Phase Ia Archaeological Assessment Survey
of the
New Haven Rail Yard Facilities Improvements
152 Water Street, USPS Parcels 2&3, and CSX Parcel
in the
City of New Haven, Connecticut

June, 2012

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by
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◆ Archaeological Consulting Services ◆

for
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72 Cedar Street
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June, 2012
Abstract

This report contains the results of a Phase Ia archaeological assessment survey conducted by ACS during the months of October, 2011 through June, 2012. The project calls for an evaluation of possible cultural resources to be affected by the expansion of an existing rail yard and associated facilities to the northeast of Union Station in New Haven, Connecticut. The originally defined project area consists of three properties lying to the east of Union Avenue and the existing rail yard, to the west of Brewery Street, and to the south of Route 34 and Water Street (Route 1). The three properties include three parcels occupied by United States Postal Service facilities, a CSX property, and a historic building at 152 Water Street that currently houses a scaffolding company. Current proposed developments consist of renovating the building at 152 Water Street to accommodate offices. Plans at the commencement of this survey also called for the potential acquisition of the two adjacent post office parcels with existing structures, although recent plans have suspended the potential acquisition of the postal parcels, and access to the interior of these buildings was therefore not supplied in the performance of the survey.

ACS was contacted to perform the archaeological assessment survey by Fitzgerald & Halliday, Inc., an environmental planning firm based in Hartford, Connecticut. The study was requested by the project owner, Connecticut Department of Transportation (ConnDOT), based on a preliminary review of the project by the Connecticut State Historic Preservation Office (SHPO).

The project area lies in the Western Coastal ecoregion, within a large unit of New Haven Arkose. Overlying fine glacial meltwater sediments and sand were submerged beneath about five to ten feet of water which precluded habitation at the time of contact between Native Americans and European explorers, although there is the possibility for deeply buried Archaic sites based on rising sea levels since the Pleistocene. The project area remained under water until filled in the mid to late 19th Century by the New Haven & Northampton Railroad Company for the construction of a rail yard. The rail yard included extensive facilities, such as a freight house and engine house or roundhouse, while the southern boundary of the project area coincides with the Long Wharf whose first construction was in 1682. The Long Wharf was lengthened considerably over the next couple of centuries, and included many businesses operating out of structures built along the landward half of the wharf adjacent to the project area.

Based on the known distribution of sites and paleoenvironmental reconstructions, the project area appears to bear a moderate sensitivity for potential prehistoric cultural resources, and specifically for deeply buried Archaic sites that could have avoided impacts from subsequent historic developments. The project area could also retain traces of significant features related to the early operations of the railroad, and could additionally contain important features related to the wharves along the northern and southwest peripheries of the project area. Because of the considerable expense that would be associated with subsurface explorations to determine the possible existence of such deeply buried potential cultural contexts, it is therefore recommended that any areas that will be impacted by subsurface alterations on the project area below a depth of one foot in areas mapped as having contained repair shops or roundhouses, and/or six feet or more in potentially undisturbed subsurface contexts, be subject to archaeological monitoring. Alternatively, mechanical stripping and professional archaeological subsurface evaluation may be warranted in cases where archaeological monitoring during construction is not feasible in these areas. With respect to the existing structures on the property, 152 Water Street has been radically altered, particularly with respect to modern replacement structural materials for the western half of the structure, and is therefore not eligible for the National Register of Historic Places (NRHP), although the exterior of the eastern half of the structure retains enough historic character that it should be further conserved according to standards set forth by the Secretary of the Interior regarding historic buildings and properties - Standards for the Treatment of Historic Properties.
Project Summary

Project Name: New Haven Rail Yard Facilities Improvements (152 Water Street, USPS Parcels 2&3).

Project Purpose: To evaluate the sensitivity of the project area with respect to the possible presence of prehistoric and/or historic cultural resources in conformance with guidelines issued by the Connecticut State Historic Preservation Office.

Project Management: Parsons Brinckerhoff, Glastonbury, CT; Fitzgerald & Halliday, Inc., Hartford, CT.

Project Location: South of Water Street (Route 1) and Route 34, west of Brewery Street, north of USPS service driveway, east of Union Avenue and railroad tracks, City of New Haven, New Haven County, Connecticut.

Project Owner: State of Connecticut Department of Transportation (ConnDOT), 2800 Berlin Turnpike, P.O. Box 317546, Newington, CT 06131-7546.

Project Number: (ConnDOT) 301-0088

Project Size: Approximately 14.67 acres.

Investigation Type: Phase Ia archaeological assessment survey.

Investigation Methods: Research, pedestrian surface survey.


Principal Investigators: Gregory F. Walwer, Ph.D. and Dorothy N. Walwer, M.A.

Submitted to: Fitzgerald & Halliday, Inc. (Laurel Stegina, Principal Planner), 72 Cedar Street, Hartford, CT 06106, (860) 247-7200.

Connecticut Office of State Archaeology (Dr. Nicholas Bellantoni, State Archaeologist), University of Connecticut, 2019 Hillside Road, U-1023, Storrs, Connecticut 06269-1023, (860) 486-5248.


Recommendations: For potential prehistoric cultural resources - archaeological monitoring on any part of the project property subject to excavation or construction in excess of six feet below the current surface in potentially undisturbed subsurface contexts. For potential historic archaeological resources - archaeological monitoring along the Water Street and Long Wharf Street boundaries of the project area, and within areas mapped as containing former repair shops and round houses, at depths greater than one foot. For the existing building at 152 Water Street - changes to the building preclude its eligibility to the National Register of Historic Places (NRHP), although the exterior of the eastern half of the building retains much of its original historic quality and reflects an important period in the growth of the railroad industry. Therefore, any proposed changes to the exterior of the eastern half of the structure should be subject to SHPO review and conformance with the United States Secretary of the Interior's Standards for the Treatment of Historic Properties.
Acknowledgements

ACS is indebted to the following people whose assistance helped to make the execution of this project more accessible and thorough:

Daniel Forrest, Staff Archaeologist for the State Historic Preservation Office in Hartford, Connecticut. ACS thanks Daniel Forrest for his help in procuring prehistoric and historic sources pertaining to the region surrounding the project property.

Dr. Nicholas Bellantoni, State Archaeologist at the Connecticut Office of State Archaeology in Storrs, Connecticut. ACS thanks Dr. Bellantoni for directing ACS towards helpful background research sources relating to the prehistory and history of the region.

Ms. Laurel Stegina, Principal Planner for Fitzgerald & Halliday, Inc. of Hartford, Connecticut. ACS thanks Ms. Stegina for coordinating the project.

Mr. James Campbell, Librarian & Curator of Manuscripts of the New Haven Museum in New Haven, Connecticut. ACS thanks Mr. Campbell for his help in securing important research sources for the project, particularly early maps of New Haven and early plans of the New Haven & Northampton Company.

Ms. Laura Smith, Curator of History & Business Collections at Dodd Special Collections at the University of Connecticut in Storrs, Connecticut. ACS thanks Ms. Smith for her help in providing access to rare research materials related to the history of the railroad in Connecticut, particularly original manuscripts of the New Haven & Northampton Company.

Connecticut State Library (CSL), Archives Staff. ACS thanks CSL staff for their assistance in accessing rare and valuable historic resources, particularly annual reports for the New Haven & Northampton Railroad.

Mr. Glen Hayden, Project Manager for Parsons Brinckerhoff of Glastonbury, Connecticut. ACS thanks Mr. Hayden for providing site access at 152 Water Street, as well as providing important information regarding recent site history.
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CHAPTER 1: INTRODUCTION

Project Description

This report provides the results of a Phase Ia archaeological assessment survey performed by ACS for the expansion of a rail yard facility in the City of New Haven, New Haven County, Connecticut. The project area is in the southern part of New Haven, to the northwest of Interstate 95 and to the south of Route 34. More specifically, the project area consists of three major parcels bound by Brewery Street to the east, Water Street (Route 1) to the north, Union Avenue and an existing rail yard to the west, and a driveway for the United States Postal Service (USPS) facilities on the south. The project owner is the Connecticut Department of Transportation (ConnDOT). One of the parcels, already acquired by ConnDOT, is located at 152 Water Street and currently has a historic structure on just over one acre occupied by a scaffolding company, and was formerly home to a lumber distributor, the New Haven Reserve Supply Company. Three other parcels, including those with modern USPS buildings, were being considered for acquisition by ConnDOT at the commencement of the survey, with an additional 1/2-acre connecting piece owned by CSX Trans, Inc. also part of the original project area under consideration, although the postal parcels are no longer being targeted for acquisition under current project definitions. The project now only calls for the renovation of the building at 152 Water Street for offices of Metro North Railroad's Structures Department, which contains about 20 to 25 workers responsible for maintaining railroad facilities from Bridgeport to New Haven. Plans call for the removal of a large billboard on the roof, with the existing building containing shops and materials designed for storage for carpenters, plumbers, and tinsmiths. Related rail yard improvements planned for the project also include the development of warehousing facilities, maintenance of way accommodations, and employee parking.

The project was initially reviewed by the Connecticut State Historic Preservation Office (SHPO), which recommended a Phase Ia archaeological assessment survey for the project based on the fact that the project area lies in the vicinity of the historic New Haven Rail Yard and former waterfront lands abutting the Long Wharf Pier. More specifically, SHPO noted in a March 18, 2010 correspondence with ConnDOT that:

"a late nineteenth-century roundhouse once stood on or near Parcel 3... several other buildings and structures associated with the rail yard and other commercial or industrial concerns were once located within Parcel 2 and the CSX Parcel. Although the construction of the existing building on Parcel 3 has likely affected the former roundhouse, we are concerned that some significant remains of these historic features may remain. The New Haven Rail Yard was identified as a significant historic property during the EIE process. It is possible that contributing resources to this National Register-eligible property may be affected by the current project."

Fitzgerald and Halliday, Inc. (FHI) of Hartford, Connecticut is coordinating the environmental documentation aspects of the project, and requested a scope of work from ACS to conduct the archaeological assessment survey. FHI provided ACS with site plans showing existing conditions on the three parcels. The archaeological survey was conducted in conformance with guidelines (i.e. Environmental Review Primer for Connecticut's Archaeological Resources) issued by SHPO, which serves as lead review agency for the report.
Background Research

The broad environmental setting of the project property is within the Western Coastal (V-A) ecoregion. The underlying bedrock of the area consists of a large unit of New Haven Arkose (Trnh), a Triassic formation on the order of 200 to 250 million years old. The surficial materials above bedrock consist of artificial fill (af), up to 12 feet thick above a bed of mostly fine glacial meltwater sediments. Given the thick artificial fill, soil contexts are indicated as Urban land (Ur), featuring a high density of paved surfaces. Much of the project area was formerly within the New Haven Harbor prior to filling during the 19th Century. The project area is within the South Central Shoreline drainage basin complex (#5000) that includes the harbor, now lying about one-quarter mile to the southeast. The project area is devoid of any substantial vegetation other than some minor strips of maintained lawn and interspersed landscaped trees. Current developments in the project area include three buildings and paved parking areas.

There are no previously recorded prehistoric sites within a mile of the project area according to site files of the Connecticut State Historic Preservation Office (SHPO) and the Connecticut Office of State Archaeology (OSA), although the lack of any recorded sites is likely attributable to early historic development that disturbed much of the area. The original environmental setting for the project area before historic development was within the harbor, thus no realistic opportunity for settlement of the specific project area at the time of European contact. There are, however, Archaic sites known in submerged contexts along the Long Island coast, and the progression of sea level rise during the course of the entire prehistoric sequence in Connecticut approaches 30 feet, although the rise in sea level has only been about ten feet since the beginning of the Terminal Archaic period. The bulk of previously identified submerged sites in the Long Island Sound tend to be identified at low tide levels, while surficial materials maps and nearby geological borings indicate from six to twelve feet of fill above glacial meltwater sediments. Additionally, the vast majority of previously identified submerged sites tend to be located adjacent to estuaries or the mouths of major streams and rivers, with the current project area formerly near the mouth of West Creek that once flowed east along what is now North Frontage Road into the harbor, and the mouth of East Creek that once flowed south along what is now Union Street. Given the former presence of nearby fresh water sources or estuaries, it is therefore possible that portions of the project area could contain traces of prehistoric activity at depths below the historic fill within the early historic limits of the harbor.

The project area also exhibits a potential for important historic archaeological resources. Originally built around 1682, the Long Wharf was repeatedly expanded seaward over the next 130 years and is a feature that was in line with the southwest boundary of the project area, now represented by a property driveway recently known as Long Wharf Street. A short length of the end of the wharf still protrudes into New Haven Harbor about one-quarter mile to the southeast of the project area where a late 20th Century revitalization project obscured much of the remaining structure. A prior assessment survey of the Long Wharf, however, suggests that much of it may remain in tact beneath the current surface of the project area and land to the east, with associated fill contexts also possibly containing or covering important associated materials such as ship wreckage, ballast from around the world, and other artifacts. The same may be true for the northern boundary of the project area, which was in line with the southern extent of historic wharfage associated with Water Street that lies immediately to the north of the project area. That
wharfage was extended in the early 19th Century along what is now Brewery Street until meeting the Long Wharf near the southern corner of the project area, and enclosing what was known as Union Basin. Originally serving as a point of entry and egress for shipping associated with the Farmington Canal Company, the basin was acquired by the company's successor, the New Haven & Northampton Company, which formed a railroad line along the route of the canal.

The New Haven & Northampton began filling in the southern half of the basin late in the 1840s, and by around 1850, had constructed a roundhouse and associated freight house and offices in the southern half of the basin as the southern terminus of the line, as well as a long freight dock that extended into the harbor parallel to the Long Wharf. The line was immediately leased to the more dominant New York & New Haven line, until 1869 when the New Haven & Northampton resumed control over its own line. At that time, they invested in major capital improvements to their facilities at the basin which they nearly filled in completely, and constructed a new, larger roundhouse and repair facilities in the northern half of the basin - continuing to use the southern half of the basin for a large freight warehouse and as a rail yard. The newer facilities constructed by 1870 included the building at 152 Water Street, which was used as a maintenance building and blacksmith shop, as well as an associated paint shop which burnt down in the 1990s. By 1890, the New York, New Haven & Hartford Railroad had acquired all assets of the New Haven & Northampton Company as well as all of the land occupied by the Long Wharf and enclosed within Union Basin. The railroad facility was actively used as a rail yard and major repair center until the 1920s, by which time the more massive and centralized facilities at Cedar Hill about one mile to the north of the project area had been expanded. In the 1950s, the extraneous properties of the railroad were sold off in a vain attempt to save the company from bankruptcy, and the massive post office building that now fronts Brewery Street was completed by 1953. In 1955, the building at 152 Water Street was sold to the New Haven Reserve Supply Company, a lumber distributor that was in operation until 1988. The building thereafter was occupied by a scaffolding company, until its recent purchase by ConnDOT. 1988 was also the year that the second post office building was constructed on the property in the southern part of the original project area.

Field Results

A pedestrian surface survey was conducted by ACS for the project area in November, 2011; February, 2012; and June, 2012. Roughly triangular in shape, the project area is located in south-central New Haven, bound on the southeast by Brewery Street, on the southwest by a long driveway into the property (Long Wharf Street), and on the north by Water Street (Route 1) and Route 34 and its Oak Street Connector. The original project area consists of three principal lots, including two belonging to the United States Postal Service along Brewery Street and Long Wharf Street, and the northern lot at 152 Water Street. Water Street is actually located well to the north of Route 34 away from the property, with the latter lot accessed by a sinuous driveway coursing below the suspended connector, named Heath Drive.

The surface survey included an examination of the perimeter of the property and the grounds, which mostly consisted of buildings and paved surfaces. There are a few maintained grass lawn sections, particularly along Brewery Street. There were no visible traces of historic features or structures at the surface of the project area, with the exception of the building and
associated features at 152 Water Street. Much of the eastern part of the project area is occupied by the massive postal facility at 50 Brewery Street, a building that is flush with the street with the exception of an intervening concrete sidewalk and landscaped trees. The northern end of the building is fronted by a paved driveway off Brewery Street, with a generous parking lot located between the southern end of the building and Long Wharf Street. The auxiliary building lies to the west of the main building, and is surrounded on all sides by more parking areas. Another building converted from a railroad freight platform lies to the rear of 50 Brewery Street between the auxiliary building and 152 Water Street, also surrounded by parking surfaces on three sides with its north face abutting the lot of 152 Water Street. Chain link fencing surrounds much of the project area, with the exception of driveway entrances.

The lot at 152 Water Street is surrounded by some narrow sections bearing grass and scrub vegetation. The driveway leading into the lot descends from Water Street beneath the Route 34 connector and bends to the east towards the interior of the lot. A concrete retaining wall lines a portion of the northern side of the driveway, while the southern side runs along the remains of an abandoned rail line that once extended from the rail yards to the west of the lot eastward into the lot and along the north face of the main building. A short spur splits from the abandoned line and also runs eastward towards the area south of the existing building. A brick sewage pumphouse resides between the main rail line and shorter spur, about 75 feet west of the main building. The interior of the pumphouse still retains much of the original pumping equipment, which appears to be mid to late 20th Century in origin. The rail lines bear embossed maker's marks of the "LACKAWANA CO..." and a manufacturing date of 1924. Portions of the rail lines to the west of the main building and pumphouse are obscured by structural debris piles bearing lumber and brick fragments. Two associated features with the abandoned rail lines to the west of the main building and pumphouse include an isolated short steel tower on a concrete platform supported by two steel cable guy wires with concrete-filled metal anchors, and a partial stanchion for another steel structure that has been cut near its concrete base.

Built around 1870, the main structure at 152 Water Street is a two-story brick building constructed in two major sections. The eastern section bears a large billboard sign on its pitched roof, and a long roof dormer with windows running nearly the full length of the building bears modern replacement siding. The interior of the eastern section reveals some internal partition walls, with missing large connecting doors revealed by remaining hinge pintles. There is no first story ceiling in the eastern half of the structure, with the original rafters and ceiling joists supporting the pitched roof visible from the first floor of the interior. Windows of the first story commonly bear wooden lintels and reinforced concrete sills. Some of the windows and bay doors have been filled in with brick or concrete masonry, and a single large rectangular metal sliding track door put in place of an original hinged arch double-door now separates the two halves of the building. The floor of the eastern half of the building has been resurfaced with concrete, with no remaining fittings or traces of machinery or equipment of the original building remaining. The western section of the building has been completely replaced with concrete masonry and other modern structural materials, and now bears a flat roof. The western half of the building is wider than the footprint of the eastern half, although a modern canopy runs along the southern side of the eastern half so that in plan view the two halves of the building appear nearly equal in width.
To the north of the eastern half of the building, there is a raised concrete masonry and concrete platform fronting one of the bays, and a modern ramp also ascends along the eastern end of the northern face of the building. The raised part of the ramp overlooks a bumping post that marks the eastern end of the main abandoned rail line extending east into the lot from the rail yards to the west. The bumping post bears a patent date of August 3, 1920, and was made by the Mechanical Manufacturing Company of Chicago (model number 5849). To the south of the east half of the building, a concrete-surfaced lot bears traces of a former structure that once extended south from near the main building at 152 Water Street, with the base of its brick walls still visible at the surface along the northern and western sides of the former structure.

Recommendations

Background research indicates no prehistoric sites have been recorded in close proximity to the project area, although this is partly due to early and intensive historic settlement that has likely eradicated most sites formerly present in the central and southern New Haven area. Alternatively, historic maps reveal that the project area was formerly and entirely within the waters of New Haven Harbor, and therefore would generally not be considered sensitive with respect to potential prehistoric cultural resources. However, lower sea levels during earlier prehistoric periods could have allowed for this location to have been utilized by prehistoric inhabitants of the region, especially given its location near the mouth of two tidal creeks that are known to have flowed into the harbor at this location, and given the fact that submerged prehistoric sites are typically identified near the mouths of major rivers or estuaries. Historic maps reveal that the historic harbor surface was about five to eight feet deep in the vicinity of the project area, and soil borings also reveal about six to twelve feet of fill above harbor sediments, thus any preserved submerged prehistoric contexts would likely be present at depths of six feet or greater below the current surface. It is therefore recommended that any construction or excavations that occur within the project area at depths of six feet or greater be accompanied by archaeological monitoring for potential prehistoric cultural resources, excluding any subsurface contexts that can be confidently demonstrated as having been destroyed by prior construction and/or landscaping activity.

