussed below.

C. BACKGROUND HISTORY

Until the second half of the 19th century, the Red Hook area of Brooklyn was a low-lying tidal marsh with little upland. Dutch farmers first settled the area, beginning in 1636, and developed water-powered mills there. As Downtown Brooklyn's population and waterfront activity grew in the 19th century, the city limits and street grid were eventually extended into Red Hook. In the late 1830's and 1840's, large-scale filling of marshes and ponds took place and real estate speculation began.

With the construction of the Atlantic Basin on Red Hook's western shore in the 1840's, Brooklyn became the region's great bulk goods handling center. The material dredged from the basin provided fill for other areas of Red Hook. Around 1856, work began on the largest waterfront project in 19th century Brooklyn — Erie Basin, developed by William Beard and two brothers, Jeremiah and George Robinson. This project, completed in 1880, occupied most of Red Hook's remaining undeveloped marsh, beach, and land — primarily sand spits and islands — between Gowanus Bay and the Atlantic Basin. When completed, Erie Basin was a manmade harbor, surrounded by a hook-shaped protective breakwater (the project site) and lined with piers and warehouses.

No detailed information documenting the construction procedure survives, but it is known that construction of Erie Basin involved erecting a narrow, temporary breakwater around the projected outer edge of the basin, and dredging the area behind it; the dredged material was then used to create inner bulkhead lines. Then, outlines of the outer breakwaters and bulkheads were completed (ca. 1864), enclosing about 60 acres of water, and the temporary barrier was removed.

The initial phase of construction on the long outer breakwater (the project site) was begun about 1873. At this time, a 1,700-foot-long bulkhead was built facing the inside of the basin, with an unretained pile of fill outside, and an open pile bridge at the elbow. Another open pile bridge connected this uncompleted breakwater to the mainland where Columbia Street is today. The breakwater consisted of cribwork extending 20 to 25 feet deep below mean low water, probably laid on level trenches excavated underwater. Bulkheads, rising 10 feet above mean low water, were usually square timbers fitted onto cribwork logs. According to local legend, Beard filled his breakwaters with European rock ballast that had been carried on returning American ships, charging the ships to unload the material.

Development of Atlantic and Erie Basins transformed Red Hook into a major shipping and warehousing center for grain and general cargo storage. Erie Basin became an important center for shipbuilding and a focus for local industries, and, for several decades, was one of the major grain storage and handling facilities in the Port of New York. By about 1910, most of the basin's warehouses were converted from grain to general cargo handling, and a large shipyard occupied part of the basin. By the end of World War I, the Todd Shipyard in the basin was the largest in the Port of New York, and shipbuilding support industries surrounded the basin, along with large lumber yards and sugar and firebrick manufacturing.

About 1920, a second phase of construction on the project site completed the long outer breakwater: the breakwater's outer bulkhead, which had been an unretained pile of fill, was completed, and the open pile bridge connecting the breakwater to the mainland was filled in. This involved building up and retaining the mass of fill behind the finished inner face of the breakwater. New York City soon took over this new section of the breakwater and rebuilt the bulkhead with steel sheet piling and a concrete wall to support a paved road, the extension of Columbia Street. At the same time, surfaces along the rest of the breakwater were graded and new sheds were built. (Figures 2 and 3 show outlines of the basin configuration in 1910 and 1984 to illustrate the evolution of the basin.)

By the early 1930's (and continuing at least until the 1950's), the bulkheads around the basin were gradually but extensively rebuilt. Often, this work involved replacing rotted timber bulkhead sections with new concrete walls on pile supports. Earth fill behind the new walls supported new concrete decks in the place of original earth surfaces. In the late 1940's and 1950's, the Beard company modernized Erie Basin for changing shipping practices, replacing the old frame and metal sheds on the project site and continuing the

complete rebuilding of the bulkheads there. On the inner face of the south breakwater, all the cribwork was removed and replaced with an anchored steel sheet pile structure containing solid fill and surfaced with asphalt.

Handling a variety of commodities from South America and Asia, Erie Basin served as a major shipping facility during World War II and the Korean War. However, the general decline in the port's trade as a result of containerization led the Beard company to sell Erie Basin to the Port of New York Authority in the 1950's. Construction of the Brooklyn-Queens Expressway further isolated the Red Hook area and use of the basin continued to decline.

D. CURRENT CONDITIONS AND POTENTIAL SIGNIFICANCE

The Port Authority of New York has recently repaired a number of the deteriorating bulkheads in Erie Basin, particularly along the project site. This repair work often involved placing new sheet pile or riprap in front of the existing bulkheads. Although almost all of the bulkhead faces above mean low water are thus modified in concrete, steel sheet piling, or timber reconstructions, most of the original cribwork foundations below mean low water are well preserved.

Erie Basin and the surrounding area were important in the development of the Port of New York. Erie Basin's breakwaters, especially the outer one that forms the project site, were possibly the largest cribwork projects of this kind in the history of the port. The basin's importance in the history of the Brooklyn waterfront and the integrity of its substructures make Erie Basin significant in the Port of New York. Although the bulkheads have been completely rebuilt since their original construction, below mean water details of vernacular design solutions to crib construction problems within and below the cribwork may be archaeologically significant. The lower cribwork component and the precise nature of bulkhead and breakwater fill materials are potentially significant.

As described above, the breakwater that forms the project site was almost completely rebuilt between 1920 and 1950, with extensive changes to the structure above mean low water, including the upper surface, which was first regraded periodically and then resurfaced with asphalt. Other modifications included building new concrete surfaces above the original surface, and constructing new sheds in the 1950's. All of this work would have involved considerable changes to the upper layers of fill material on the project site. The project site breakwater is currently occupied by 12 structures, 6 of which are large single-story structures. These sheds were built in the 1950's and are not of archaeological significance.

E. POTENTIAL PROJECT IMPACTS

Details regarding site planning and facility design for the proposed sludge management facility are not yet available, so a worst-case scenario has been analyzed for archaeological impact assessment. This scenario assumes that all existing structures on the project site would be demolished and the entire breakwater developed with a sludge management facility supported by a spread-footing foundation up to 5 or 6 feet deep. Part of the southern, outer face of the breakwater and both sides of the western portion of the breakwater would probably require repair work, most likely by building new sheet pile walls in

front of the older materials. In addition, a bridge connecting the southern portion of the breakwater to the western portion would likely require reconstruction.

The new sludge management facility would disturb no more area than the existing and past buildings and other extensive activities on the project site. The cribwork that supports the breakwater below mean low water, and the fill material and construction techniques of this cribbing, would not be disturbed by the proposed project. Therefore, this project would not have a significant impact on archaeological resources.

BIBLIOGRAPHY

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Stone & Webster, Site Assessment for Erie Basin, Brooklyn Site 23, March 15, 1991.