With respect to potential historic cultural resources, historic maps also reveal that the entire project area was within the waters of New Haven Harbor until the mid-19th Century when filled in by the railroad, although the southwest and northern boundaries of the project area were in close proximity to the historic features of Long Wharf for the former, and wharfage along Water Street for the latter. Each of these waterfront features included intensive occupation by businesses engaged in international commerce, particularly during the 18th and early 19th centuries, with Long Wharf in particular including associated structures both of wood frame and brick construction. Associated foundations for these, particularly the brick buildings, are likely represented by remains below the surface along the Long Wharf Street boundary of the project area, with remains of Long Wharf itself previously documented to the east in another assessment survey. It is known that much of the wharf was buried beneath three feet of fill further to the southeast and closer to the water, with possibly less fill covering the feature in the proximity of the project area. The prior assessment survey that exclusively evaluated the Long Wharf determined that the feature is eligible for the National Register of Historic Places (NRHP) on multiple criteria, including its construction by a unique African American businessman in the
early 19th Century, its monumental length that was on the order of three-quarters of one mile and therefore the longest of its kind in the history of the United States, as well as its historic association with important commercial developments in the Northeast and across the world. In addition to the wharfage remains that could be present along the southwest and northern boundaries of the project area, there could be associated remains in the form of ship wreckage, ballast, and other associated artifacts. It is therefore recommended that should future development projects call for excavation or construction along the southwest and northern boundary areas of the project area within a distance of 25 feet of the project area boundaries, archaeological monitoring should accompany the development. Alternatively, should monitoring be considered logistically not feasible, archaeological testing utilizing heavy equipment to remove overburden should be conducted in coordination with the Connecticut State Historic Preservation Office (SHPO).

The same recommendations of archaeological monitoring and/or subsurface evaluation hold for areas known to have contained repair facilities of the former railroad, within a distance of 25 feet of the actual buildings and for any construction or excavations that are in excess of one foot below the surface. These especially include the two roundhouses, which were relatively unique features demonstrating the changes in associated locomotive and rail car technologies and sizes, and were additionally associated with repair pits that by their nature were conducive to the intensive accumulation of associated artifacts. The southern roundhouse feature in particular is relatively unique as one of the earliest of its kind, with its brief existence related to the earliest of railroad technology. The recommendations for further conservation efforts related to these potential features rely partly on the results of other archaeological monitoring and testing surveys conducted at rail yards or shops where roundhouse features were successfully recorded at Spring Street and Lamberton Street about one-half mile to the southwest of the project area.

One of the repair facility structures survives within the project area, at 152 Water Street. Background research revealed substantial changes to the structure over time, particularly the replacement of the entire western half of the building and substantial changes to the interior of the eastern half, thus the structure is not eligible for the National Register of Historic Places (NRHP). However, the exterior of the eastern half of the building bears enough architectural details of the original structure that represents an important historic period of growth in the railroad industry, and additionally was associated with an entire array of activities related to the maintenance and repair of a relatively new form of transportation - particularly when it functioned as a blacksmith shop - that the structure should be further conserved. Current plans call for the renovation of the building, but mostly the interior which has already been radically altered. Alternatively, should site plans call for substantial alterations to the exterior surface, architectural plans should be reviewed by the Connecticut State Historic Preservation Office (SHPO) to ensure that the work meets the United States Secretary of the Interior's Standards for the Treatment of Historic Properties." Other above-ground features associated with the main building do not require further conservation efforts, based on lack of significance, common occurrence, condition, and/or lack of substantial antiquity, including the pumphouse, abandoned rail line, isolated tower and stanchion, and the bumping post.
CHAPTER 2: BACKGROUND

Environmental Setting

Location

The project area is located in the City of New Haven, New Haven County, Connecticut (Figure 1). The project setting is in the eastern part of the Western Coastal (V-A) ecoregion (Figure 2). The proposed development is in southern New Haven, on the east side of Union Avenue (Route 1) and adjacent existing rail yard, to the south of Water Street (also Route 1), to the west of Brewery Street, and to the north of a driveway into the project area (Figures 3, 4a). The original project area consists of three major properties, including one bearing the address 152 Water Street, and the other three consisting of United States Postal Service (USPS) parcels west of Brewery Street and north of the driveway (Figure 4b). Measuring 1.16 acres, 152 Water Street appears on New Haven Tax Assessor's Map #226, Block 23, Lot 1 (Figure 4c). The USPS parcels are on the same tax map and block, and share the designation of Lot 2, measuring 13.01 acres, although they were no longer being considered for acquisition at the conclusion of this study. There is an additional half-acre narrow Lot 5 between Lots 1 and 2 that constitutes the CSX parcel within the original project area. Proposed improvements include the renovation of 152 Water Street for offices of the Metro North Railroad's Structures Department, as well as the development of warehousing facilities, maintenance of way accommodations, and employee parking. To the nearest ten meters, the Universal Transverse Mercator (UTM) coordinates (Zone 18) for 152 Water Street and the northeast and southeast corners of the project area are, respectively: 674,050/4573,940; 674,230/4573,900; and 674,060/4573,670 (Figure 5).

Climate

The climate of the Western Coastal ecoregion of Connecticut is strongly influenced by its proximity to the Long Island Sound and Atlantic Ocean (Kirk 1939; Brumbach 1965; Dowhan and Craig 1976; Reynolds 1979). The project region typically experiences 46 inches (~117 centimeters) of precipitation per year. Average annual snowfall is about 33 inches. Precipitation amounts are rather evenly distributed throughout the year. Principal storm tracks include the Colorado and South Atlantic lows, and the Plateau and Rocky Mountain, Alberta, and Hudson Bay highs. While the predominant winds are from the southwest, northwest winds are frequent during winter. Normal temperatures vary between approximately 30 F in winter (21 F normal minimum) to 72 F (81 F normal maximum) in summer, with an average year-round temperature at about 50 F. Average relative humidity for the area is about 60-75 percent. These conditions result in a relatively humid environment throughout the year with considerable seasonality in terms of temperature. This limits the growing season for most crops between the middle of April and the end of October (about 195 days), the average times for last and first killing frosts for the region. The temperate climate in general provides for an abundance of resources that are rather evenly distributed given the moderate topographic relief of the region, but which also vary cyclically based on a marked seasonality. Seasonality is known to have had a greater bearing than large scale spatial factors on prehistoric and early historic resource procurement strategies in regions with a relatively even distribution of wild resources (Butzer 1982), such as that of Connecticut.
Figure 1: Map of Connecticut showing New Haven County and the project location.

Figure 2: Ecoregions of Connecticut

Figure 2: Project area is located in the Western coastal ecoregion (V-A) of Connecticut. From Dowhan and Craig 1976:26.
Figure 3: Map of the New Haven Area
Figure 4a: Modern aerial photograph of the project area and surrounding territory. Note the high density of development within the project area, including mostly buildings and paved surfaces.
Figure 4b: Map of the Project Area (with USPS Parcels)

Figure 4b: From a site plan provided by Parsons Brinckerhoff, 2011. The site plan includes the two USPS parcels (#2 and #3) that were being considered for acquisition at the commencement of the survey. Scale 1:3,600 (1” = 300’).
Figure 4c: From a site plan of the 152 Water Street property prepared by Conn DOT. Scale 1:2,000.
Figure 5: USGS 7.5' Topographic Map, New Haven Quadrangle

Figure 5: From USGS 1984.
Geology

The project region lies within the Hartford Basin of the Newark (Rift Valley) geological terrane in the central lowlands of Connecticut (Rodgers 1985). This geological setting is separated from the Connecticut Valley Synclinorium of the western uplands to the west by faults associated with the East Derby fault, and the Bronson Hill Anticlinorium of the eastern uplands by the Eastern Border fault system. The central lowlands generally contain sedimentary formations of a failed rift between two larger metavolcanic oceanic masses, formed during the Triassic and Jurassic eras on the order of 150 to 250 million years ago. The central lowlands have normally faulted and tilted blocks with bedding planes generally dipping slightly to the east. There are no major faults within the project area, although there are nearby faults associated with the Eastern Border fault lying about five miles to the east.

More specifically, the project area lies within the heart of the central lowlands that is dominated by a large unit of New Haven Arkose (Trnh) (Figure 6). This Triassic formation is on the order of 210 to 250 million years old. New Haven Arkose is described as a reddish to pink or gray, poorly sorted, coarse-grained and indurate arkose that is similar to sandstone in having a sedimentary structure, although locally more like a conglomerate or interbedded with a brick-red micaceous and locally shaly siltstone and fine-grained feldspathic clayey sandstone. Subsequent metavolcanic activity during the Jurassic period of roughly 210 to 150 million years ago resulted in intrusive formations of basalt or dolerite in the area. Geological cross sections show both dikes and sills of dolerite (or traprock) in the region, consisting of a dark gray to greenish gray fine grained rock similar to basalt, with columnar jointing. The dolerite formations have a principal mineralogy of plagioclase feldspar and pyroxene, with some traces of opaque minerals, olivine, quartz, and devitrified glass. While the durable intrusive volcanic formations are responsible for the more prominent hill ridges of the area (e.g. West Rock), the less durable sedimentary formations result in less prominent bedrock exposures, thereby greatly limiting the potential for prehistoric rockshelter sites. Historically, rock from dolerite formations have been targeted for the production of traprock used in construction and landscaping.

Geomorphology

Although the shape of the landscape in the broader region surrounding the project area is dictated by faulting and the metamorphic folding of bedrock formations, other aspects include glacial features. Various landscapes are created depending upon the distribution and density of rock and the shape and melting nature of the incorporating glacier (Tarbuck and Lutgens 1990), as evident in the territory surrounding the project area which consists of a wide variety of glacial till, moraines, and meltwater features. Most of the glacial geomorphology of the broader region is characterized by thin glacial till deposits on hill ridges from the last or late Wisconsinan glaciation (Stone et al. 1992). Other prominent glacial landforms of the region include broad, glacially deposited meltwater features such as those found along the coast and in the vicinity of the project area. Post-Pleistocene alluvial terraces are mostly limited to the larger drainages such as the Quinnipiac River well to the east, with lesser alluvial terraces found in the Wepawaug and Indian River drainages well to the west of the project area.

The project area lies towards the northern and western edges of a substantial body of artificial fill (af) within the original boundaries of the harbor (Stone et al. 1992). A nearby boring towards the center of the unit and near the southeast corner of the project area revealed 12
Figure 6: From Rodgers 1985. The project area is set within a massive unit of New Haven Arkose (Trnh) shown in pink.
Figure 7: From Flint 1965. The project area lies within a large unit of artificial fill (af) shown in brown. Note how the project area would have been at the confluence of two tidal creeks before being filled.
feet of fill over 218 feet of fines. According to Stone et al. (1992) sand overlies finer sediments (s/f) just west of the project area, with a sand and gravel component (sg/s/f) at the top of the stratigraphic column to the north of the project area, both in a unit mapped by Flint (1965) as New Haven glacial outwash (nhow) (Figure 7). The upper sand typically occurs in inclined foreset beds over thinly bedded finer sediments, representing distal glacial deltaic deposits over glacial lake-bottom-sediments. Other borings closer to Union Station to the west revealed between six and twelve feet of fill, being deeper towards the harbor (Artemel et al. 1982). The project area is nearly level with a slight dip to the east and south towards the harbor. Its original harbor environment would not have been suitable for late prehistoric settlement, although a trend of rising sea levels during the prehistoric sequence could have afforded the possibility for the project area to have been occupied during the Archaic period. Historically, the project area was within the bounds of the harbor between the Long Wharf on the southwest and Water Street and adjacent structural developments to the north, although once filled, the project area provided prime space for historic development as well.

Pedology

The soils of the region can be broadly classified as Gray-Brown Podzolic soils. The project area is contained within an area dominated by urban land (Ur) (Reynolds 1979) (Figure 8). Urban land soils have been radically altered, can be nearly level to steep, and are generally loamy for upper profile texture, but exhibit variable profiles in the field. They have been altered by both cut and fill landscaping, with Urban land also characterized by a high density of pavement cover. Based on historic map indications that the project area was within the harbor until the 19th Century, original soil types below the current fill were at times likely close in form to Westbrook mucky peat (We), located on tidal marshes and bearing organic layers on the order of several feet thick over loamy mineral material. Much of the soil of the area surrounding the harbor in non-fill contexts is a Penwood loamy sand (PnA), located on outwash terraces and containing a typical profile of dark brown loamy sand eight inches thick over a subsoil of yellowish red loamy sand to reddish brown sand nearly two feet thick, and a substratum of reddish brown sand. The latter soil type would have been highly conducive to prehistoric and early historic settlement, particularly before the prolific use of fill late in the historic sequence to expand settlement seaward.

Hydrology

The major drainage patterns of southern Connecticut were mostly established before the onset of the last glaciation (Flint 1930). In the region surrounding the project area, the usual trend of streams is to the south in line with the strike of the bedrock formations, indicating that the glacial history of the area had little effect on the general drainage pattern. Instead, they appear to be largely dictated by the strike of the faults and folds of the bedrock formations exposed at the surface and subject to differential weathering and erosion depending on the resilience of the constituent beds. This pattern changes, however, along the coast where the irregular deposition of deep glacial sediments and subsequent Post-Pleistocene developments dictated drainage patterns on a smaller scale.

The project area now lies to the northwest of New Haven Harbor, but was within the northwest corner of the harbor before fill was brought in by the 19th Century. The harbor is fed
Figure 8: From Reynolds 1979. The project area lies within a broad unit of Urban land, characterized by a high density of buildings and paved surfaces.
Figure 9: From McElroy 1991. The project area lies within the South Central Shoreline (#5000) complex of drainages that feed directly into the Long Island Sound.
by surrounding drainages of the West (#5305), Mill (#5302), and Quinnipiac (#5200) Rivers as part of the larger South Central Shoreline complex of drainages (#5000) that drain into the Long Island Sound (McElroy 1991) (Figure 9). The mouth of the Mill River is currently closest, at about three-quarters of one mile to the northeast of the project area, although historically the project area was located near the mouth of West Creek that flowed along what is now the Route 34 connector into the northwest corner of the harbor, and the mouth of East Creek that flowed along what is now Union Street into the harbor. The proximity of the project area to the former tidal creeks would have made it attractive to prehistoric subsistence and/or settlement efforts when sea levels were substantially lower.

**Flora and Fauna**

The Western Coastal ecoregion is dominated by coastal hardwoods, including various oaks and hickories, tulip poplar, black cherry, and sassafras (Dowhan and Craig 1976:39), and historically chestnut and elm (MTC 1939:2). Catbrier and greenbrier and other shrubs and vines form thickets in open or disturbed areas. The project area is open, with mostly paved surfaces and building cover, although there are some maintained grass lawn sections and interspersed landscaped trees. Most crops in the broader area are grown between April and October. Historic maps indicate the project area was within the harbor before being filled during the 19th Century. Despite the lack of potential for traditional or mainstream agricultural products, salt marshes lining the harbor, particularly towards the western end of the project area, were tapped historically by Euroamerican settlers of the region for grasses such as tall salt-water cordgrass that was harvested for cattle fodder and roofing thatch (Bell 1985:86).

Typical mammals for the project region include deer, raccoon, rabbit, skunk, opossum, chipmunk, squirrel, fox, and woodchuck. Birds include songbirds, sparrows, crow, woodcock, thrushes, woodpeckers, ruffed grouse, hawks, and the barn owl, as well as ducks, geese, gulls and other waterfowl (Dowhan and Craig 1976). The original harbor and salt marsh environment of the project area would not have been conducive to the direct grazing of livestock, but served as an attractive environment for snails, fish, and shellfish gathered by both prehistoric and historic occupants of the region.
Cultural Setting

Regional Prehistory

The prehistory of the project region and New England in general can be broadly divided into periods reflecting changes in environment, Native American subsistence and settlement patterns, and the material culture which is preserved in the archaeological record (Table 1). Although it remains controversial today, the conservative estimates for the first occupations of North America are about 18,000 to 15,000 years ago, just after the maximum extent of the last glaciation and the broadest extent of the Bering land bridge (Kehoe 1981:7; Parker 1987:4; Jennings 1989:52). Southern Connecticut itself remained glaciated until about 15,200 B.P. (Snow 1980:103; Gordon 1983:71; Parker 1987:5; McWeeney 1994:181, 1999:6).

Paleo-Indian

The Paleo-Indian period is documented in Connecticut after 12,000 years ago and extends to roughly 9,500 B.P. (Swigart 1974; Snow 1980:101; Lavin 1984:7; Moeller 1984, 1999). This was a period of climatic amelioration from full glacial conditions, and a rise in sea levels which fell short of inundating the continental shelf. It was during this time that tundra vegetation was replaced by patches of boreal forests dominated by spruce trees (Snow 1980:114; Parker 1987:5-6), and eventually white pine and several pioneering deciduous genera (McWeeney 1994:182, 1999:7). Early in the period, the environment was conducive to the existence of large herbivores and a low population density of humans who procured these animals as a major subsistence resource, although warming temperatures and denser forests contributed to the extinction of the larger mammals. The projected social and settlement patterns are those of small bands of seminomadic or restricted wandering people who hunted mammoth, mastodon, bison, elk, caribou, musk ox, and several smaller mammals (Ritchie 1969:10-11; Snow 1980:117-120). Episodes of sparse vegetation during this period encouraged the use of high lookout points over hollows and larger valleys by people in pursuit of large game. The southern part of New England had an earlier recovery from glacial conditions when compared to areas to the north, however, with a higher density of vegetation that might have precluded Paleo-Indians of Connecticut from focussing heavily on the larger mammals (McWeeney 1994:182).

The cultural material associated with this period includes large to medium-sized, fluted projectile points (cf. Clovis), in addition to knives, drills, pieces esquillees and gravers, scrapers, perforators, awls, abraders, spokeshaves, retouched pieces, utilized flakes, and hammerstones (Wilbur 1978:5; Snow 1980:122-127; Moeller 1980). Although numerous finds from this period have been found in Connecticut, only a few, small in situ sites exist throughout the state. Finds tend to be located near very large streams in the lower Connecticut River Valley, and in rockshelters of other regions (McBride 1981). A survey performed by the Connecticut Office of State Archaeology and the Archaeological Society of Connecticut resulted in the documentation of 53 Paleo-Indian "find spots" in Connecticut (Bellantoni and Jordan 1995). Towards the end of the Pleistocene, glacial meltwater sand was deposited over previous fine sediments throughout the basin surrounding New Haven harbor that reflect glacial lake conditions (Stone et al. 1992), allowing for the development of resource-rich estuaries and broad areas suitable for habitation following glacial retreat.
Table 1: Regional Prehistoric Chronology

**Paleo-Indian Period (12,000-9,500 B.P.)**
- Environment: Dry and very cold, tundra herbaceous plants and sparse spruce forests shifting to pine forests.
- Settlement: Semi-nomadic, restricted wandering.
- Subsistence: Very large grazing herbivores and smaller mammals.
- Material: Large fluted points (cf. Clovis), knives, drills, scrapers, awls, abraders, perforators, spokeshaves, and hammerstones.
- Ritual: Unknown.

**Early Archaic Period (9,500-7,500 B.P.)**
- Environment: Cold, dense pine and deciduous forests.
- Settlement: Central-based wandering.
- Subsistence: Large foraging herbivores and smaller mammals.
- Material: Atlatl, stemmed and bifurcated (Stanly, cf. Kanawha and Lecroy) points, choppers, anvil stones, and others from earlier periods.
- Ritual: Unknown.

**Middle Archaic Period (7,500-6,000 B.P.)**
- Environment: Cool, deciduous hardwoods and pine.
- Settlement: Central-based, seasonally circulating.
- Subsistence: Foraging mammals, fish, and shellfish.
- Material: Contracting stemmed points (Neville, Stark, and Merrimac), semi-lunar groundstone knives, banner stones, net plummets, gouges, denticulates, grooved axes, percussed celts and adzes, and others from earlier periods.
- Ritual: Unknown.