Figure 1
Project Location

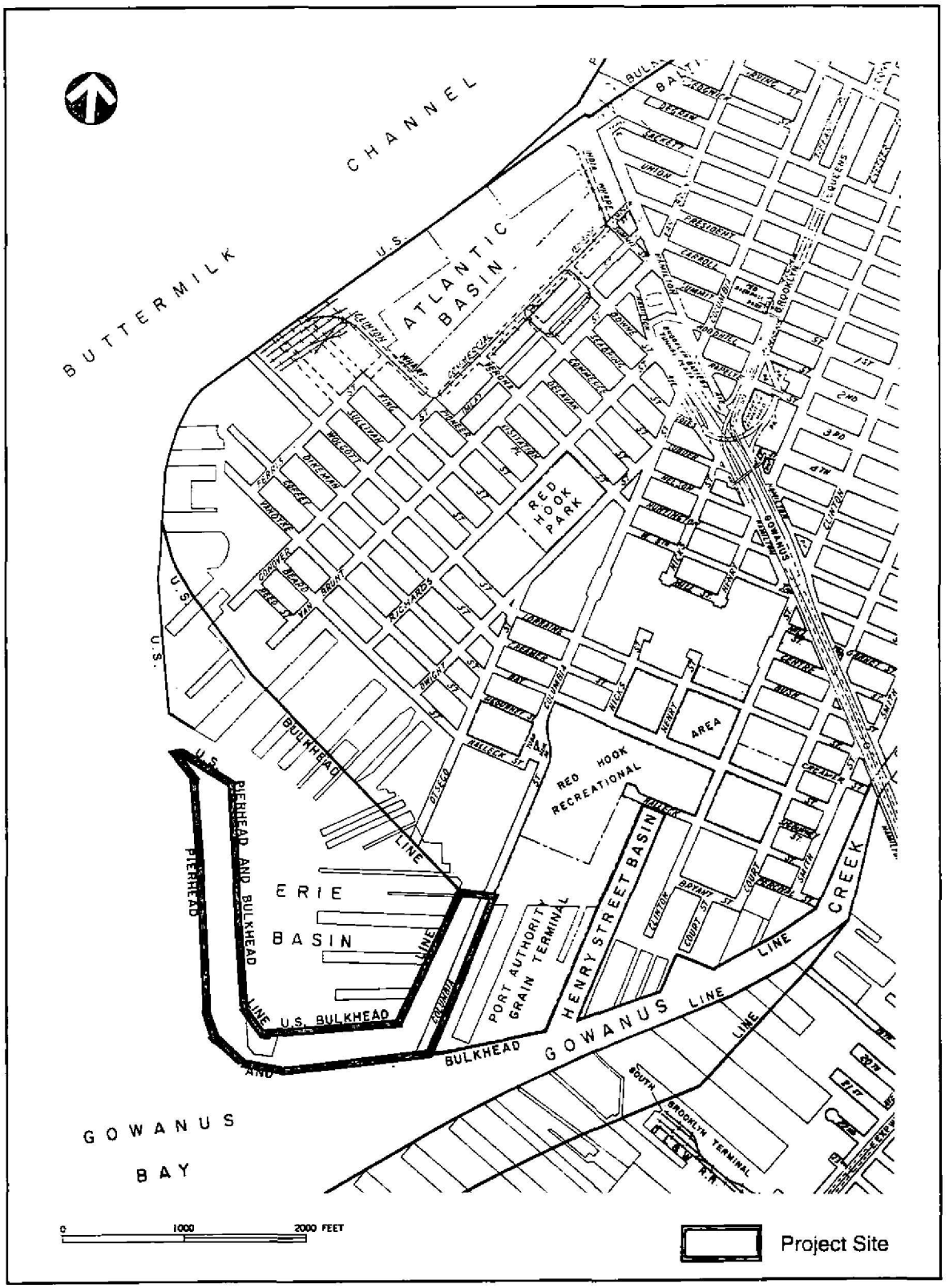
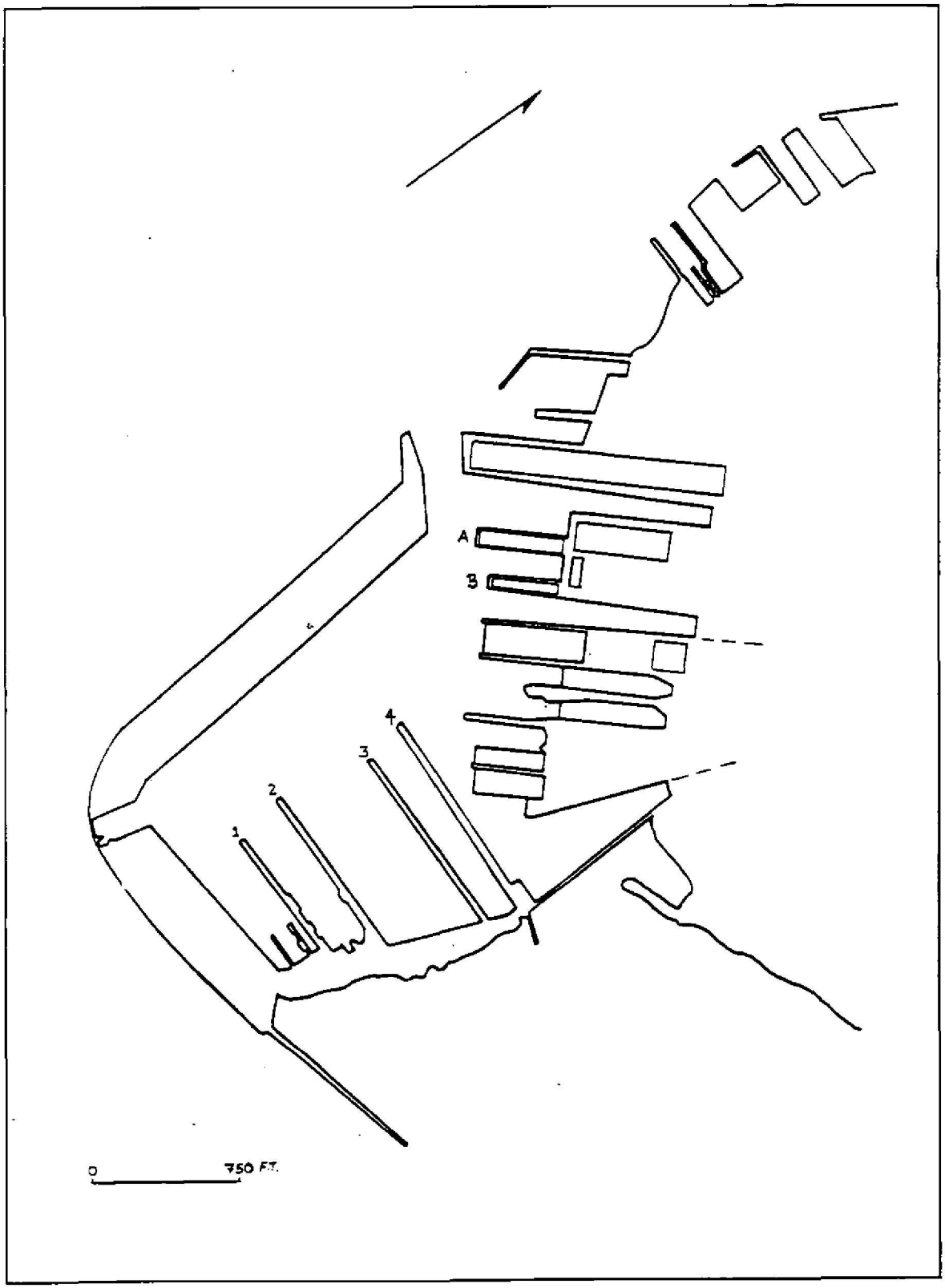
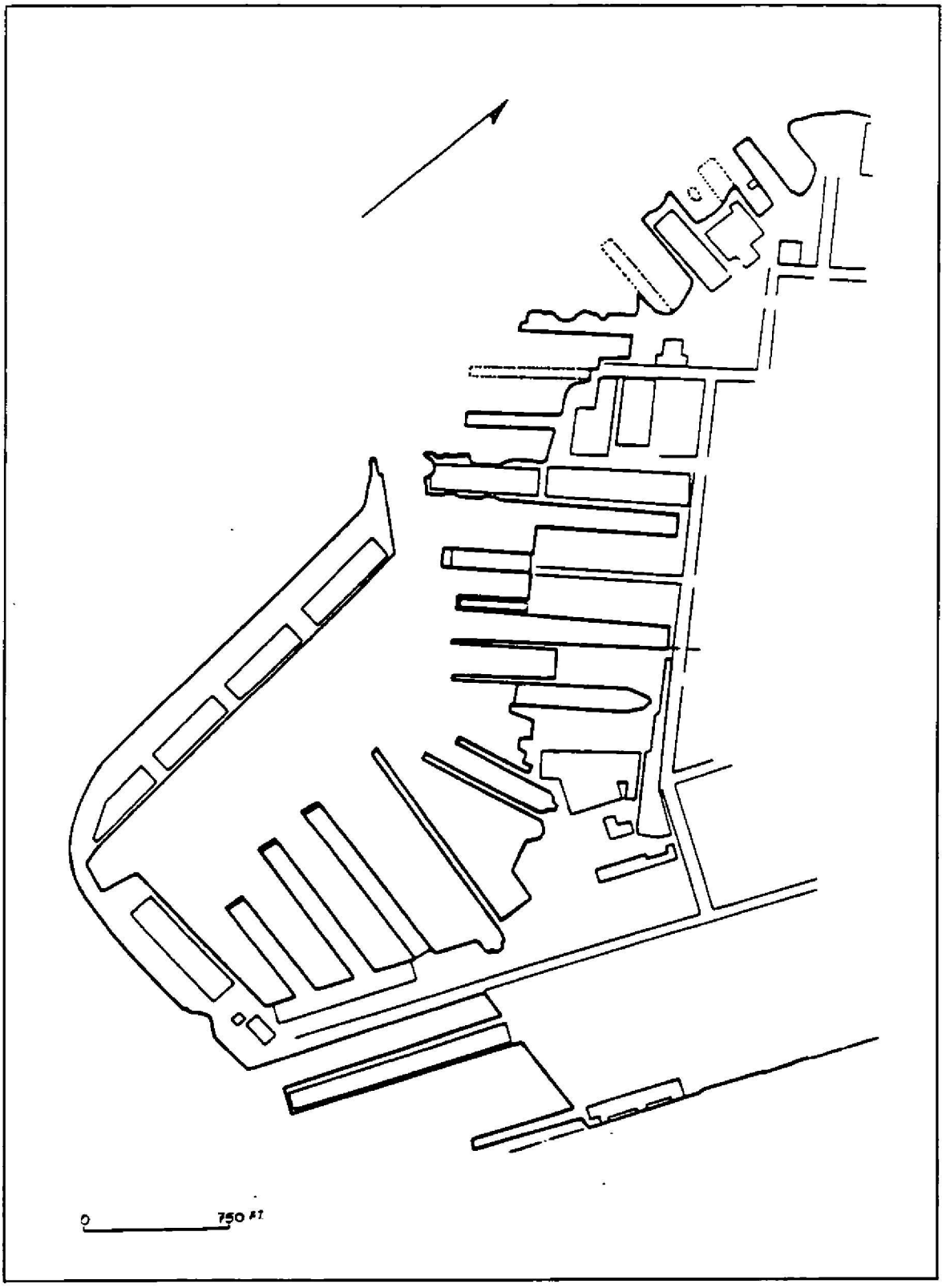


Figure 2
Erie Basin ca. 1910



Source: Raber and Associates

Figure 3
Erie Basin ca. 1984



Source: Raber and Associates