**Late Archaic Period (6,000-3,700 B.P.)**
- Environment: Moderate, deciduous hardwoods.
- Settlement: Central-based or semi-sedentary, seasonally circulating and radiating.
- Subsistence: Foraging mammals (deer), small mammals, turtles, birds, fish, shellfish, berries, nuts, seeds.
- Material: Groundstone manos, mortars, pestles, and bowls, stone pipes, bone tools, perforated weights, decorative gorgets, corner-notched (Vosburg, Brewerton, and Vestal), side-notched (Otter Creek, Brewerton, and Normanskill), narrow-stemmed (Dustin, Lamoka, Squibnocket, and Wading River), and triangular points (Squibnocket, Brewerton, and Beekman), fish weirs and harpoons, and others from previous periods.
- Ritual: Cremation burials with utilitarian funerary objects for limited groups, suggesting possible access to restricted resources (e.g. transportation routes).
Terminal Archaic Period (3,700-2,700 B.P.)
Environment: Moderate, deciduous hardwoods.
Subsistence: Foraging mammals (deer), small mammals, fish, shellfish, turtles, birds, berries, nuts, seeds.
Material: Susquehanna corner-notched points, side-notched and large stemmed points, steatite bowls, canoes, Vinette I pottery, and others from previous periods.
Ritual: Elaborate secondary cremation burials containing high proportions of highly stylized artifacts of non-local material in specialized cemetery sites for limited groups with access to restricted resources (e.g. steatite, transportation routes), suggesting a stratified society and semi-sedentism for some groups.

Early Woodland Period (2,700-2,000 B.P.)
Environment: Cool, deciduous hardwood trees.
Settlement: Central-based, seasonally circulating.
Subsistence: Foraging mammals (deer), small mammals, fish, shellfish, turtles, birds.
Material: Bow and arrow, Early Windsor cord-marked and Linear Dentate ceramics, stemmed (Adena-Rossville) and side-notched (Meadowood and Fulton) points, Steubenville points, some exotic Adena material, and others from previous periods.
Ritual: Combination of cremation burials and primary inhumations, often in habitation settings, suggesting some latent retention of class distinctions during a period of declining ceremonialism and undifferentiated control over critical resources.

Middle Woodland Period (2,000 B.P.-1,000 B.P.)
Environment: Moderate, deciduous hardwood trees.
Subsistence: Agriculture (squash, beans, corn, sunflower, tobacco), foraging mammals (deer), small mammals, fish, shellfish, turtles, birds, berries, and nuts.
Material: Groundstone hoes, cylindrical pestles, many ceramic styles (Rocker Dentate, Windsor Brushed, Sebonac Stamped, Hollister Stamped, Selden Island, and Windsor Plain), projectile points (Snyders corner-notched, Long Bay and Port Maitland, Rossville stemmed, Greene), and others from previous periods.
Ritual: Unknown (not yet distinguished from the Late Woodland).

Late Woodland Period (1,000-1,600 A.D.)
Environment: Moderate, deciduous hardwood trees.
Subsistence: Agriculture (squash, beans, corn, sunflower, tobacco, Jerusalem artichoke), foraging mammals (deer), small mammals, fish, shellfish, turtles, birds, berries, nuts, and tubers.
Material: Wigwam homes, Jack's Reef, and Madison and Levanna triangular points, Late Windsor and East River ceramics, and others from previous periods.
Ritual: Primary inhumations in habitation sites, suggesting egalitarian society.
Early Archaic
The Early Archaic period lasted from approximately 9,500 B.P. to 7,500 B.P. (Snow 1980:159; Lavin 1984:9; Moeller 1984). Sea levels and temperatures continued to rise during this period as denser stands of forests dominated by pine and various deciduous species replaced the vegetation of the former period (Davis 1969:418-419; Snow 1980:114; Parker 1987:9; McWeeney 1994:184-185, 1999:8-9). This environmental change was rapid and caused a major shift in the animals it supported, including deer, moose, other small to medium-sized mammals, migratory birds, fish, and shellfish. The material culture changed along with the environmental conditions to include the atlatl and smaller stemmed and bifurcated projectile points (Stanly, cf. Kanawha and Lecroy) for procuring smaller, faster game in more closed settings (Wilbur 1978:6-7). The expanded tool set included choppers and anvil stones. Settlement patterns were probably becoming more territorialized towards a central-based wandering character (Snow 1980:171; see also Forrest 1999). The Early Archaic period is poorly represented in Connecticut and the lower coastal river valleys, probably resulting from a combined effect of low population densities in response to rapidly changing environmental conditions, as well as site location and preservation factors (Snow 1980:168; McBride 1981; McBride and Dewar 1981:45; Lavin 1984:9; McWeeney 1986; see also Forrest 1999).

Middle Archaic
The Middle Archaic period extended from approximately 7,500 B.P. to 6,000 B.P. (Snow 1980:173; Lavin 1984:9; McBride 1984; Jones 1999). It was by the end of this period of increased warming that sea levels and coastal configurations had stabilized and approached their present conditions (Kehoe 1981:211; Gordon 1983:82; Parker 1987:9). The period is marked by the establishment of forests with increasing proportions of deciduous hardwoods in relation to the pine predecessors in Connecticut (Davis 1969; Snow 1980:114; McWeeney 1999:10). The material culture included square or contracting-stemmed points (Neville, Stark, and Merrimac), semi-lunar groundstone knives, ground and winged banner stones for atlatls, plummets for nets, gouges, denticulates, perforators, percussed celts and adzes and grooved axes for woodworking (Snow 1980:183-184), as well as tools used in previous periods. This more extensive range of material culture indicates a broader subsistence base than in previous periods, including greater fish and shellfish procurement (Wilbur 1978:8; Snow 1980:178-182) which was associated with the stabilization of sea levels towards the end of the period. The increased breadth of subsistence resources had the effect of increasing scheduling efforts and may have caused settlement patterns to take on more of a central-based or seasonally circulating pattern with bands joining and dispersing on a seasonal basis (Snow 1980:183). Sites found in the lower Connecticut River Valley region suggest that a wider range of environments and associated site types were exploited, including both large and special task sites in upland areas (McBride 1981, 1984:56). This regional pattern may confirm the suggested settlement pattern of central-based, seasonally circulating or restricted circulating groups of people supported by logistical procurement sites throughout the state. Middle Archaic sites are fairly rare in Connecticut, again a combined product of rising sea levels and poor site preservation (see Forrest 1999).
Late Archaic

The Late Archaic period ranged from approximately 6,000 B.P. to 3,700 B.P. (Snow 1980:187; Lavin 1984:11; McBride 1984; Pfeiffer 1984; Cassedy 1999). This period is marked by a warm-dry maximum evident from pollen cores in the region (Davis 1969:414; Ogden 1977). Hardwood, oak-dominated forests very similar in character to ones established today covered most of Connecticut by the Late Archaic (Parker 1987:10). The Late Archaic in Connecticut has been divided into two traditions: the Laurentian and the Narrow Point (Lavin 1984:11), with the former perhaps being distributed more in the interior. The Laurentian tradition is defined by wider-bladed, notched and eared triangular points, and ground slate points and ulus, while the Narrow Point tradition includes smaller, thicker, and narrower points. The tool kit and general material culture became even more expanded during this period, with the advent of ground stone manos, nut mortars, pestles, and bowls, as well as stone pipes, bone tools, corner-notched (Vosburg, Brewerton, and Vestal), side-notched (Otter Creek, Brewerton, Normanskill), smaller narrow-stemmed (Dustin, Lamoka, Squibnocket, and Wading River), and triangular points (Squibnocket, Brewerton, and Beekman), grooved and perforated weights, fish weirs and harpoons, and decorative gorgets (Wilbur 1978:15-24; Snow 1980:228-231). The groundstone material has been inferred as being associated with an increased vegetable diet that consisted of berries, nuts, and seeds (Snow 1980:231; Lavin 1984:13), including acorn, butternut, chestnut, walnut, hickory, bayberry, blackberry, goose foot, cranberry, partridge berry, service berry, strawberry, swamp current (Cruson 1991:29). Deer continued to be the predominant meat source, although animal remains recovered from archaeological sites in the region include black bear, raccoon, woodchuck, rabbit, otter, gray squirrel, red fox, gray fox, wolf, wild turkey, grouse, pigeon, migratory fowl, and anadromous and freshwater fish and shellfish (Cruson 1991:28-29). Various sea mammals and fish were procured along the coast.

The increasing breadth of the subsistence base and material culture was in turn associated with a central-based settlement pattern in which a restricted range of seasonally scheduled and used areas were exploited in a more semi-sedentary fashion than previously (Lavin 1984:13; Dincauze 1990:25). Sites in the lower Connecticut River Valley suggest that the larger rivers served more as long-term bases within a central-based circulating system than in the Middle Archaic (McBride 1981; McBride and Dewar 1981:48). The interior uplands of Connecticut may have supported a relatively independent set of seasonally circulating groups which used larger wetlands as long-term bases (Wadleigh 1981). Mortuary practices of the time suggest some sedentism for certain groups of people who were buried in specialized secondary cremation cemeteries and who may have had some control over restricted resources (e.g. riparian transportation routes) (Walwer 1996). Although the cremation sites largely include utilitarian funerary objects, some contain non-local materials which suggest trade association with cultures to the west of Connecticut (Walwer 1996).

Terminal Archaic

The Terminal Archaic period extended from approximately 3,700 B.P. to 2,700 B.P., as defined by the Susquehanna and Small-Stemmed traditions (Swigart 1974; Snow 1980:235; Lavin 1984:14; Pfeiffer 1984; Pagoulatos 1988; Cruson 1991; Cassedy 1999). Steatite, or soapstone, was a frequently used material by this time, and could be fashioned into bowls and
other objects. The mass, permanency, and labor intensiveness of creating these heavy items have led to the inference of more sedentary base camps, especially on large rivers where the development of a canoe technology had become fully established and increased the effective catchment area within which groups of people were gathering resources on a continuous basis. The material culture of the period was very similar to the Late Archaic, with a proliferation of stemmed projectile point types including Snook Kill, Bare Island and Poplar Island stemmed points, Orient Fishtail points, Sylvan and Vestal side-notched points, and Susquehanna corner-notched points. The resource base continued to consist of deer and small mammals, nuts, shellfish, turtles, and birds (Snow 1980:249). The first signs of ceramics (Vinette I pottery) tempered with steatite fragments appears during this period (Lavin 1984:15; Lavin and Kra 1994:37; see also Cassedy 1999:131), and archaeological evidence of trade with other regions becomes more substantial for this time (Pfeiffer 1984:84).

The distribution of sites and site types in the lower Connecticut River Valley during this period suggests that there was a change in settlement to one with fewer, yet larger sites in riverine settings, and associated satellite task-specific sites in the uplands (McBride 1981; McBride and Dewar 1981:49). The implications are less foraging-strategy residential movement and more task-oriented collection activities within a radiating settlement pattern, but probably one in which some degree of seasonal circulation of settlement took place. Pagoulatos (1988) has shown that while sites associated with the Small-Stemmed tradition tend to suggest a more mobile settlement pattern in the interior uplands, sites of the Susquehanna tradition indicate a semi-sedentary collector strategy in major riverine and estuarine environments. At least certain groups exhibited semi-sedentism and some control over restricted resources, as indicated by the elaborate burials of the Terminal Archaic (Walwer 1996). Mortuary practices from the period include secondary cremation interments in formalized cemetery areas, with individual pits containing fragmented utilitarian material from communal cremation areas, as well as highly stylized funerary objects from non-local material (Walwer 1996). The lack of other, less formalized burial types evident in the archaeological record may be a matter of poor preservation, in which case it has been proposed that the cremation cemeteries are representative of a stratified society in which a portion of the people (of the Susquehanna "tradition") were able to generate a surplus economy that supported a semi-sedentary settlement pattern. This surplus may have been generated by the procurement and control over the transportation of steatite from various areas in Connecticut and surrounding territory.

**Early Woodland**

The Early Woodland period in Connecticut extended from about 2,700 B.P. to 2,000 B.P. (Lavin 1984:17; Juli and McBride 1984; Cruson 1991; Juli 1999). A cooling trend during the Early Woodland (Davis 1969:414; Parker 1987:10; McWeeney 1999:11) is thought to have reduced population sizes and regional ethnic distinction as the hickory nut portion of the resource base was significantly decreased, although the apparent decline in populations may possibly be related to other factors such as the inability to confidently distinguish Early Woodland sites from those of other periods (Filios 1989; Concannon 1993). Climatic deterioration and depopulation are in turn thought to have inhibited the progression towards, and association with, more complex social structures and networks that were developing further to the west and south.
A proliferation of tobacco pipes may indicate the beginnings of agricultural efforts in the northeast. The Early Woodland of this region, however, exhibits no direct traces of subsistence crop remains, indicating continuity with previous periods in terms of subsistence practices (Lavin 1984:18).

Materially, the period is marked by a substantial development of a ceramic technology, with the Early Windsor tradition of pottery being dominant in the Early Woodland of Connecticut (Rouse 1980:68; Lavin 1984:17, 1987). Both Early Windsor cord-marked and Linear Dentate ceramic forms were being produced at this time. Diagnostic projectile points can be developmentally traced to indigenous points of previous periods, consisting of many stemmed forms in addition to Meadowood and Fulton side-notched points, Steubenville points, and Adena-Rossville types, but now may have been used in conjunction with the bow and arrow (Lavin 1984:18). Adena-like boatstones are also found in this period. Although rare contact with the Adena culture is evident throughout assemblages of the period, the Early Woodland in southern New England remained a very gradual transitional period (Snow 1980:279,287; Lavin 1984:19).

A heightened use of ceramics has been erroneously promoted as an automatic indication of increased sedentism in many areas. Instead, central-based camps with restricted seasonal encampments appear to be the dominant settlement pattern (Snow 1980:287). Minimal archaeological evidence from the lower Connecticut River Valley appears to suggest a similar settlement pattern to the Terminal Archaic in which large riverine sites served as central bases with upland seasonal dispersal or specific task sites (McBride 1981; McBride and Dewar 1981:49), but with a lesser degree of sedentism. Interior uplands populations also decreased during the Woodland era, perhaps related to the intensification of agricultural resources along major riverine and coastal areas (Wadleigh 1981:83). The trend towards greater mobility may in part be attributed to the decline in the use of steatite that no longer gave certain groups control over critical and restricted resources, as indicated by the declining ceremonialism of burial sites at the time which were more often located in habitation sites and exhibited combinations of secondary cremation features and primary inhumations (Walwer 1996). This transition in the socio-economics of the region was brought about by the decrease in importance of steatite as ceramics obscured its value for producing durable containers. Partially preserved primary inhumations appear for the first time in the region based on preservation considerations.

**Middle Woodland**

The Middle Woodland period lasted from about 2,000 B.P. to 1,000 B.P. (Lavin 1984:19; Juli and McBride 1984; Cruson 1991; Juli 1999). The climate was returning to the conditions basically witnessed today (Davis 1969:420; McWeeney 1999:11). It is a period which exhibited considerable continuity with previous periods in terms of both subsistence and material culture. Cylindrical pestles and groundstone hoes are tools diagnostic of the period and reflect developing agricultural efforts, including the cultivation of squash, corn, and beans on a seasonally tended basis (Snow 1980:279). Direct evidence for agriculture in the form of preserved vegetal remains, however, does not generally appear until the early Late Woodland (Lavin 1984:21) when corn is thought to have been introduced into the Connecticut River Valley from the upper Susquehanna and Delaware River Valleys (Bendremer and Dewar 1993:386). Projectile point forms from the
period include Snyders corner-notched, LongBay and Port Maitland side-notched, Rossville stemmed, and Greene lanceolate types. A proliferation of ceramic styles was witnessed during the Middle Woodland (Rouse 1980; Lavin 1984:19-20, 1987; Lavin and Kra 1984:37), including Rocker Dentate, Windsor Brushed, Sebonac Stamped, Hollister Stamped, Selden Island, and Windsor Plain types that were all also produced in the Late Woodland, with the exception of the Rocker Dentate. Ceramic forms from the Early Woodland were still being produced as well. Minor traces of the Hopewell cultures to the west are also present in the archaeological record of this period. Site types and distributions in the lower Connecticut River Valley imply that a moderate increase of sedentism with aspects of a radiating settlement pattern took place on large rivers, supported by differentiated upland task sites (McBride 1981; McBride and Dewar 1981:49). This trend may have been supported by the expansion of tidal marshes up larger rivers (McBride 1992a:14).

Late Woodland

The Late Woodland period extended from approximately 1,000 B.P. to 1600 A.D., the time of widespread European contact in the broader region (Snow 1980:307; Kehoe 1981:231; Lavin 1984:21; Feder 1984, 1999). A warmer climate and increased employment of large scale agriculture for subsistence in New England were associated with increased population densities, more sedentary settlements, and more permanent living structures and facilities in larger villages. Settlements in Connecticut, however, tended to remain smaller with only small scale agricultural efforts, and as part of a seasonal round in which smaller post-harvest hunting and task-specific settlements were established in fall, and protected settlements occupied in winter (Guillette 1979:CI5-6; McBride and Bellantoni 1982; Lavin 1984:23; Starna 1990:36-37). Instead of maintaining permanent villages near agricultural plots, aboriginal populations engaged in the slashing and burning of new plots and let old plots lie fallow periodically (Salwen 1983:89). In this area, domestic resources included corn, beans, squash, Jerusalem artichoke, and tobacco (Guillette 1979:CI5; Starna 1990:35). Agriculture was largely maintained by women, with the exception of tobacco (Salwen 1983:89; Starna 1990:36). Deer, small mammals, fish and shellfish, migratory birds, nuts and berries, and other wild foods continued to contribute significantly to the diet (Waters 1965:10-11; Russell 1980). Many of the foods produced were dried and/or smoked, and stored in baskets and subterranean holes or trenches.

The increasing diversity of wild estuary resources may have served to increase sedentism in the coastal ecoregions of Connecticut (Lavin 1988:110; Bragdon 1996:67), while agriculture and sedentism may have been even more prominent along the larger river bottoms (Bragdon 1996:71). Late Woodland settlement patterns of groups in the uplands interior ecozones of Connecticut may have included the highest degree of mobility, while many sites from the central lowlands represent task-specific sites associated with larger settlements along the Connecticut River (McBride 1992a:16). House structures consisted of wigwams or dome-shaped wooden pole frameworks lashed and covered with hides or woven mats, and clothing was made from animal hides (Guillette 1979:CI7-8; Starna 1990:37-38). Pottery for the period is defined as the Late Windsor tradition in Connecticut (Rouse 1980:68; Lavin 1984:22, 1987). Most of the ceramic forms of the Middle Woodland were still being produced, in addition to the newer Niantic Stamped and Hackney Pond forms. Ceramics of the East River tradition also appear in the area during the Late Woodland, having originated and been concentrated in the New York
area (Rouse 1980; Wiegand 1987; Lavin 1987). The period exhibits some continuity in terms of projectile point forms, although the Jack's Reef, Madison triangular, and Levanna points are considered diagnostic for the period. As likely with earlier periods, the material culture included various textile products such as baskets and mats, and wooden utensils such as bowls, cups, and spoons (Willoughby 1935; Russell 1980:56).

Unlike groups of the Mississippi valley, the overall cultural pattern for the entire Connecticut Woodland era exhibits considerable continuity. Interregional contact increased during this period, however, with non-local lithic materials increasing from as low as 10% to as high as 90% from the early Middle Woodland to the Late Woodland (McBride and Bellantoni 1982:54; Feder 1984:105), although most trade appears to have been done between neighboring groups rather than initiated through long-distance forays (Salwen 1983:94). The lack of enormous agricultural surpluses for the time is indicated by the low density of small storage features in habitation sites, as well as the ubiquitous primary inhumation of people without a select portion of graves exhibiting special treatment that would require high energy expenditure (Walwer 1996). As confirmed by early ethnohistoric accounts, this suggests a largely egalitarian and relatively mobile society for the Late Woodland despite the fact that this period marks the highest development of food production (i.e. agriculture) during the course of prehistory in the region. Corn was undoubtedly important, however, as a disproportionate amount of the simple, flexed burials were oriented towards the southwest, which was the aboriginally acknowledged direction for the origins of corn and the Spirit Land.

**Local Sites and Surveys**

There are relatively few previously recorded prehistoric sites in New Haven (Figure 10), and none within the core of the city (CT SHPO 2011; CT OSA 2011). The closest site is a possible Native American burial location near City Point at the mouth of the West River about one mile to the south (Artemel et al. 1979:36). Along the Mill River a couple of miles to the north of the project area, a Late Archaic site was identified by a quartz Bare Island or Wading River projectile point (93:022). 44:008 is located about two miles to the southeast of the project area on Tuttle Brook across the harbor, having produced three stemmed points, a triangular point, and a notched projectile point.

One major study was conducted for the Route 34 Relocation and Route 1 Connector Project in the northern part of West Haven several miles to the north and west of the project area (Wadleigh and Furbish 1978). In the initial reconnaissance survey, surface scatters of lithic debitage were observed on the west side of Horseshoe Lagoon (156:003) and at the Ciarleglio farm field along Route 34, although subsurface testing did not reveal further material at the time. Along the various proposed courses of a Route 1 connector, more debitage was found in tests in the vicinity of Maltby Lakes (156:001, 156:002).

A subsequent set of surveys in West Haven was devoted to the Maltby Lakes area that noted sensitive areas similar to those bearing sites as indicated above. A Phase I survey identified at least three site areas revealing lithic debitage, hearth features, a probable living floor, fire-cracked rock, charcoal, and shell (Raber et al. 1984). The lithic debitage was dominated by quartz, and recovered tools included scrapers and indistinct bifaces. A Phase II intensive survey was conducted at Site 1 and Site 2, each measuring between one and two acres (Raber et al. 1987). The latter survey revealed small-stemmed points at Site 1 where charcoal
Figure 10: Prehistoric Sites of the Area

Figure 10: Distribution of prehistoric sites (red circles) in the area recorded with the Connecticut State Historic Preservation Office.
features were also recorded, and a later Levanna projectile point at Site 2 indicating a Late Woodland origin. A more detailed data recovery of Site 2 (Raber and Wiegand 1990) revealed three loci represented heavily by quartz debitage from the manufacture of projectile points, as well as lithic tools (knife, scraper, utilized flakes) used for the processing of other materials such as animal bone, hides, wood, and/or food resources.

Another survey was conducted for the proposed Minor Farms Subdivision property just southeast of Maltby Lakes in West Haven (McBride 1992b). The Phase I survey revealed chert, basalt, quartz, and quartzite debitage, as well as charcoal from three different site areas (156:006, 156:007, 156:008). The latter site (156:008) had been previously known to bear prehistoric cultural material, with one neighbor revealing a collection of six projectile points from the site. Other surveys conducted in various parts of West Haven have not revealed either prehistoric or historic cultural resources (e.g. CAS 1985).

One prominent cluster of sites is located over one mile east of the project area at the mouth of the Quinnipiac River, including a number of burial sites, some of which may date as late as the early Contact period. At the American Steel site (93:001), amateur archaeologists discovered a burial site that also yielded groundstone adzes, triangular spearpoints, a chert Meadowood point, other projectile points, and a fabric-marked ceramic vessel. Another site on Farran Avenue (93:012 / 93:015) revealed a burial with two bone projectile points (see also nearby 93:011). The Burwell Karako site (93:021) is a substantial multi-component village site that yielded thousands of projectile points to amateur excavations, including Wading River, Snook Kill, Susquehanna, and Levanna types ranging from the Late Archaic through Late Woodland periods. Another Late Archaic site was found further to the south on the harbor waterfront where recovered materials include groundstone axes, pestles, and adzes, as well as steatite sherds, quarry picks, and numerous quartz and chert projectile points. Further inland, some more materials were recovered at Fort Wooster Park (93:014) where there were also possible burials reported (Lawrence and Rowe 1953).

There is another cluster of sites about three miles to the northeast of the project area at the confluence of the Hemingway, Little, and Quinnipiac Rivers. A prolific multi-component site (Granniss Island #1) ranging from the Late Archaic through Late Woodland periods was well documented by amateur archaeologists who recorded a dog burial, post molds, hearth features, Late Woodland ceramics, steatite bowls, Bare Island and Poplar Island projectile points, Brewerton points, net sinkers, scrapers, bone points, and lithic drills (Sargent 1952). The nearby Granniss Beach site (93:005) is another well documented village site where excavations revealed an exclusive Terminal Archaic assemblage of steatite, Orient Fishtail projectile points, and small-stemmed quartz points (Sargent 1952). The Little River site (93:007) also produced Terminal Archaic Snook Kill points, quartz triangular points, stemmed scrapers, debitage, and a hearth feature (see also nearby Lettieri Site - 93:018). A similar array of materials was retrieved from the multi-component Wilson site (93:008), including Susquehanna broad stem points, Orient Fishtail points, small-stemmed quartz points, Jack’s Reef pentagonal and corner-notched points, a slate semi-lunar knife, hearth features, and chert and quartz debitage.

At the time of the survey of the northern Union Station parking garage, the Connecticut State Historic Preservation Office (SHPO) indicated that proposed renovations would not have an adverse effect on the NRHP property, and the survey therefore concentrated on the subsurface archaeological potential of the area immediately north of the station. The survey examined soil
borings from three different areas: the project area itself, a development area at Long Wharf, and at the New Haven High School site. A composite analysis of these borings indicated a surface layer of fill ranging from two to twelve feet deep, overlying alternating layers of alluvial sand and organic clay each ranging up to ten feet thick or more, with glacial sand at 50 to 86 feet below the surface. The alternating layers of sand and organics reflect multiple glacial depositional episodes of glacial lake formation and breaches accompanied by alluvial deposition. The survey report noted no cultural material recovered in any of the borings (Artemel et al. 1982:18). Other surveys along the harbor have also reported similar historic fill contexts and a lack of prehistoric material in subsurface contexts, but these have generally lacked broad coverage and have been mostly focussed on potential historic resources (Raber 2001; Deaton and Cherau 2003a, 2003b, 2003c; Clouette 2009).

**Summary**

In summary, there has been a low density of prehistoric archaeological sites recorded in the central and southern New Haven areas. Most sites have been recorded in the Fair Haven section to the east, and further north along the Quinnipiac River. This lopsided distribution can be partly attributed to the early, dense, and intensive Euroamerican settlement in the core of the city, which likely eradicated most traces of prehistoric Native American settlement. Most recorded sites of the broader region occur along larger rivers and streams, particularly near their tributaries with other bodies of water and in estuaries close to the sound. The bulk of sites in the New Haven area are recorded in stacked glacial meltwater sedimentary environments. Some sites have been found submerged at other locations along the Long Island coast, reflecting lower sea levels since the end of the Pleistocene, and these also commonly occur near the mouths of major rivers or estuaries in glacial meltwater sedimentary contexts (see McWeeney 1986). Thus while the project area has not had environmental contexts suitable for prehistoric occupation during the historic era or at present, lower sea levels during the prehistoric era affords the potential for prehistoric site contexts to be contained within the project area.
Historic Background

Contact

The Contact period is designated here as the time ranging from the first substantial contact between Europeans and Native American inhabitants of the area, to the time the area was intensively occupied by Euroamerican settlers and their first generation of descendants, from roughly 1600 to 1700 (Table 2). The first contact between aboriginal populations of the broader region and European explorers occurred in 1524 when Verrazano reached the coast of New England (Terry 1917:16). Others followed in the first decade of the 1600s (Salwen 1983). In 1614, Dutch explorers reached the Connecticut River (DeForest 1852:70; DeLaet 1909 [1625-1640]:43), and in 1625 they were met by the Quinnipiac in New Haven Harbor (Brusic 1986:9) when they established fur trading relationships with the native inhabitants in the region until the early 1630s (Guillette 1979:WP2-4). Major English settlements in the area started in 1635-1636. DeForest (1852:48) estimated about 6,000 to 7,000 Native Americans in Connecticut at this time, while Winthrop estimated somewhere between 12,000 and 15,000, and most others (Trumbull 1818:40; Gookin 1970[1674]; Cook 1976; Snow 1980:35; Bragdon 1996:25) estimated between 16,000 and 20,000.

The composition of the tribes at the time of contact is fairly well known, although boundaries fluctuated significantly, as did the political alliances by which the tribes could be defined (Thomas 1985:138). Three major divisions of Algonkian speaking groups in Connecticut can be delineated, and their territories conform well to ecozone distributions (see Dowhan and Craig 1976:26 and Speck 1928:Plate 20), including the Mohegan-Pequot range in the Southeast Hills and Eastern Coastal ecoregions, the Nipmucs in the Northeast Hills and Northern Uplands ecoregions, and tribes designated as the Wappinger-Mattabesec Confederacy in the North Central Uplands and most of western Connecticut. The validity of the Wappinger-Mattabesec Confederacy as a cultural entity has been challenged (Salwen 1983:108-109), with many smaller and somewhat independent tribes occupying much of the western half of the state.

The Quinnipiacs occupied the project region at the time of contact, with populations concentrated along the Quinnipiac River and along the coast near the mouth of the river (Spiess 1933:26-27). The Quinnipiac territory extended from the coast as far north as Cheshire, as far west as Bethany, and as far east as Wallingford. The name Quinnipiac is thought to derive from a corrupted name for a major change in course for an early trail extending from Boston to Manhattan (Spiess 1933:26), or from an Algonkian expression meaning "long water country," referring to the Quinnipiac River (Trumbull 1974:61). The Wangunks were concentrated in areas to the north and east of the upper Quinnipiac range, roughly defined by a corridor along the western side of the Connecticut River extending from Wethersfield to the north as far south as Durham and Killingworth, and extending across the Connecticut River as far east as Colchester (DeForest 1852:54-55; Spiess 1933:24-26). To the south of the Wangunks, the Menunketucks were concentrated in an area represented by the present towns of Guilford and Madison (Spiess 1933:29-30). The Paugussetts and Naugatucks occupied the territory west of the project setting, with the Paugussetts on the western side of the Housatonic and lower Naugatuck Rivers, and the Naugatucks to the north near the town of the same name, although records of various early land transactions suggest that the Paugussetts and Naugatucks were very integrated and closely

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Table 2: Local Historic Chronology

**Contact (17th Century)**
- Dutch explorers make contact in the Quinnipiac drainage in 1614.
- Dutch trade relationships established until the early 1630s, trading post in Branford.
- Severe disease epidemics in 1616-1619, 1633 reduce Native American populations.
- Pequot War of 1637 decimates Pequots, attracts settlement along Connecticut Coast.
- Theophilus Eaton and Reverend John Davenport establish settlement at Nine Squares.
- Quinnipiacs sell territory in 1638-1639, reservation established for Quinnipiacs in East Haven.
- New Haven Colony established in 1643, merges with Connecticut Colony in 1665.
- Long Wharf built near the southern boundary of the project area in 1682.
- Maritime commerce forms along Water Street, area to south in New Haven remains agricultural.
  Project area is within the harbor at the mouth of West Creek and East Creek.

**18th Century**
- New Haven becomes one of two Connecticut capitols in 1701.
- Yale College founded at Saybrook in 1701, brought to New Haven in 1716.
- Long Wharf expanded several times to accommodate growing regional and international trade.
- New Haven militia train on the Green, fight in French and Indian War.
- Benedict Arnold runs apothecary business in New Haven prior to Revolutionary War.
- In 1775, Arnold marches with men to Battle of Lexington.
- New Haven raided by British on July 5, 1779, left mostly unburnt.
- In 1784, New Haven is incorporated as a city, 500 buildings, 3,500 population.
  Project area within the harbor - north edge along wharves of Water Street, south edge along Long Wharf.

**19th Century**
- Embargo Act of 1807 temporarily affects maritime commerce.
- Long Wharf expanded to about 4,000 feet long into New Haven harbor in 1810.
- War of 1812 ends embargo.
- New Haven serves as terminus for steamship routes and the Farmington Canal, built 1825-1835.
- Hartford & New Haven railroad completed to Hartford in 1839.
- New Haven & Northampton railroad completed in 1848, roundhouse and rail yard by 1850 at project area.
- First railroad station located to north of project area on State Street.
- Railroad prompts rapid expansion of manufacturing, population reaches 20,000 by 1850.
- 1870 - New Haven & Northampton builds new roundhouse and repair facilities in north part of project area.
- Second railroad station built on fill over tidal marsh to the west of the project area in 1874.
- Railroads consolidate to form the New Haven monopoly, including rail, trolley, and steam travel.

**20th Century+**
- Project area continues to be used for rail car storage and maintenance for the New Haven.
- New Haven railroad overextends itself with electrification project, becomes insolvent, reorganizes.
- New Haven population over 100,000, diversification of population.
- Railroad freight business diminishes role of wharves and maritime commerce.
- Cass Gilbert helps create New Haven development plan.
- Cass Gilbert designs current Union Station in 1918 after second station burns down.
- Two world wars stimulate manufacturing economy and railroad business.
- Roundhouse and other repair facilities in project area torn down, repair operations move to Cedar Hill.
- Decline in manufacturing in New Haven following World War II.
- Railroad sells part of project area in 1953 for construction of major post office facility.
- Railroad sells 152 Water Street to New Haven Reserve Supply Company (lumber distributor).
- Auxiliary structure built on 3rd parcel of project area in 1988.
affiliated, along with the nearby Pequannocks, Pootatucks, and Wepawaugs who have all been loosely termed Paugussets (DeForest 1852:49-50,52; Guillette 1979:GH-1-2). Of the five subtribes, the Wepawaugs were closest, with the historic boundary between the Wepawaugs and Quinnipiaca thought to have been the West River just west of the project area, although the actual boundary likely fluctuated through time.

Ethnohistoric sources yield clues to aboriginal Final Woodland and early Contact settlement patterns (McBride and Bellantoni 1982; Starna 1990:36-37). Spring settlements were located to take advantage of anadromous fish runs in larger drainages and along the coast. Late spring attention focused on tending corn fields. Semi-sedentary settlements near these fields were supported by special task hunting and gathering sites. Dispersal in the late fall and winter brought smaller groups into protected, upland or interior valleys where hunting and gathering continued, for a longer duration in the Contact period than earlier and by a smaller subsistence unit (family). Fortified villages were likely a response to very early Contact period intertribal political strife resulting from increased economic pressures of sedentism and territoriality (Salwen 1983:94; McBride 1990:101; but see Thomas 1985:136). One such fortified village of the Paugussets is said to have been located on the Housatonic less than a mile north of its confluence with the Naugatuck River (DeForest 1852:51). Large villages were found to be associated with a central-based circulating to semi-sedentary settlement pattern, with family units dispersing from and returning to the major settlement on a seasonal basis in the lower Connecticut River Valley and surrounding region in the early Contact period (McBride 1981). Eventually, however, many Native American populations had been dispersed and afflicted by disease, warfare, and intertribal conflict to the point that small, scattered reservations served as the last community sites for various aboriginal populations in the area.

The early Contact period economic base for Native Americans in Connecticut continued to consist of hunting deer and small mammals, gathering berries, nuts and roots, and procuring shellfish and fish on larger drainages and along the coast (Waters 1965:7; Salwen 1970:5). This basic subsistence strategy was supported by varying intensities of horticulture, including the production of corn as the staple, as well as squash, beans, Jerusalem artichoke, and tobacco (Guillette 1979:CI5; Starna 1990:35). The importance of corn is evident in the description of ritual activities, including the Green Corn Festival and similar ceremonies that extended with various groups into the present day (Speck 1909:194-195; Speck 1928:255; Tantaquidgeon 1972:81; Fawcett 1995:54-57). Elderly women held extensive knowledge of wild plants which provided a host of medicines and treatments (Tantaquidgeon 1972; Russell 1980:35-37). Wigwams continued to serve as the principal form of housing, in some cases well into the 18th Century (Sturtevant 1975). The material culture included a mix of aboriginal forms as well as some European goods such as metal kettles and other metal implements (knives, projectile points), cloth, glass beads, and kaolin pipes (Salwen 1966, 1983:94-96). Wampum served as an important trade item for the Native Americans with European traders, but more significantly had served as symbolic signs of allegiance or reciprocity and sacred markers or tokens of honor in the form of belts (Guillette 1979:CI8; Ceci 1990:58-59; Salisbury 1990:87; Fawcett 1995:59). With European metal drill bits, tribes along the coast were now mass producing wampum for trade with the Dutch and English who in turn used the shell beads to trade with other tribes further inland (Salwen 1983:96; Ceci 1990:58). Late Contact period Euroamerican goods included various metal tools, glass bottles, ceramic vessels, kaolin clay tobacco pipes, and nails (McBride
Unlike the Late Woodland, Contact aboriginal lithic products were once again mostly manufactured from local sources (McBride and Bellantoni 1982:54). Dugout canoes may have continued to provide a major form of transportation in larger drainages (Salwen 1983:91). While colonization brought new material goods to Native Americans in the area in exchange for land and services, the indigenous inhabitants became increasingly subject to legislative and economic restrictions by the colonists (Salisbury 1990:83).

Sachems and councils of leading males formed the basic political unit for groups of villages (Gookin 1970[1674]; Simmons 1986:12-13), along with clan mothers whose authoritative roles became diminished as a result of a strong European male-leadership bias (Fawcett pers. comm. 1996). Tributes paid to sachems were generally used as reserves for the tribe at large. Although sachems were generally assigned by hereditary lineage, this was not always the case (Bragdon 1996:140-141). Authority was usually enforced by persuasion of a council. Shamans were "magico-religious" specialists of the tribes who also had a considerable role in leadership and decision-making (Speck 1909:195-196; Simmons 1986:43; Starna 1990:42-43). Rules of obligation and reciprocity operated on all levels of tribal-wide decision-making (Bragdon 1996:131-134), serving to diffuse centralized authority. Other special status roles included warriors and persons who had visions, thus social status was largely based on achievement and recognition. While the assignment of lineality (i.e. matrilineal vs. patrilineal) for the area tribes is still largely debated (Bragdon 1996:157), the well established practice of bride-pricing supports the contention of patrilineal social organization (Speck 1909:193; Salwen 1983:97). Post-marital residence appears to have been ambilocal.

On a larger scale, more powerful tribes demanded tributes from smaller ones, often resulting in loose alliances between the latter. This process resulted in a dynamic political situation that prompted intertribal conflict, especially after contact with Euroamericans (Guillette 1979; Bragdon 1996). The European settlers of the Contact period would eventually use this embedded rivalry system to their advantage. In the period between 1616 and 1619, and more severely around 1633, disease epidemics would initiate a trend of drastic reductions in the native population that aided in Euroamerican settlements of the area (Snow and Lanphear 1988; Snow and Starna 1989; Starna 1990:45-46). Diseases introduced into the Americas included chicken pox, cholera, diphtheria, malaria, measles, onchocercosis, poliomyelitis, scarlet fever, smallpox, tapeworms, trachoma, trichinosis, typhoid fever, whooping cough, and yellow fever (Newman 1976:671).

During the early part of the Contact period, Quinnipiac territory was controlled by two sachems, with Momauguin head of aboriginal populations in the southern part of the territory that would have included the project area, and Montowese in control of land to the north (Spiess 1933:26; Newell 1959:29). Montowese was son of the Wangunk sachem Sequin, thus showing the complex interrelationships between neighboring tribes. The Menunketucks to the east were also closely affiliated with the Quinnipiacs by relation, and when the female sachem Shaumpishuh sold the territory of Guilford to Euroamerican settlers, the remaining members of that tribe subsequently moved west to Branford and East Haven at Momauguin (also the name of Shaumpishuh's sachem brother) (DeForest 1852:52,167; Spiess 1933:29). Early trails through Quinnipiac territory include the Boston to New York path, and three extending north from the village of Quinnipiac in New Haven well to the north of the project area towards Farmington, Hartford, and Wethersfield (Spiess 1933:27).
The Pequot War of 1637 led to a near decimation of the Pequot tribe in southeast Connecticut (Hauptman 1990). Some of the Pequots were able to flee westward along the Connecticut coast, but were hunted down as far west as Fairfield. It was during this chase that some future Euroamerican settlers became introduced to the New Haven area (Rockey 1892:7; Woodward 1929:4; Osterweis 1953:8). In September of 1637, Theophilus Eaton and a band of 20 men explored the lower Quinnipiac region, and reported positive findings to their religious leader, Reverend John Davenport, who had recently landed in Boston and was looking to form a newly established settlement for his puritanical following (Rockey 1892:7-8; Woodward 1929:4). Davenport came with about 300 individuals from Boston to form a settlement at New Haven in what is now the downtown area, in nine principal squares or groups of lot (Rockey 1892:9-10; Osterweis 1953:3). The landing site of the early settlers is traditionally thought to be approximately at the intersection of Water and Meadow Streets, with what is now Water Street then at the edge of the harbor (Woodward 1929:5). The construction of the first meetinghouse at the center of what would become the Green was commenced in 1639 (Woodward 1929:26). Based on a "Plantation Covenant" and subsequent "Fundamental Agreement," or rules laying out the religious basis for the formation of a government, the foundation for the New Haven Colony was formed (Rockey 1892:9; Woodward 1929:19; Osterweis 1953:14-18, 50).

The initial land transactions between Euroamericans and native inhabitants of the New Haven area took place in 1638-1639 (Rockey 1892:13-14). The Euroamerican settlers from Boston were at first welcomed by the Quinnipiac who had been subject to occasional attacks by the Mohawk from the northwest and tributes from the Pequots to the east (DeForest 1852:162-163). With vastly reduced populations, initially signed treaties required little compensation for the sale of land other than a continued right of remaining aboriginal tribe members to hunt and fish within their original territory, and for a small reservation to be set aside on the east side of the Quinnipiac River in what is now East Haven (DeForest 1852:360; Osterweis 1953:10). The bargain included the provisioning of the Quinnipiac with a dozen coats, spoons, hatchets, hoes, knives, porringers, and scissors (DeForest 1852:164; Osterweis 1953:10). Euroamerican compensation for Menunketuck territory to the east of the Quinnipiac range amounted to similar paltry sums of material goods (DeForest 1852:167; Rockey 1892:111-112; Steiner 1897:29).

The core of Euroamerican settlement was the Nine Squares of what is now downtown New Haven, the center square of which is the New Haven Green (Woodward 1929:13, 32; Osterweis 1953:12). Agricultural plots were distributed beyond the Nine Squares (Woodward 1929:14-17). Early crops included wheat, rye, peas, corn, and flax, while cows and hogs constituted much of the livestock (Woodward 1929:24, 32; Osterweis 1953:33). In 1641, a map of the Nine Squares area shows that the two creeks extended inland for at least the full lengths of its eastern and southern boundaries, with assigned lots north of what would later be Water Street owned by James Russell, George Ward, Lawrence Ward, and Moses Wheeler (Brockett 1641 - Figure 11a). These lots measured about three to four acres each, and had about 350 to 400 feet of water frontage (NHPT 2000a). No substantial wharfage along the waterfront had been constructed at this time, and the entire project area would have been within the waters of New Haven Harbor.

The New Haven Colony was officially established in 1643, and a year later it established an alliance with the Massachusetts, Plymouth, and Connecticut colonies to form the United Colonies of New England in response to perceived threats from Native American groups
Figure 11a: Historic Map of the Area (1641)

Figure 11a: From Brockett 1641. Note that the project area was completely within water at the time of initial Euroamerican settlement.
(Rockey 1892:18; Osterweis 1953:26-27). By this time, the colonies had formed their own militia, which regularly trained on the Green (Rockey 1892:56; Woodward 1929:37; Osterweis 1953:19). The militia of New Haven were deployed in King Philip's War of 1675, but did not face major campaigns until well into the 18th Century (Rockey 1892:57).

After some resistance, the New Haven Colony joined the Connecticut Colony by 1665, and New Haven County was formally established a year later in 1666, covering an area now represented by 26 towns (Rockey 1892:25-28; Woodward 1929:79; Osterweis 1953:62-69). While early agreements included a reservation in East Haven for the Quinnipiacs, and stipulated that the Indians of the area could continue to hunt, fish, and farm certain areas, encroachments by more fixed Euroamerican settlements eventually made this impossible. Most Quinnipiacs of the area eventually removed to the Farmington area by 1768, and similar fates held for the Wangunks and Menunketucks (DeForest 1852:360-364; Spiess 1933), with only a minor Native American presence in the region thereafter.

Because of its protected harbor, New Haven became one of the region's early port towns. Regionally shipped surplus goods from the New Haven area included flour, malt, dairy products, livestock, meat, hides, leather, furs, shingles, clapboards, pipestaves, fish, whale products, wampum, and locally crafted items (Osterweis 1953:45). The first wharves were built on the protected East Creek that coursed along State Street. Trade with regional destinations and Barbados brought in manufactured items, hardware, canvas, rum, sugar, cotton, salt, tobacco, and wine (Osterweis 1953:46). To support a growing shipping and warehousing economy, Long Wharf was built into the harbor near the western end of the project area around 1682 (Barber and Punderson 1870:44; Rockey 1892:131; Osterweis 1953:244), which at that time was located near the northwest corner of the harbor. The wharf was principally established by a grant to Thomas Trowbridge in 1682, but also included land granted to Samuel Bache as early as 1663 (Townshend 1887:300).

**18th Century**

In 1701, New Haven was selected as one of two colony capitals, along with Hartford (Rockey 1892:30; Woodward 1929:33; Osterweis 1953:74). Its location and function as the county seat ensured that New Haven would grow quickly. A college that was formed at Saybrook in 1701 moved to the growing village in 1716. Yale was named after one of its benefactors, Elihu Yale, son of one of the early settlers of New Haven, and a governor of the East India Company through which he had acquired great wealth (Rockey 1892:106; Woodward 1929:102-107; Osterweis 1953:94-97). In 1717, a county courthouse was built next to an existing prison house on the Green that was updated a few years later (Rockey 1892:30-32; Sletcher 2004:26).

The local militia of New Haven that had formed as a result of perceived threats by Native Americans during the Contact period continued to grow as a result of other perceived political threats during the 18th Century (Osterweis 1953:108-109). In 1702, the New Haven militia added a troop of horses (Rockey 1892:57). By 1739, the militia of New Haven County numbered more than 2,300 (Rockey 1892:57).

Long Wharf was expanded several times in the early 18th Century to accommodate the growth of the port town (Rockey 1892:131). The wharf was also expanded to accommodate the rapid silting of the harbor that made navigation difficult at low tide (Osterweis 1953:102).
1736 to 1738 alone, the Long Wharf was extended 500 feet seaward, by which time the wharf had formally received its name (Clouette and Harper 2008:7). By the middle of the 18th Century, there were 180 dwellings in New Haven (Rockey 1892:107).

By 1748, structures along Water Street were limited to the north of the waterfront which did not have a well developed road (Wadsworth 1748; see Atwater 1887:30 - Figure 11b). There was one possible structure within the road or slightly to the south on the water at the foot or south end of Olive Street, probably related to the shipyard known to have operated there (Townshend 1887:301). Occupants of the north shore of the harbor along Water Street included Atwater, Mansfield, Goram, Collins, Rutherford, Sherman, Rothbotham, Engliss, and various members of the Brown family (Barber and Punderson 1870:87). The entire project area at this time would have been within the harbor, although the Long Wharf, measuring about 26 rods (429 feet) at the time, would have approached the southwest boundary of the project area by this time (Clouette and Harper 2008:7-8). The original wharf was constructed from timber bulkheads filled with earth and rubble. Tidal creeks still lined the eastern and southern boundaries of the nine squares at this time, each (because of historic infilling) only extending about two-thirds the length of the corresponding nine squares boundaries, with the eastern creek (East Creek) extending north between Union Street on the east and State Street on the west (approximately in line with subsequent railroad alignments), and the southern creek (West Creek) extending west just south of Meadow Street (and the Long Wharf) and George Street. In 1754, a public lottery was held to raise money for the extension of "David Wooster's Wharf" (Osterweis 1953:102).

In 1760, the Union Wharf Company was incorporated and operated the wharf until close to the end of the following century (Barber and Punderson 1870:44). They initially extended the wharf to a total length of 495 feet (Couette and Harper 2008:7-9). In 1770, an isolated pier with 80-square-foot mooring was constructed from stone and wood in a line with the Long Wharf, about one-third mile distant from the end of the wharf at that time into the harbor (Trowbridge 1865:87-91; Townshend 1887:301; Osterweis 1953:169). A lottery held to pay for the extension of the wharf in 1772 was conducted with the provision that any excess funds to Yale College (Osterweis 1953:105). A map from Stiles (1775) at the time reveals that in addition to the Long Wharf, which by that time had reached 1,100 feet long, there were two other shorter wharves or piers extending into the northwest corner of the harbor, including one adjacent and to the north of the Long Wharf, the other extending south into the harbor from about the end of Brewery Street (see also Atwater 1887:32). There were also a number of structures along the north shore waterfront of the harbor at this time, although Water Street had not been fully improved.

New Haven militia contributed to the forces of both the French and Indian Wars of 1755 to 1760, and the Revolutionary War to follow (Rockey 1892:57). Benedict Arnold was a prominent figure in the Revolutionary War, but as early as 1765 had an apothecary business in New Haven near George Street, and later Water Street (Rockey 1892:58; Osterweis 1953:259). Captain Arnold's leadership during the war included a march with the militia to Lexington in 1775; continuing into Canada to initiate a campaign in Quebec; returning to Connecticut to help repel a British advance on Danbury in 1777; and being made a major general with a victory at Saratoga (Rockey 1892:59; Osterweis 1953:131). By 1780, however, Arnold became a traitor to the revolutionary cause (Rockey 1892:59). Colonel David Wooster was another prominent Revolutionary War leader from New Haven, dying from mortal wounds received in battle at Ridgefield in 1777 (Rockey 1892:60). New Haven was subject to a British attack at dawn on
Figure 11b: Historic Map of the Area (1748)

Figure 11b: From Wadsworth 1748. Note the length of the Long Wharf, which falls short of the project area. Note also the sparse development along Water Street at this time.
July 5, 1779, with only 100 to 150 armed men on call to defend against 3,000 British troops under Generals Tryon and Garth from the east and west, respectively (Rockey 1892:61-62; Woodward 1929:91-98; Osterweis 1953:141-146). While the British had successfully shown a superiority in force, they did not set out to raze the town, with only a couple of dozen homes and vessels burnt (Rockey 1892:63-64; Woodward 1929:98; Osterweis 1953:146-147).

In 1784 within a year following the war, New Haven was incorporated as a city, and at this time had nearly 500 structures and a population of about 3,500 (Rockey 1892:107; Osterweis 1953:157). There were many substantial structures built on the Long Wharf in the 1780s for representative businesses, some three to four stories high. A late 18th Century map shows numerous structures within or towards the south side of Water Street, which was formally named in 1784 (Osterweis 1953:160-161). The slow but steady process of infilling seaward is evident from historic maps, but also historic references to the addition of land, with the Tomlinson causeway and toll gate constructed along Water and East Streets in the 1790s (ConnDOT 1997a).

Isaac Tomlinson was a hardware and grocery merchant who had a wharf at the foot of Brewery Street that would have been just north of the northeast corner of the project area, whose wharfage grant was contingent upon fully developing and maintaining Water Street (Townshend 1887:302). Products being shipped out from the wharf in the late 18th through early 19th centuries include grain, butter, meat, vegetables, cattle, horses, and lumber, while ships were simultaneously importing sugar and molasses (NHPT 2000a:38). There were 30 locally owned ships harboring at Long Wharf, most of which were involved in the West Indies trade (Osterweis 1953:161). Maps of New Haven in the late 18th through the beginning of the 19th centuries generally terminate in the vicinity of the project area, due to the lack of substantial development south of Water Street (see Osterweis 1953:76-77, 192-193).

19th Century

As a major port city of Connecticut, New Haven grew partly because of coastal, regional, and international trade, particularly Barbados (Rockey 1892:131). There were 110 stores in New Haven at the beginning of the century, and over 60 commercial vessels (Rockey 1892:107). In 1801, New Haven had a population of about 5,000, mostly of English descent, and included 85 recorded slaves (Rockey 1892:107; Osterweis 1953:191). About two-thirds of the families were Congregationalist, another third Episcopalian (Rockey 1892:107). Most of the population was still concentrated to the north of West Creek, and at Water Street along the northern side of the harbor (Osterweis 1953:158). The rest of territory within the current bounds of New Haven was very sparsely settled at the time. Howard Avenue, or Broad Street, laid out about the time of original settlement and representing the main road south through southern New Haven to City Point, was mostly flanked by farmland until the mid-19th Century (Loether and Penar 1985a).

Maritime business at the Long Wharf was booming at the start of the 19th Century, with advertised goods for sale at the wharf including rum, gin, molasses, sugar, spices, coffee, chocolate, tea, starch, rock salt, fish, nails, oil, turpentine, pottery, lumber, bread, and shipping gear (Clouette and Harper 2008:10). By 1802, development had expanded seaward from Water Street to the south towards the project area, with individual houses now depicted on the south side of Water Street for the entire length of the northern boundary of the project area, and some seaward developments additionally including a ship yard likely belonging to Daniel Collins (Atwater 1887) at the southern end of Olive Street, or "Bone Walk Street" (Figure 11c). Several
Figure 11c: Historic Map of the Area (1802)

Figure 11c: From Osterweis 1953:193. This map gives the depths of water along the Long Wharf, at about five to eight feet in the vicinity of the project area.
other waterfront structures to the west of Olive Street on the water included a fish market at the southern end of Union Street, likely within the existing rail yard just west of the project area. The map from this time indicates that the harbor depth at the Long Wharf about mid-way along the southern boundary of the project area was approximately five feet deep, and about eight feet deep closer to what is now Brewery Street along the eastern boundary of the project area. The Long Wharf is indicated as being 120 rods long at this time, or approximately 1,980 feet.

Around 1810, there were substantial improvements made to the Long Wharf, and by 1811 it was lengthened 1,350 feet and reached the formerly isolated pier, for a total of between 3,500 and 3,900 feet (Barber and Punderson 1870:44, Rockey 1892:131; Osterweis 1953:193,244). The structure was the longest wharf ever built in the United States (Clouette and Harper 2008:10). The 1810 improvement was constructed from stone - basalt quarried from East Rock at New Haven with timber pile fenders, and the earthen fill contained ballast from ships originating in waters around the world (Trowbridge 1865:102; Osterweis 1953:244). Despite being the period of maximum expansion of the wharf, the nature and scale of wharf business changed in the early 19th Century, at first because of the Embargo Act of 1807, then the subsequent War of 1812 (Rockey 1892:68; Osterweis 1953:193, 201-202; NHPT 2000a:39). Forts Hale and Wooster were built at the harbor to defend the city about this time (Rockey 1892:68-69). Unemployed vessels and seamen of New Haven were drawn towards privateering during the war (Rockey 1892:69-73).

Business returned to normal after the war. Early commercial enterprises included dry good stores and groceries; apothecaries; ship yard and stores; tanners; brass makers; manufacturers of firearms, combs, paper, and bells; and various professionals including lawyers and physicians (Rockey 1892:107-109; Osterweis 1953:237). The New Haven bank was established early in the 19th Century as a result of expanding commerce (Rockey 1892:108). A major fire in 1820 that affected wharves in the harbor critical for this commerce resulted in the bolstering of a small fire department (Rockey 1892:121-122; Osterweis 1953:277-278). A number of schools and academies were also established in the first few decades of the 19th Century, reflecting the growth of the population and professional pursuits (Rockey 1892:145-146; Osterweis 1953:222-229).

In 1820, more than two dozen buildings of the Long Wharf burned down (Barber and Punderson 1870:44, Osterweis 1953:277). A few years later, the wharfage became more complex along Water Street, expanding seaward, with Water Street by now more formally laid out (Doolittle 1824 - Figure 11d; ConnDOT 1997a). By 1830, the wharfage to the south of Water Street at the end of Brewery Street was the most extensive along the entire northern side of New Haven Harbor, and the "Basin Wharf" was extended from the end of Brewery Street to a mid-section of the Long Wharf (Buckingham 1830). This wharf served to enclose the northwest corner of the harbor into what would become known as "Union Basin." The basin served as the terminal end of the recently constructed Farmington Canal, with the first large (guard) lock of the canal built at the northwest corner of the basin just west of the project area. The Long Wharf was known as "Caton Wharf" at the time, and the wharf was expanded southward at various locations to accommodate structures along the landward half of the length of the wharf. The shipyard was still in operation at the foot of Olive Street, and a pottery works or enterprise was on the waterfront between the shipyard on the west and Brewery Street on the east (Townshend 1887:301). By 1838, the increasing complexity of wharfage is apparent on the south side of the
Figure 11d: Historic Map of the Area (1824)

Figure 11d: From Doolittle 1824. This schematic drawing shows a shipyard along Water Street and newly established buildings on the Long Wharf after the fire of 1820.
Long Wharf extending from its base seaward to the east of the project area and what is now Brewery Street, while the side of the wharf facing the project area remained streamlined (Hassler 1838). At this time (1838), development to the south of Water Street was still located to the north of the project area (see also Hassler 1846).

Although lesser bridges across the Quinnipiac and Mill Rivers had been built and rebuilt over many years, the first major span across the Quinnipiac below the confluence was built just before the start of the 19th Century (Rockey 1892:44; Osterweis 1953:275). Wharves were built around the western terminus of the bridge (now at Forbes Avenue), and were eventually used as freight depots for the terminal end of the Hartford & New Haven Railroad in 1839 (Rockey 1892:45). In the years between 1795 and 1825, various turnpike companies were established for the creation and maintenance of major thoroughfares throughout New Haven County (Rockey 1892:46; Osterweis 1953:161). The emergence of the steamboat in 1815 rendered all major Connecticut coastal towns with harbors as natural sites for further development, and New Haven also became the terminus of the Farmington Canal which was built between the years 1825 and 1835 (Rockey 1892:49-50; Osterweis 1953:192, 245-246).

The impetus for the creation of the Farmington Canal was a commercial rivalry between merchants of Hartford and New Haven in conducting trade with the entire upper Connecticut River Valley of Massachusetts, Vermont, and New Hampshire (Harte 1938; Hartley 1943:184; Osterweis 1953:244-245). Hartford had the natural advantage, being located directly on the river, and canals had already been constructed by the early 1820s to bypass the un-navigable parts of the river, although Hartford still had to contend with one major set of falls on the river at Enfield until a circumventing canal was built there in 1829 (Raber 1984). To take advantage of this prior to the bypass of the falls at Enfield, the Farmington Canal concept was to link the Long Wharf at New Haven with a point above the falls at Northampton, Massachusetts. In 1822, a group of 17 towns along the proposed route hired the resident engineer of the Erie Canal, Davis Hurd, to survey the alignment, and based on that survey the Farmington Canal Company was granted a charter to construct and then operate the canal (Harte 1933:26, 1938:125; Hartley 1943:185). Hartford representatives attempted to prevent the charter from being granted by the General Assembly, although they were only able to prevent any state subsidy of the project. The Massachusetts legislature followed suit in 1823 with a charter granted to the Hampshire and Hampden Canal Company to construct the connecting section in Massachusetts (Harte 1938:126) Funding for the project was mostly through private stock and capital from the City of New Haven (Blake 1888:96; Harte 1938:128-129; Osterweis 1953:245-246). Construction of the canal began just two years later in 1825, with the Connecticut section finished in 1829 and the Massachusetts section finished in 1835. The two companies were merged into the New Haven & Northampton Canal Company in 1836 (Harte 1933:22, 1938:148-149; Osterweis 1953:245).

The canal represents a distinctive engineering and construction phenomenon of the 1820s, and served an important role in the transportation and commercial development of the region in the early 19th Century. The canal was 80 miles long, the majority of its length in Connecticut (Barber and Punderson 1870:48). It was generally only four feet deep. Because of low funding and technical design flaws, the canal was in constant disrepair during its short life (Harte 1933; Osterweis 1953:246-247). When it was operating sufficiently, the canal benefitted commerce along its length, particularly at New Haven, which could transport goods from central New England throughout the region (Roth 1981:184). Typical cargo shipped along the canal included
wood, butter, apples, cider brandy, and other farm products brought down to New Haven; while sugar, salt, molasses, flour, coffee, hides, farm implements, iron, and steel were brought up on the return trips (Harte 1938:137,153; Hartley 1943:196; Raber 1984). While others profited from ancillary businesses such as taverns, warehouses, wharves, stores, and carrier services, the canal company charter did not allow for broadening its revenue base and suffered from underfunding and lack of ability to sustain repairs (Watrous 1887:360-361; Blake 1888:96-97). The canal company was never profitable (Rockey 1892:299; Raber 1984), and when fully operational, only 20 boats per week were going in and out of New Haven.

In 1836, the Farmington Canal investors reorganized as the New Haven & Northampton Company (Osterweis 1953:245; Turner and Jacobus 1986:60). In 1845, under the direction of Joseph Sheffield who had made a fortune in cotton, and only ten years after the completion of the canal, the company began to survey a route for an adjacent railroad, to be built mostly on the former towpath of the canal (NHNC 1836-1858:1846; Blake 1888:98; Rockey 1892:299; Hartley 1943:205). The Farmington Canal Railroad replaced its hydrological predecessor, reaching Plainville by 1848 and Simsbury by 1850 (Rockey 1892:52; Baker 1937:73; Osterweis 1953:247-249). Its southern terminal end was originally near Hillhouse Avenue and Grove Street well to the northwest of the project area and in the northern part of the Nine Squares, where it had a passenger station, engine house capable of servicing between two and four cars, and a small circa 40-foot separate turntable (Turner and Jacobus 1986:62). Subsequent plans called for the construction of a new roundhouse and repair facilities within the southwest half of the project area, which was in the process of being filled (NHNC n.d.).

Paralleling and competing with the Farmington Canal Railroad, the Hartford & New Haven Railroad Company was chartered as early as 1833, started construction in 1836, and was completed to Hartford in 1839 (Rockey 1892:51; Osterweis 1953:248; Stanford 1976:1; Lynch 2003:12). At the time, the line ran south only as far as the Forbes Avenue (Tomlinson) bridge, and a wharf was built there to accommodate steamboats bound for New York (Rockey 1892:51). The New York & New Haven Railroad received its charter in 1844 for the construction of a rail line between the two namesake cities that had to compete with the well established steamship lines (Harlow 1946:180; Hartley 1992:20; Karr 1995:46). The latter line opened in 1849, and by five years later had established a second track to accommodate increased traffic (Turner and Jacobus 1986:26; Karr 1995:47). The Shore Line Railroad between New Haven and New London to the east was finished in 1852, and the last link between New London and Stonington was completed in 1858 (Turner and Jacobus 1986:10).

In 1846, the Farmington Canal Railroad revised its charter and became the New Haven & Northampton Railroad (NHNC 1846; Cornwall and Smith 2001:36, 70), with the New Haven & Northampton Company originally formed from the Hampshire & Hampden Canal Company and the Farmington Canal Company (NHNC 1845:3). The company was formed with $288,225 of capital stock from 11,529 shares issued (NHNC 1845:5). The new company immediately leased its line to the New York & New Haven (NHNC 1848:7; Turner and Jacobus 1986:60-61; Karr 1995:71). Part of the agreement included leasing land at the head of the basin east of the canal for a station house to be built, with a direct connection to the Northampton line (Watrous 1887:365-367). The leasing of the canal railroad for over two decades provided business advantages to Sheffield and other investors, including giving them rights to valuable land and 21
acres of canal-basin property in New Haven where shops and terminals could be constructed (Baker 1937:76; Weller 1969:37; Turner and Jacobus 1986:61):

"Negotiations are now pending for a further lease from Grand Street to the Basin, for a longer period, which we trust will result in making the land of the Canal available for all the Roads which may now or hereafter pass through the City, and yield to this Company a further very considerable annual income..." (NHNC 1848:5);
"...stockholders have a sure source of income, independent of the railroad, which it will be the duty of the Directors to cherish and improve." (NHNC 1848:7).

While the canal was now defunct as a major source of transportation, the company was still seeking to lease sections of the canal as a hydrological power source for manufacturers. Wishing to attract as much traffic originating in Hartford as possible, the New York & New Haven had originally preferred an agreement with the Hartford & New Haven whose passengers were reaching New York City by steamboats from New Haven, and was finally able to secure that agreement after its arrangements with the New Haven & Northampton (Baker 1937:78; Weller 1969:38; Turner and Jacobus 1986:24). The New Haven & Northampton railroad line was slow to mature, not reaching the Massachusetts boundary until 1866, and it took several more years and leases from other lines to reach the Northampton area. In 1869, the line was reverted back to independent operation by the New Haven & Northampton (Baker 1937:80; Karr 1995:71-72). The railroad experienced a period of well being and financial health at this time (Turner and Jacobus 1986:64):

"Where at the start only a few trains crawled back and forth from New Haven to Plainville, the Canal Railroad at its greatest extent became a property to reckon with. In 1874 the company owned twenty locomotives, twenty-eight passenger and baggage cars, and nearly 450 assorted freight cars. Four hundred persons were regularly employed. During 1874 $440,000 was derived from the movement of freight, $164,000 was tallied from passenger service, with a net income of $73,800. The line's flimsy early construction was radically improved. Steel rails replaced iron, early bridges were totally rebuilt, and many new stations were erected along the various routes."

This profitability was relatively impressive, especially considering the fact that the New Haven & Northampton Company was responsible for back debts incurred by the problematic operations of the canal predecessor (NHNC 1836-1858:1846; NHNC 1849). Having reached as far north as Turners Falls, Massachusetts in 1881, the full line was leased back to the New York, New Haven & Hartford Railroad, which by 1887 purchased all the stock in the New Haven & Northampton Railroad at an over-valued price in order to pursue its overzealous attempt at monopolizing the rail industry of the region (Baker 1937:83-85; Turner and Jacobus 1986:64; Karr 1995:72).

By 1852, the New York & New Haven railroad line was constructed across the northwest corner of the harbor and the connecting New Haven & Northampton alignment continued north along the approximate course of the abandoned and infilled Farmington canal (Hartley and Whiteford 1851 - Figure 11e; Whiteford 1852). The first Union station was well to the north of the project area at this time along State Street, although an important spur was constructed off the main line that nearly bisected Union Basin and connected to the Basin Wharf that is now where Brewery Street resides. Further, to the south of the spur and north of the Long Wharf, the basin was half filled in order to accommodate a circa 150-foot diameter roundhouse, spare rail for
Figure 11e: Historic Map of the Area (1851)

Figure 11e: From Hartley and Whiteford 1851. Note the wharf that has formed an enclosed basin. Note also the structures in the southern half of the partially filled basin, including a roundhouse, freight house, repair shop, and probably an office.
storage, and other rail maintenance facilities - at the time the only such facilities in the Greater New Haven area. In particular, the roundhouse was accompanied by three major buildings, which likely included a freight house with its own spur, a maintenance building whose connecting spur was exclusively to the roundhouse, and what was likely a separate office building. The construction of turntables for the Northampton line began in 1847 that could relate to the very first turntable and engine house located at Hillhouse and Grove, with another considerable expenditure for turntables in 1849-1850 that more certainly relate to the facility at the project property (see NHNC 1836-1858:1847-1850). Capital improvements for the Northampton line in 1849 alone included $10,974.08 for depots, stations, and turntables, and $283,557.59 more broadly for "superstructure" (NHNC 1849). A lumber yard occupied the waterfront on the south side of Water Street to the west of Olive Street, with other enterprises located to the east of Olive Street and along the Basin Wharf. Wharfage continued to expand along the southern side of the Long Wharf, while the north side remained mostly streamlined with the exception of the new railroad facility. Commerce peaked at the Long Wharf in the mid-19th Century, thereafter declining and serving fewer goods such as lumber and coal (Clouette and Harper 2008:14). To the south at City Point, or Oyster Point, oystering grew during the 19th Century as a substantial business with individual proprietors having homes on the water fronted by piers (Loether and Penar 1985a).

The connection of steamboat, railroad, canal, overland, and sailing port routes made New Haven a natural site for rapid growth in industry and commerce during the 19th Century. The population of New Haven more than quadrupled in the first half of the 19th Century to over 20,000 (Rockey 1892:114). As a hub of multiple transportation forms, New Haven also became a hub of various railroad routes. Irish immigrants constituted a large proportion of the workforce for railroad construction, and many remained to add to the growing population of the city (Rockey 1892:52). In 1849, the first substantial train depot or station was built by the Hartford & New Haven line just south of Chapel Street, also used by the newly established New York & New Haven (Rockey 1892:52; Osterweis 1953:273-274). That station was only in use for 25 years, after which a more elaborate structure was built to the north of the present station at the foot of Meadow Street in 1874 (Rockey 1892:52-53; Osterweis 1953:249, 363). The newer station was built two years following the merger of the New York & New Haven with the Hartford & New Haven (1872), after which there would be many more consolidations and mergers under a large network of lines throughout southern New England, eventually to become known as "The New Haven" (Rockey 1892:54; Osterweis 1953:362-363).

Historic maps cited above show a progression of fill extending the western bank of New Haven harbor seaward (Townshend 1887:301). In 1868, the New York & New Haven railroad reported the purchase of land to the south of the project area for the construction of highly needed repair shops (CRC 1868:14-15). The nearby Spring Street roundhouse and associated repair facilities were constructed within several years. More property was also purchased to the south and to the north up to Long Wharf during the next couple of decades to expand their repair facilities (CRC 1890, 1891). A map from 1868 shows that the rail line from New York was built through the northwestern part of the harbor and associated tidal marshes towards the base of the Long Wharf (Beers 1868).

By 1868, the Long Wharf still extended fully from its base at the railroad tracks into the harbor. A major railroad spur also extended approximately one-third the length of the Long
Wharf into the harbor to the north, within current project parcels two and three (Beers 1868). The area to the south of the spur and to the north of the wharf was completely infilled at this time, although the section of the project area to the north of the spur and south of Water Street was within an enclosed section of the harbor made by the extension of Brewery Street, that currently defines the eastern boundary of the project area, to the wharf. Development along Water Street had grown seaward considerably, with a complete alignment of wharfage present on the south side of Water Street for the entire length of the northern project boundary. The shipyard was no longer in operation, with its land and wharfage sold to the city of New Haven for the establishment of a fire engine house in 1871 (Townshend 1887:301). Another wharf just west of the shipyard that had been granted to Hezekiah Sabin was sold to the New Haven & Northampton Railroad in 1869 (Townshend 1887:301).

With the leases of its line to the New Haven & New York expiring in 1869, the New Haven & Northampton Company initiated a considerable plan for capital improvements the following year that included substantial changes within the project area (NHNC 1868, 1869, 1870). The company anticipated this need in 1868, declaring that dividends must be discontinued in order to pay for the costs of filling in the basin grounds, extending its wharf, and paying for new machine shops and engine and freight houses (NHNC 1868), with $125,989.18 spent on new cars, wood, and ties, and $193,777.50 spent on new locomotives (NHNC 1869). The central rail line of the rail yard ran along the bisecting wharf of the basin, and in 1869 it had been extended as a 2,319-foot long, 80-foot wide "Canal Dock" built on wood piles seaward into the harbor nearly as far as the Long Wharf (NHNC 1869, 1870:3; Osterweis 1953:330). The new wharf replaced the older wharf in importance, reflecting the shift in dominant patterns in transportation and commerce in the late 19th Century (Osterweis 1953:386), and was touted as "facilities for receiving and shipping freight, equal, if not superior to any other found along the Sound" (NHNC 1869). Recent capital expenditures by the New Haven & Northampton Company at this time included $493,176 for equipping the rail line; $108,842 for the extended canal dock anticipated as increasing freight business and future steamboat connections; and $195,200 for a new freight depot, work shops, repair shops, car and engine houses, and stationary engines, machinery, and tools (NHNC 1870:3), with plans to fill in more of the basin (NHNC 1870:8). Annual receipts at this time were $475,082, based on 302,831 passengers and 169,080 tons of transported goods (NHNC 1870:7,14). To give an idea of the demand of repair facilities to service the line, by 1872 there were 20 locomotives with "two in the shop," as well as 17 passenger cars, seven baggage cars, 100 box cars, 300 flat and coal cars, and 40 gravel cars - "nearly all the cars are in good order" (NHNC 1872:8).

For the newly filled northern part of the basin, plans called for a new brick freight house measuring 150 x 60 feet just west of the project area, and within the project area for the repair of engines and cars - a 120x60-foot machine shop; 50x40-foot engine and boiler room; 100x40-foot blacksmith shop; and 130x70-foot carpenter shop. The new engine house was designed as a half-circle, measuring 240-feet in diameter. The facility had a depth of 65 feet and a capacity for servicing 14 engines at any given time. The iron turntable was to measure 50 feet, with a separate octagonal tank house measuring 20 feet in diameter. There was also a 30x15-foot brick and iron fire-proof building constructed for the storage of oil, paints, and waste. The brick buildings were to be lit with gas and heated by exhaust steam. They were constructed to a height of 21 feet above the surface, with roofs covered in slate tile - "are built in a substantial and
durable manner with a regard to the future wants and growth of the Road" (NHNC 1870:8). Power for the facility was to be supplied by a 60 horsepower engine and boiler built by Corliss Steam Engine Company of Providence. The machine and blacksmith shops were furnished with lathes, planers, steam hammers, and tools, many supplied by Bement & Dougherty of Philadelphia, and a 50-ton truck scale was also located on site (NHNC 1870:9). The 1870 annual report also indicated the anticipated need for a two-story store house near the machine shop to be built to a dimension of 60x35 feet with a shed for the storage of coal and lumber. It was also noted that there would soon be a need for a paint shop to handle the increasing number of locomotives which at that point were being cleaned and painted in the engine house that was also servicing the many passenger cars of the line (NHNC 1870:9).

By 1875, Union Basin was almost entirely infilled, with a small inlet still hugging the south side of the Water Street wharves. 152 Water Street was constructed by this time, just south of the inlet (New Haven tax records indicate 1880; but see Patterson 1875). A half-round house was still present at the yards, now to the southeast of 152 Water Street. The bulk of the basin was now filled with tracks and maintenance buildings as it had become one of the area's largest rail yards, although other prominent train repair facilities had been constructed by this time at nearby sites for the New York & New Haven as well, particularly at Spring and Lamberton Streets to the south. A large railroad freight house lay parallel to the southern line of tracks adjacent to the base of the Long Wharf (see Bailey and Hazen 1879 - Figure 11f). By 1885 just before the acquisition of the New Haven & Northampton by the New York, New Haven & Hartford Railroad, annual gross earnings had increased to nearly $800,000, while expenses were kept at around one-half million dollars, with slightly less than one-half million passengers and one-half million tons of goods transported during the fiscal year (NHNC 1885:3,6). About one-tenth of the expenses were related to the repair of cars, and another seven percent related to the repair of engines (NHNC 1885:8), roughly twice the percentages as 15 years prior following the expiration of the leases to the New Haven (NHNC 1870:13).

Late in the 19th Century, businesses operating on the south side of the Long Wharf and project area include rag processing and storage, grain and hay, coal and wood distributors, molasses wholesale, and a cement and stone yard (Sanborn 1886 - Figure 11g). Buildings devoted to these operations include offices, stores, warehouses, and storage for supplies such as salt, kerosene, and horses. Structures on the Long Wharf, particularly the landward half, were substantial, with many constructed of brick (Hopkins 1888 - Figure 11h). Within the project area, railroad repair and maintenance facilities were now largely concentrated in the north central section, with the rest of the project area occupied by a rail yard, and long freight house and stock pens lining the southern boundary of the project area. The rail yard had a very high density of tracks by this time, and by the end of the century the whole yard was densely occupied by tracks where buildings were not present (Sanborn 1901 - Figure 11i).

Towards the end of the 19th Century, 152 Water Street was being used by the New Haven & Northampton line as a machine shop and blacksmith shop (Sanborn 1886). A very small tool house was located to the northwest of the building. The inlet still lined the northern side of the building and separated the yard from industrial suppliers lining the south side of Water Street to the north. Railroad facilities to the west and south of 152 Water Street at the time include a store house, and sawing, planing and painting shop. Also to the southeast of the building still lay the large round house, or more precisely, half-roundhouse. To the east and south of the roundhouse lay private commercial enterprises with access from Brewery Street and mostly belonging to
Figure 11f: Historic Map of the Area (1879)

Figure 11f: From Bailey and Hazen 1879. Note the considerable detail regarding features in the project area, including the roundhouse, inlet along the northern boundary, repair shops to the west of the roundhouse, and long freight house in the south.
Figure 11g: Historic Map of the Area (1886)

Note the inlet at the northern end of the project area is shown as not fully filled in. The building at 152 Water Street is labeled as a blacksmith shop, and the building to the south that burned down in the 1990s was a “sawing, planning, and painting” shop.
Figure 11h: Historic Map of the Area (1888)

Figure 11h: From Hopkins 1888. Pink structures are brick, yellow are wood frame. Note the canal dock that is extended far into the harbor by this time. Major brick structures of the project area include the freight house, engine house (round house), 152 Water Street, and associated paint shop.
Figure 11i: Historic Map of the Area (1901)

Figure 11i: From Sanborn 1901.
Burgess & Newton Barytes Manufactory, including a cooper shop and storage building (for making barrels), grinding shop, dry kiln, and a crushing, separating and storage facility possibly used for making railroad ballast.

**Table 3: Principal Transfers of Property Title**

**152 Water Street Parcel**  
152 Water Street & 50 Brewery Street  
New Haven, Connecticut

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<td>Vol. 6594, pg. 204</td>
<td>Henry Syvertsen to 152 Water Street, LLC (quit claim)</td>
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<td>2003</td>
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<td>New Haven Scaffolding et al. to Henry Syvertsen (foreclosure)</td>
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<td>1988</td>
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<td>Alan Judelson to Modern Food Equipment Company (1/2 interest)</td>
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<td>1988</td>
<td>Vol. 3976, pg. 166</td>
<td>CRSC Dissolution Trust to Alan Judelson</td>
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<tr>
<td>1988</td>
<td>Vol. 3976, pg. 163</td>
<td>Connecticut Reserve Supply Co to CRSC Dissolution Corp (name change)</td>
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<td>Vol. 1768, pg. 277</td>
<td>NYNHH Railroad to Samuel W. and Summer Poorvu</td>
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In 1890, the New York, New Haven & Hartford Railroad purchased the Long Wharf, with its section landward of Brewery Street now entirely devoted to the rail yard and overlain with tracks (Clouette and Harper 2008:7). The Sperry & Barnes pork packing plant located on the south side of the wharf and east of Brewery Street survived the transformation of the wharf into the early 20th Century. The larger Consolidated Road (or the New Haven) was formed in 1892 (Turner and Jacobus 1986:54; Cornwall 1987:53-66; Karr 1995:16, 57). That consolidation, under the direction of financier and board member, J.P. Morgan, was part of a much broader consolidation process of railroad lines throughout southern New England during the last decades of the 19th Century because of economic necessity, with as many as 30 highly competitive independent lines in 1865 reduced to 18 by 1880, and then just three major systems by 1900 (Baker 1937:72; Hartley 1992:6-7; Karr 1995:15-16). In the 1890s, third and fourth tracks were added to the New York to New Haven line to accommodate greater traffic, and most grade crossings were eliminated (Karr 1995:48). By the end of the 19th Century, the station located to the north of the current Union Station was serving about 70 trains daily, about one-fifth travelling between New Haven and New York (Rockey 1892:53).

The railroad resulted in the growth in scale of manufacturing and commerce in New Haven. As an example, carriage-making was introduced into the area during the second decade of the Century, generating annual revenues on the order of $40,000 - but had grown 50 times to a $2,000,000 business by 1860 when there were more than 40 firms engaged in the business (Rockey 1892:110, 134). The growth of the carriage business in particular would have been even higher into the late 19th Century, except for the fact that much of the business was dependent upon sales to the south which declined after the Civil War (ConnDOT 1997a). But growth in general in the latter half of the 19th Century led to a proliferation of prominent civic structures in downtown New Haven, including the United States post office in 1860, City Hall built in 1861, the county court house in 1873, the city police building in 1874, and later the free library (Rockey 1892:101). Many of the larger buildings belonging to Yale University were also built in the western part of the downtown area during this time (Rockey 1892:101-102). Major utilities
developed in New Haven in the latter half of the 19th Century, including gas in 1849, a public water supply by 1862, a large scale telephone company by 1882, and electricity by 1883 (Rockey 1892:124-126; Osterweis 1953:279-280, 366; Sletcher 2004:127-128). By the last decade of the 19th Century, there were 700 manufacturing establishments in New Haven, including makers of carriages, guns, rubber, clocks, locks, pianos, corsets, chairs, paper boxes, and hardware (Rockey 1892:134-138; Osterweis 1953:194, 251-254, 351-356; see also Sletcher 2004:104-108). With the rise of population and manufacturing developed a broad network of professional services, with many charitable services and organizations also emerging in the latter half of the 19th Century (Rockey 1892:138-143). The population of New Haven had grown to more than 85,000 by 1890 (Rockey 1892:114), and saw a shift of immigration from Ireland and Germany to southern and eastern Europe by the end of the Century (Osterweis 1953:367-375; Sletcher 2004:102-104, 114-115). This included a shift in local industrial workforce from Irish to Italian immigrants living in the southern Wooster Square section of New Haven directly to the north of the project area by the 1880s (NHPT 2000a). The growth of industrialization along Water Street and to the north resulted in a decline in the quality of residential housing in the area, overcrowding, and pressure to expand into the more elegant Wooster Square area (Osterweis 1953:316; NHPT 2000a).

20th Century

By the beginning of the 20th Century, the New York, New Haven & Hartford Railroad (NYNHH, or "the New Haven") dominated water and rail travel throughout southern New England and several important utility assets under President Charles S. Mellen (Turner and Jacobus 1986:206; Cornwall 1987:81). The company controlled 10,000 miles of rails and steamboat systems, as well as a host of utilities such as electric, gas, and water companies (Hartley 1992:7). But the rapid growth of the railroad came at a fatal cost, with the company in debt by $114,000,000 in 1903, and the debt obligations compounded by the fact that more than $4.5 million was being expended annually on leases of various rail lines (Weller 1969:43). This was also compounded by expensive maintenance costs for its aging equipment, which included 983 locomotives, 1,922 passenger cars, and 13,768 freight cars (Weller 1969:43). The electrification experiments of NYNHH in the late 19th Century initially paid off because of a legislative act in New York to switch away from steam locomotives following an accident in 1902 caused by the obscuring of signals in tunnels (Hartley 1992:20-21; Karr 1995:48). But NYNHH spent $230 million between 1903 and 1914 electrifying its line from New York to New Haven, requiring the construction and installation of lattice-bar catenary wire support towers, overhead wire substations, switching gear, and a power plant. The coal-powered plant was built at Cos Cob in Greenwich (Karr 1995:48). This process was lengthy because of interruption by near insolvency after 1912 due to problems associated with deferred maintenance and a series of accidents (Weller 1969:149-151).

The City of New Haven had grown to the point that the city and town governments became consolidated, and the population exceeded 100,000 (Osterweis 1953:376-379, 385; Sletcher 2004:114). The city had established numerous parks, and the growth of industry and commerce allowed for the formation of recreational organizations and facilities (Osterweis 1953:380-382). Trolley lines provided another form of local transportation, and the New Haven Railroad quickly saw these lines as consolidation targets (Sletcher 2004:127-128). The New
Haven Railroad overextended itself in creating the monopoly, however, and it soon went into a series of bankruptcies during the 20th Century (Sletcher 2004:128-129). The railroad freight business had the result of diminishing the role of the wharves and maritime commerce, now mostly limited to the coastal trade of coal, iron, oysters, and lumber (Osterweis 1953:386).

New Haven placed a heavy emphasis on city improvements in the first couple of decades of the 20th Century, with Cass Gilbert being one of the principal architects commissioned to draft a plan for future New Haven development (Osterweis 1953:390-392). Large civic structures built in the downtown area included a county courthouse and a federal post office (Osterweis 1953:392). Cass Gilbert also designed the current Union Station in 1918 (Sletcher 2004:122). Replacing the prior structure that was built in 1874 and had just burnt down, it was completed by 1920 (Lynch 2003:40). The station featured a large waiting room and concourse, with upper floors devoted to the offices of operating and engineering staff. Along with the new station came an increase from six to ten principal tracks, the central two tracks of which were devoted to freight. The new station also featured an underground tunnel for pedestrian crossing.

By the start of the 20th Century, industry was still growing along Water Street, whose remaining residential areas were declining and being locally regarded as slums (ES 1991:27). The peak of industrial development occurred during the second decade of the 20th Century due to spending by the federal government to support its military efforts in World War I. Overexpansion during this time led to a recession in the early 1920s, and the declining carriage business basically ended with the onset of the automotive industry and was finalized by the onset of the Great Depression (NHPT 2000a). The decline of the north harbor area of New Haven naturally continued throughout the depression years of the 1930s.

Early in the 20th Century, the Long Wharf area was continuing a trend away from diverse commercial enterprises towards industrial concerns and railroad facilities. Warehouses along the Long Wharf were fewer, and one of the buildings was now devoted to an electric light plant or power facility for the railroad (Sanborn 1901). Commercial and industrial enterprises were still located to the north of the project area along the south side of Water Street, particularly lumber distribution businesses, and the inlet leading to the harbor was now completely infilled. Within the southern part of the project area, the railroad freight warehouse was still functioning, and other structural features close to Brewery Street include a freight platform and cattle pens (Sanborn 1901). The "Northampton Shops of the New York, New Haven & Hartford Railroad" were still operating in the northern part of the yard, including the machine shop and blacksmith shop at 152 Water Street, the planing and sawing shop to the south, and the roundhouse to the southeast. The Sanborn maps showing the details of buildings at this time also show utilities servicing the facilities - for instance heat by steam and gas lights at the roundhouse. To the east and south of the roundhouse, the commercial enterprises disappeared, and this part of Brewery Street was now occupied by warehouses for roofing supplies and lumber. The Northampton division of the NYNHH was one of four major divisions at the start of the 20th Century, the other three being the Shore Line extending east, the Berkshire extending to the northwest, and the Air Line running from Boston to New York through New Haven (Osterweis 1953:386).

New Haven was influenced by World War I in several ways. As a center for weapons and ammunition manufacturing, this served to boost local economy (Osterweis 1953:402). Many men of the region contributed to the troops sent overseas (Osterweis 1953:404-405), and the movement of manufactured goods and personnel to support the war effort utilized the railroad
lines that radiated out of New Haven. The New Haven railroad line was taken over by the U.S. Railroad Administration during World War I, returning to private control in 1920 (Weller 1969:196; Cornwall 1987:83; Sletcher 2004:128-129). The company was profitable again by 1924 due to the divestiture of street rail assets and the formation of a complimentary transport company using internal-combustion vehicles (Cornwall 1987:81-83). By 1927, NYNHH was moving 40,000 people daily into and out of New York City (Stewart 1997), with freight service secondary to passenger service on the New Haven (Karr 1995:53).

By 1923, freight offices and lumber facilities were still located to the north of the project area along Water Street (Sanborn 1923 - Figure 11j). Repair and machine shops still occupied 152 Water Street, but the roundhouse was no longer present by this time. Buildings associated with 152 Water Street were now used mostly for storage, and the commercial facilities along Brewery Street were now completely gone. The long freight house still lined what was the Long Wharf, by now the section in the vicinity of the project area reduced to a driveway for railroad facilities such as a tool house, blacksmith, heating plant, oil storage, and gas making and storage. Shortly after Union Station was built in 1918, the Cedar Hill rail yard a mile to the northeast of the station and north of the project area was expanded to become the largest freight yard in the eastern half of the country (Lynch 2003:40). First constructed in 1909 (Turner and Jacobus 1986:217), this rail yard and repair facility resulted in less emphasis on repairs at the yards near Union Station, whose roundhouses and repair shops were either closed or greatly diminished in function. This trend was compounded by the presence of large repair yards at Readville near Boston and in New York (Turner and Jacobus 1986:256).

By the 1930s, the emergence of the automobile, and particularly the bus, reduced railroad demand (Osterweis 1953:418; Weller 1969:197), which had peaked by 1929 (Sletcher 2004:129). Because of its intensive commercial and industrial base, New Haven suffered greatly during the following Depression years (Osterweis 1953:421-422) that further impacted the already suffering railroad industry (Sletcher 2004:129). The New Haven filed for reorganization in 1935 and never returned to profitability (Cornwall 1987:89).

During the Depression, almost the entire project area was devoted to train car storage as part of one of the largest train yards in the region. The roundhouse and many of the repair buildings were now gone, although the long freight house structure along the former Long Wharf was still present in 1934, as was 152 Water Street and the smaller repair building directly to the south (Fairchild 1934). The Sperry & Barnes pork packing plant was still present to the southeast of the project area on the other side of the wharf, and the Long Wharf and parallel "Canal Dock" still extended far into the harbor. Between 1951 and 1956, however, massive amounts of fill was brought in to extend the shoreline seaward for the construction of the interstate, engulfing another quarter of the length of the Long Wharf and nearly the entire Canal Dock which were buried beneath at least three feet of fill (Clouette and Harper 2008:15).

The middle of the 20th Century witnessed a greater diversity of ethnicities, now including substantial Hispanic and African American populations (Sletcher 2004:117-121). Industry changed to meet changing needs, including a focus on many electronic and automotive products, although many products previously manufactured in the area like guns, ammunition, paper boxes, and corsets continued to be made in New Haven (Sletcher 2004:123). As with World War I, the second world war also boosted local industry (Sletcher 2004:125).
Figure 11j: Historic Map of the Area (1923)

Figure 11j: From Sanborn 1923. Note that the round house is already gone by this time, and the overall diminished nature of the facility as repair operations were being streamlined at the massive Cedar Hill complex about one mile north.
Following the Great Depression, the New Haven Railroad went through a series of efforts to return to profitability by engaging in a number of strategies (Doughty 1998:39-43). One of the earlier strategies was to diversify its business and simultaneously hedge against technological obsolescence, by buying alternative transportation companies such as bus lines, trucking firms, and even investing in airlines. The surplus returns of these ventures were often dumped onto the balance sheets of the railroad in an effort to keep it solvent, although a combination of factors such as natural disasters (floods and hurricanes), employee contracts, increasing maintenance and tax costs, and various inefficiencies were devastating to the business. By the 1950s, the New Haven attempted to increase efficiency by divesting of its non-rail assets, as well as various properties used for maintenance and storage. The concomitant reduction in maintenance expenditures temporarily improved earnings being demanded by railroad stock investors, although this strategy was recognized by internal board members as essentially bookkeeping trickery (Weller 1969:219; Doughty 1998:42). The long-term effect of this policy, however, was the degrading of railroad equipment, low employee morale, and reduced customer service quality (Doughty 1998:47).

After World War II, the city began to witness a decline in both commerce and population. This trend was caused by multiple factors, including a booming suburban development period for middle class families (Sletcher 2004:130). The population decreased from a peak of about 160,000 between the two wars, to less than 125,000 by the end of the century, and manufacturers left the city in order to find more affordable locations to operate (Sletcher 2004:130-131). The construction of Interstate 95 (Connecticut Turnpike) through New Haven had the effect of isolating to some degree the southern part of the city from the rest of New Haven, and more directly reduced the demand for rail freight (Weller 1969:222). A revitalization movement in the 1960s focussed on the downtown New Haven area (Sletcher 2004:132). The Long Wharf redevelopment project of the 1950s through 1970s helped to improve the area with the construction of a number of large commercial structures along Sargent and Long Wharf Drives, and included a renovation of the remaining part of the now very shortened Long Wharf (NHPT 2000b). Yale University has made efforts to acquire and upgrade properties in and around the core of campus (Sletcher 2004:138), and has become one of the nation's most highly endowed universities. The university has also served to attract many research and service-related firms that have to some degree replaced manufacturers (Sletcher 2004:141-142). Yale has also served to provide a cultural force within the city, including theater and art (Sletcher 2004:143-145).

Norfolk Southern and CSX, the latter subsequently controlling the bulk of New Haven freight operations (Lynch 2003:158). The Northampton line section from New Haven to Cheshire had its last freight trains running in the early 1980s, with a formal abandonment of the line in 1987 (Karr 1995:73).

Water Street was relocated somewhat to the south and widened in the 1960s, thus historically mapped structures on the south side of Water Street could be further to the north of the project area than projected, as is likely the case for the various mapped wharves. Union Station continued to serve as a freight and passenger station for New Haven throughout the troubled history of the railroad during the 20th Century, and was listed with the National Register of Historic Places in 1975 (Raiche 1975). Much of Union Station was closed as a facility during the late 1970s, but reopened after substantial renovations in the early 1980s.

Today, numerous structures occupy the parcels that constitute the project area. At 152 Water Street, the main building is listed in New Haven tax records as a commercial warehouse (Figures 12 and 13). As described in tax records, the structure is a [partial] brick building having 13,050 square feet with a [partial] flat roof and finished concrete floor. The building has three basic sections, including one measuring 39 x 150 feet, the other 60 x 120 feet. There is also a 20 x 136-foot canopy section that runs nearly the entire length of the southern side of the narrower section. The building was sold by the NYNHH Railroad to the New Haven Reserve Supply Company in 1955 (Table 3). At the time of the sale of the property, a survey map (Map 13, Page 110) shows an existing railroad platform for the United States Postal Service located along Lot 5 that constitutes the CSX lot today. The New Haven Reserve Supply Company was a lumber supplier, as was its successor, the Connecticut Reserve Supply Company, which occupied the site until 1988. The New Haven Scaffolding Company occupied the site after a foreclosure forced the sale of the building from the company in 2003, until ConnDOT purchased it earlier this year. Documented improvements of the building in 1962 include converting portions of the 2nd floor for office space, construction of a dividing wall, the relocation of an interior enclosed stairway, and adding an egress or new door with steel stairway. The building also had a large billboard installed on the roof in the 1960s, viewable from the deck of the Oak Street Connector above. In 1989, further improvements included non-bearing partitions, handicap ramp, and metal exterior stairs from the second story to grade level. In the 1990s, the rear brick building belonging to 152 Water Street suffered severe fire damage, and was demolished. A survey map shows the taking of the very northern edge of the property for the Route 34 Connector in 1957 (Map 14, pg 153).

There are three main structures at 50 Brewery Street, including the large Post Office Annex building built in 1953 (USPS Parcel 3) (Figure 14), another structure built in 1988 for the postal service (USPS Parcel 2) (Figure 15), and the CSX warehouse. The first building is a two-story structure with flat roof constructed of concrete and cinder blocks, measuring nearly 200,000 square feet or over 4.5 acres. The smaller building is of similar construction, and is 18,266 square feet. The third CSX pre-fabricated metal warehouse building with tin roof measures 75 x 200 feet and lines a section of Lot 5 to the north. The large post office building at 50 Brewery Street was built in 1953 (New Haven tax records; also see USGS 1947, 1954; Robinson 1951) about the time the parcel was sold by the NYNHH Railroad to Samuel W. and Sumner Poorvu who constructed the facility (see Survey Map 13, Page 43), with full ownership of the parcel by the USPS in 1974 (see Table 3). Building permits reveal that the main structure included 125 workroom areas and 75 office spaces, with a steel frame supported by concrete and composite
Figure 12: Southeast view of the front or north face of the building. Note that the western half of the structure has been replaced with concrete masonry and other modern materials. Also note the large sign installed on the roof of the building’s eastern section.

Figure 13: North view of the rear or southern face of the original eastern section of the structure built around 1870. Note that the sign was built over a re-sailed roof dormer, with a canopy also built south from the building. Concrete paved area in foreground represents former paint shop burnt down in late 20th Century, with traces of brick walls visible along the perimeter.
Figure 14: USPS Parcel 3

Figure 14: East view of the northwest section of the massive postal facility built in 1953. The structure measures over four acres. A paved parking surface in foreground is the approximate location of the former half roundhouse built around 1870.

Figure 15: USPS Parcel 2

Figure 15: Southwest view of the postal building built in 1988 at Parcel 2. The parking area in the foreground is the approximate location of the original roundhouse built in 1850. The building was built over portions of two of three supporting structures of the earlier facility.
piles on concrete footings. A contemporaneous permit called for the construction of a 566-foot long train shed in the same year.

**Local Sites and Surveys**

There are only a few recorded historic archaeological sites in the New Haven area. Judges Cave (93:010) or rockshelter site is a well known landmark located several miles northwest of the project area in West Rock Park, where the famous regicides William Goffe and Edward Whalley reportedly stayed in hiding intermittently between the years of 1660 and 1664 (see Woodward 1929:59-68; Sletcher 2004:74). Later historic industrial sites include the Parker Paper Company site (93:017) several miles to the northwest of the project area on Whalley Avenue near the West River where ruins include traces of a dam, mill race, and brick foundation dating to the late 18th through 19th centuries (TAMS 2006). The 20th Century Connecticut Coke Company plant property was subject to an assessment survey on the east side of the harbor, where traces of the late historic plant, including foundations and coal storage areas, were recorded (Clouette 2009).

Assessment surveys of potential resources to be impacted by the Quinnipiac River (Pearl Harbor Memorial) bridge and Interstate 95 crossing project identified areas that could potentially hold deeply submerged prehistoric sites, but also a host of potential historic resources such as structural features associated with the Long Wharf, structures built along Water Street, a tide mill foundation, remains of a shipyard, a pottery works, railroad roundhouse, basement features of major hardware and carriage manufacturers, and other features related to historically mapped residential and commercial occupations (ES 1991; ConnDOT 1997a, 1997b; Raber and Gordon 1998; Raber 2001).

The ConnDOT study (1997b) that in particular examined archaeological potential at the north end of the harbor, which would have included the project area, made a determination that there was generally a low level of sensitivity for prehistoric cultural resources and a low to moderate level of sensitivity for historic cultural resources due to modern developments and historic fill contexts. Closest to the project area, prior studies noted the historic locations of the Cowles factory property at 83 Water Street, the Sholhorn factory complex, and the Fitch Foundry complex at 151-153 East Street. The Fitch Foundry, makers of carriages and carriage parts, survived as the most intact plant representing the 19th Century carriage industry of the area (ES 1991:41). The Cowles factory was initially used to manufacture carriage hardware, and switched to the manufacture of automotive parts, which was conducted late into the 20th Century (ES 1991:38-40). The Sholhorn factory similarly manufactured hardware, and was part of the Sargent factory complex into the mid-20th Century (ES 1991:41). The studies also noted a high level of sensitivity for historic wharf areas that would have had associated structures devoted to various maritime businesses, particularly along the Long Wharf that lined the southwest boundary of the project area, and at the wharves and docks south of Water Street along a stretch that nearly coincides with the northern boundary of the project area.

Archaeological reconnaissance testing in the I-95 corridor to the west of Mill River revealed the remains of the Cruttenden Carriage Works and associated service facilities on Wooster Street about one-half mile northeast of the project area (Deaton and Cherau 2003a). Subsequent data recovery at the site documented in detail the carriage works, a saloon, a woodworking shop, a stable, two privies, and trash deposits dating to the 19th through early 20th centuries (Ford and Cherau 2004). Other projected late historic structural features were also recorded closer to the project area, including Sargent & Company basements partially
represented by concrete and masonry features, and possible wharf retaining walls to the east of
the project area on Hamilton Street (Deaton and Cherau 2003a). Another area of reconnaissance
testing in the I-95 corridor to the west near Frontage Road and close to the project area revealed
late 19th to early 20th Century wharf construction material where an early 19th Century tide mill
was known to be located at the foot of Brown Street before being subsumed within the Benedict
& Company Coal wharf by 1876 (Deaton and Cherau 2003b:86-87). Test trenches placed in this
vicinity only revealed traces of the later historic wharf structures represented by wooden timbers
and concrete footings. Other potential resources targeted for identification or noted during the
survey include late 19th Century structures with basements along Water Street to the north of 152
Water Street where there was also historically mapped pottery and shipyard facilities from the
first half of the 19th Century.

Closest to the project area and lining the southwest edge of the project area, the stone
masonry remains of Long Wharf formerly extended from what is now Frontage Road southeast
about three quarters of one mile into the harbor, and currently terminates at a harbor light that is
now only about 700 feet off shore. Much of its remains are beneath the fill that extended into the
harbor during the 18th through 20th centuries. The wharf was repeatedly built seaward to access
deeper water as the harbor was continuously affected by silt deposition (Clouette and Harper
2008). Dating to as early as 1682, the 1810 improvements that extended it to its current seaward
length can still be seen below improvements to the currently shorter pier in the 1960s for a
waterfront redevelopment project.

The remains of the circa 1870 Spring Street Roundhouse (93:024a) were documented
during construction monitoring about one-half mile to the southwest of the project area, where
recorded features include repair pits constructed from concrete, brick, and stone, and recovered
artifacts include brick, coal, glass, fire brick, shaft split journal, structural timbers, and stone
pintle blocks (Clouette 2002). Features of the roundhouse exposed by mechanical stripping of
overburden include a masonry pit wall and circular track of the turntable, parts of the exterior
wall, and repair pits constructed from concrete, brick, and stone. The original two-story brick
structure would have been able to accommodate at least several dozen engines at any given time,
with a 52-foot turntable at its center and stalls with underlying repair pits radiating outward.
Archaeological monitoring at the Spring Street roundhouse site revealed a concrete repair pit that
would have been a subsequent modification to the original construction, probably dating to the
early 20th Century (Clouette 2003:9).

Two more 1890 Lamberton Street Roundhouses (93:024b) were also documented during
construction monitoring further to the south in the rail yards where exposed brick pits, include
those extending within the turntables, were found to be used for both the repair of existing cars
and the manufacture of wooden freight cars (Clouette 2003). These roundhouses relate to an
expansion of the original New Haven Rail Yard that included the Spring Street roundhouse from
two decades prior. The turntables of these newer roundhouses measured 60 and 75 feet across
(260 and 300 feet diameter for the entire structures), thus accommodating the larger locomotives
of the time. These newer facilities were also used commonly after World War I for the repair
and rebuilding of more than 12,000 wooden boxcars that the New Haven Railroad could not
afford to replace with newer freight cars (Clouette 2003:5). Following the construction of these
roundhouses, the Spring Street roundhouse was reduced to half its original size, with the other
half serving as a coal loading and storage facility (Clouette 2002:7). The roundhouse features
were all demolished by the 1930s, likely relating to obsolescence and the creation of massive facilities and even larger roundhouse at the Cedar Hill yards to the north, as well as other substantial facilities in New York and Boston. Roundhouse structural debris from this demolition was present at the Lamberton Street site, including spikes, track plates, brick, glass, and slate, with the tops of repair pits found as shallow as six to twelve inches below the surface (Clouette 2003:1,6). One of the repair pits at the site additionally contained hundreds of metal artifacts, including railroad car parts, tools, and fasteners. Tools recovered at the site include T-handled socket, single, double, straight, and offset open wrenches, reamers, and journal-packing iron. Metal parts for the railroad cars include grab irons, stirrup steps, flatcar stake pockets, corner braces, chain hooks, center plate, knuckle coupler, axle journal, and freight car spring, while fasteners include nuts, bolts, clevises, iron pins, cotter pins, and rivets. Mechanical stripping at the site revealed stone ashlar retaining walls for the turntables.

In the downtown area, excavations were conducted within the historic Exchange Building, built near the southeast corner of the New Haven Green or old "Public Square" in 1833 (LBA 1988a, 1988b). The initial assessment survey of the property revealed possible foundation walls of earlier structures incorporated into the existing building's foundation, although subsequent excavations revealed a mix of later historic glass, ceramic, and bone artifacts that could not be positively related to an earlier occupation of the site. Excavations at a crypt in the nearby Center Church occurred ahead of a proposed restoration, and revealed 13 grave shafts, two coffins, two complete gravestones, and the cranium of a child (Neiman 1990). Extrapolating sample data, it was estimated that there could be on the order of 1,000 individuals represented in the crypt. Another survey of the Ninth Square area to the southeast of the Green and north of Interstate 95 led to the identification of brick foundation walls; a late 18th to mid-19th residential yard deposit bearing a high density of ceramics, pipestems, and bone; and the remains of a 19th Century "smithy" or small brick forge that contained some ceramic fragments as well as coal, charcoal, a graphite crucible, and decomposed copper (LBA 1989). A subsequent survey of the yard site (Raber 2005) revealed a stone foundation wall, early slipware and delftware ceramic fragments, cuprous spoon, salt-glazed stoneware, apothecary bottle, and other diagnostic materials indicating an occupation dating to the early 18th Century.

There is also a prolific occurrence of historic architecture in New Haven, particularly within and surrounding the New Haven Green located on the opposite side of Interstate 95 about one-half mile northwest of the project area. Many of the historic structures are recorded in large volumes of New Haven Historic Resources Inventory issued by the New Haven Preservation Trust, Inc. and Connecticut Historical Commission (NHPT 2000a, 2000b). Three churches (United, Center, and Trinity) and two memorials (Bennett and World War I) occupy the Green that is nearly bisected by Temple Street. On the east side of the Green closest to the project area, historic structures and features include City Hall and the Amistad Memorial, the U.S. District Court House, and the Exchange Building.

The first assessment survey of the "Q - Bridge" crossing (ES 1991) and the historic architectural resource companion to the ConnDOT archaeological study (1997a) identified numerous historic structures and districts that could be affected by the project. Resources listed with or eligible for the National Register of Historic Places (NRHP) that were identified as potentially affected adversely include the Howard Avenue Historic District to the west of the project area, the Oyster Point Historic District (Cunningham 1989) at the southern end of the
Howard Avenue district, Cowles Factory and Fitch Foundry Complexes to the north of Interstate 95, the former Yale Boathouse on the other side of the Quinnipiac River, and the Church of the Epiphany and Forbes House on Forbes Avenue east of the river (see also Roth 1981:178 regarding Cowles).

The Howard Avenue Historic District, at about one-half mile to the west of the project area, contains one of the oldest roads laid out in New Haven (ca. 1640), and is lined by houses of the late 19th to early 20th centuries, bearing Italianate, Gothic Revival, Second Empire, Stick, Queen Anne, Romanesque, and Colonial Revival styles (Loether and Penar 1985a). The Trowbridge Historic District (Loether and Penar 1985b) is located at the northern end of the Howard Avenue district, to its east. Also historically known as the Village of Spireworth or Mount Pleasant, the district is roughly bound by Columbus Avenue to the north, Rosette Street to the south, and Loop Road to the east. There are about 200 contributing structures within the district, mostly built in the latter two thirds of the 19th Century, and consisting of structures of Greek Revival, Italianate, Queen Anne, Romanesque Revival, and Colonial Revival styles. The district is significant as an example of a working class neighborhood of the 19th Century, designed for that purpose with the help of famed social reformer Simeon Jocelyn and developer Isaac Thompson. The village, with Spireworth or Trowbridge Square as its core focus, was modelled as a miniature representation of the nine-square settlement plat containing the New Haven Green.

Other important historic architectural resources lay to the north and/or east of the project area. Elegant residential houses are present within the Wooster Square area to the northeast of Brewery Street, dating from the third decade of the 19th Century to just after the Civil War, including Second Empire, Greek Revival, and Italianate styles. The Wooster Square Historic District was formally designated in 1969. The Cowles Factory at 83 Water Street dates between 1886 and 1901, while the nearby Sholhorn Factory from about the same time period with additions built in 1923. The Fitch Foundry Complex on East Street that initially manufactured carriages just after the Civil War shifted its focus to hardware, with additions built around 1920. To the north of the Cowles Factory complex are other historic structures including an Italianate store structure from the 1850s at 100 Wooster Street and an apartment building at 488 Chapel Street dating to about 1900. A substantial commercial block building is located at 166 Bridge Street, and is a three-story structure that dates to around 1870 to 1880. Finally, the Tomlinson Bridge to the south of the Quinnipiac River Bridge was built in the 1920s, and is a double leaf moveable bridge, with the original bridge no longer extant. Other late historic structures have been documented in the Long Wharf area, to the east of the railroad tracks and south of Water Street (NHPT 2000b).

There were several rail yards and railroad maintenance facilities of the late 19th Century in New Haven. While the project area represents one of these, a more substantial facility was located about one-half mile to the south-southwest at the "Lamberton Street Shops." Historic structures and features related to the facility were documented in a Historic American Engineering Record (HAER) documentation (PAST 2006). The documentation was conducted in advance of plans by Amtrak to demolish many of the buildings that were in poor condition, making room for improved facilities. Eight existing buildings at the facility at the time of the survey included the 1954 Interlocking Control Building; the 1946 Work Equipment Shop; the 1930 Central Heating Plant and Oil Storage building; the circa 1888 Freight Car Shop; the 1870
Machine Shop; the circa 1940 Small Stores Building; the circa 1870 Oil Storage Building; and the 1930 Locker Building. Another building, Building 10, was a parts storage warehouse and shop building subject to a more detailed state level documentation (FHI 2007). Built in 1948, the utilitarian structure is a concrete block building with steel framing and truss systems measuring about 150 feet wide by 650 feet long. It was a later addition to the Lamberton Street facility that dates to the late 1860s when it specialized in the repair of steam engines before conversion of the rail lines to electric in the early 20th Century (FHI 2007). Formerly, other buildings at the facility included "three roundhouses with turntables, two transfer tables, a huge forge building, a water tower, a coal dock, a brass foundry, and a number of other brick shop buildings similar in appearance to those that have survived " (PAST 2006:2-3).

Another cultural resource study was conducted nearly 30 years ago for the parking garage to be built to the north of the train station, which was also scheduled for renovations at that time (Artemel et al. 1982). The four-story brick Union Station was built in 1919-1920 in a Beaux Arts (Italian Renaissance or Renaissance Revival interpretation) classical style by famed architect Cass Gilbert for the New York, New Haven & Hartford Railroad (or the "New Haven"). The station building was a replacement for an earlier structure built by 1875 and burned down in 1918. The property was listed with the National Register of Historic Places (NRHP) in 1975 (Raiche 1975). The structure is significant with respect to its architecture, but also its function as the hub for the New Haven rail system that drove commerce and industry throughout southern New England from the mid-19th through early 20th centuries. An assessment survey for a planned parking garage to the south of the station revealed that the latter area had been used for light maintenance and storage by the railroad from the late 19th Century into the early 20th Century (Walwer and Walwer 2011).

A number of historic bridges span the rivers and railroad tracks of central New Haven within a couple of miles of the project area, and are recorded with the Historic American Engineering Record (HAER) and/or State of Connecticut Department of Transportation historic inventory files (CT SHPO 2011). The Chapel Street (#3806 - 1882 truss-pony) and Edgewood Avenue (#3806 - 1910 arch-deck) bridges cross the West River well to the west of the project area. To the east and crossing the Quinnipiac River, the Forbes Avenue (#337 - 1924) and Ferry Street (#3809 - 1940) bridges are bascule span / steel girder bridges, the former having brownstone abutments, the latter of concrete. Connecticut Department of Transportation (ConnDOT) plans to replace the Forbes Avenue (Tomlinson) Bridge led to an assessment survey that identified the bridge and adjacent two-story brick Adee Boathouse, built in 1910 and listed as a New Haven Preservation Trust landmark, and as important resources for consideration (Dieter et al. 1993). Two late 1890s swing bridges span the Mill River further to the east and north, the closer one at Chapel Street, the farther one at Grand Avenue (Roth 1981:190-192).

Closest to the project area at about one-quarter mile to the west, the Water Street Bridge is an iron truss structure built in 1894 over the railroad tracks (Roth 1981:191). Six more bridges were built across the tracks in 1907 to the north of Water Street (#3870 - Fair and Union Streets; #3871 - Crown Street; #3872 - Chapel Street; #3873 - Court Street; #3874 - Grand Avenue; #3752 - Olive Street), with the bridge at Olive Street featuring a truss-through design and the rest being concrete arch-deck forms. Other bridges crossing Amtrak's Northeast Corridor Line well to the east of the project area in Fair Haven and Fair Haven East include the ca. 1885 masonry arch-deck bridge built at Clifton Street; the 1888 Pratt through truss bridge built at Blatchley
and the 1918 girder-through bridge built at Middletown Avenue (see also Roth 1981:190-191 regarding Chapel Street, Blatchley Avenue, and Water Street bridges).

Summary

During the early Contact period, New Haven was centrally located within the tribal territory of the Quinnipiacs, whose principal villages were located near the mouth of the Quinnipiac River and further up that drainage. Disease and decimation of the population resulted in the removal of the Quinnipiacs to a reservation on the east side of the harbor.

New Haven was settled by Puritans in 1638 under the leadership of John Davenport who was looking for a new settlement. Early settlement was concentrated in the Nine Squares to the north of West Creek that formerly flowed east along what is now Frontage Road into the northwest corner of New Haven Harbor near the project area, and to the west of East Creek that flowed south along what is now Union Street.

Settlement density remained very light in the southern part of New Haven until the arrival of the railroad, although there were early settlements located along what is now the northern side of Water Street that once fronted the harbor. There was also a considerable historic feature in the form of the Long Wharf that was located along the southwest boundary of the current project area. The wharf started as a small pier initially constructed in 1682 that fell short of the project area to the west, and was repeatedly expanded until reaching about three-quarter of one mile in length by 1810. The wharf was the center of inter-regional and even international commerce in New Haven until the arrival of the railroad.

In a period between 1839 and 1849, independent rail lines were built from New Haven west to New York, north to Hartford, and north to Plainville, with the New Haven & Northampton line terminating at Union Basin which was bound by the Long Wharf, the Water Street wharves, and a new wharf connecting the two sets of wharfage. The New Haven & Northampton began infilling the basin, and had a roundhouse and repair facility in the southern part of the project area by 1850. A substantial rail wharf or dock was built through the project area into the harbor, nearly reaching the extent of the Long Wharf. By twenty years later, the roundhouse was replaced in the newly filled northern half of the project area, and more extensive repair facilities were constructed.

The New Haven & Northampton was acquired by the larger New Haven, New York & Hartford system in 1886, with the commercially depleted Long Wharf absorbed into the basin property by 1890. The repair facilities and rail yard remained operational at the project area until the 1920s when the roundhouse was torn down and maintenance operations of the New Haven were centralized at the massive Cedar Hill rail yards to the north.

In the 1950s, the project area was sold by the railroad, with the bulk of it being used to build a massive postal facility in 1953, and the remaining structure at 152 Water Street sold to the New Haven Reserve Supply Company - a lumber distributor. In the 1990s, a companion building that was the former paint shop burned down, and the building at 152 Water Street was occupied by a scaffolding company. There are no historic archaeological sites recorded in the direct vicinity of the project area, although Long Wharf has been evaluated in a separate assessment survey that found the feature eligible for the National Register of Historic Places, and similar important structural remains could exist along the northern boundary of the project area related to the historic wharfage along Water Street.
CHAPTER 3: CONCLUSION

Prehistoric Sensitivity

There were no prehistoric cultural resources identified during the Phase Ia assessment survey of the project area. A review of site files of the Connecticut State Historic Preservation Office (SHPO) and the Connecticut Office of State Archaeology (OSA) revealed a light density of previously recorded sites in the broader area, mostly stacked along the lower Quinnipiac River drainage basin where historic sources indicate a principal settlement of the Quinnipiacs was located at the time of contact with European explorers and early English settlers. The closest referenced site from background sources is a possible Native American burial site indicated by a prior cultural resource survey of the Amtrak Northeast Corridor project near the West River about one mile to the south of the project area (Artemel et al. 1979:36). Several other sites are located on the Mill River to the north of the project area, and the West River to the west of the project area. There is a notable lack of previously recorded sites in central and southern New Haven between these rivers, although this is partly attributable to the intensive early historic development of New Haven that would have eradicated many traces of prehistoric sites before they could be recorded by professional cultural resource surveys. Extrapolating from regional data that reveals most sites tend to be located on glacial meltwater landforms in close proximity to large bodies of water, one can expect a high density of sites along the West, Mill, and Quinnipiac Rivers as already established.

If the assessment survey were limited to a static view of environmental conditions, a determination of low sensitivity for potential prehistoric cultural resources within the project area would be warranted. This determination could be based both on the general lack of previously documented prehistoric sites in the southern New Haven area, as well as a reconstruction of historic fill expansion into New Haven Harbor from historic maps that reveal the entire project area was formerly within water until the 19th Century. However, environmental conditions of the harbor have changed through time, and beyond that which has been caused by human changes to the landscape. Thus the determination of prehistoric sensitivity for the project area must include a more detailed assessment of prior environments. Specific evidence for prior environments of the project area come from several sources, including historic maps, paleoenvironmental reconstructions, geological testing in the area, and the known distribution of prehistoric sites. Reconstructions of paleoenvironments utilizing various lines of data indicate substantial changes in sea levels that have resulted in changes to the shoreline of Connecticut, including the formation of harbors and estuaries that served to enhance and broaden the diversity of the resource base of indigenous populations.

More specifically, a rise in sea levels since the last glaciation of the Northern Hemisphere provides for the possibility that prehistoric occupations could have been present in areas currently or recently submerged beneath water, and it is likely that the project area itself contained habitable living surfaces in close proximity to the harbor that contained an abundance of important resources:
"The very irregular shoreline and abundant islands both east and west of the New Haven-Woodmont area suggest that this part of the Connecticut coast has been submerged beneath the sea since the valleys and ridges were developed by erosion. It is apparent also that the submergence, or at least the most recent submergence, postdates glaciation, for terrestrial sediments, including freshwater swamp deposits, occur beneath tidal marsh peat at positions well below low-tide level in the valley of the Quinnipiac River opposite New Haven" (Flint 1965:6).

Referring to the wedge shaped deposits of muddy peat and peaty mud that thicken to as much as 17 feet seaward, with alluvium deposits landward, "...the Connecticut coast has been undergoing gradual subsidence by rise of sea level, subsidence of the land, or both" (Flint 1965:32). And referring to beach deposits (and relating to different surficial units near the project area): "The grain size of beach sediments likewise reflects the character of the materials locally exposed to the surf" (Flint 1965:32).

In his discussion of sea level change in Connecticut, Gordon (1983:73-74) points out that the best conditions for finding submerged sites would be those settings in "deep embayments that have now become salt marshes... protected from the larger waves of the open Sound and... buried under the rapidly-accumulating marsh peat...," as opposed to settings not afforded the protection of being capped by peat and instead "passed through the surf zone as it was submerged." Historic maps reveal that the project area was not within a well developed salt marsh, thus preservation conditions for potential submerged prehistoric sites may not have been optimal, although an additional important factor to consider is the past distribution of fresh water that dictated settlement behavior throughout the prehistoric sequence. In reviewing the distribution of twelve submerged sites referenced by McWeeney (1986), the vast majority are located within tidal estuaries or the mouth of substantial river basins, with the notable exception of the Orient Point site located at the end of Long Island. The known distribution of prehistoric sites in the New Haven area being concentrated on the West, Mill, and Quinnipiac Rivers was likely true during times of lower sea levels as well, thus any submerged sites in the harbor would likely be along the former courses of these rivers, as well as any other former streams that emptied into the harbor including the two tidal creeks that once formed a confluence near the project area.

Given the understanding that there has been a general rise in sea levels for the duration of human occupation in North America, and how this has affected sedimentation that could contain traces of prehistoric activity, the next question regards timing of the submergence and related deposits:

"New Haven Harbor is floored with a layer of gray clayey silt containing marine shells and fine-grained, dark-colored organic matter. This material, characteristic generally of open estuaries along the Connecticut coast, is known from borings to reach thicknesses of at least 40 feet. The borings also show that in New Haven Harbor the estuarine mud overlies with sharp contact reddish or brown sand of the New Haven and Farm River valley trains. The mud has been deposited during the time when the sea level, rising relatively against the land, has been encroaching through the harbor area, a period inferred, from radiocarbon dates, to have embraced the last 7,000 years or more " (Flint 1965:33).

"By about 5,900 years ago the sea had risen, relative to the land, to a position about 26 feet below present mean sea level, as shown by a series of radiocarbon dates on wood and peat from beneath estuarine mud at several places along the Connecticut coast..." (Flint 1965:39).
Some studies indicate that sea level may have risen as much as 300 feet since the end of the Pleistocene about 15,000 years ago (McWeeney 1986:53). Surficial materials maps of the area show New Haven Harbor and much of present New Haven to have been a large glacial lake accumulating fine sediments, until a breach of moraine sediments drained the lake and allowed for the deposition of deltaic deposits of sand and gravel at the trailing edge of the melting glacier at the end of the Pleistocene (Stone et al. 1992). Studies of sediments and freshwater peat indicate that the submergence of the Connecticut coast was nearly 30 feet by 8,000 years ago (Early Archaic period), and about 10 feet by 3,500 years ago (Terminal Archaic period) (McWeeney 1986:53-54). The deltaic sediments of sand and gravel provided the landbase for what would become New Haven, and a continued, although less pronounced, rate of sea level rise by the Woodland era resulted in the creation of estuaries up the river drainages that had dissected the glacial sedimentary deposits. A statistical landscape sensitivity analysis of the distribution of significant sites in Connecticut conducted by ACS revealed that prehistoric sites tend to be located within 25 feet vertically to the nearest water source (Walwer 1996), thus based on the progression of coastal submergence throughout the prehistoric era, any submerged sites present in the vicinity of the project area would likely be Early Archaic to Early Woodland in age, as is the case for the great majority of documented submerged sites along the coast of Connecticut.

Because of the daunting depths at which traces of prehistoric activity might be present within coastal deposits, archaeologists have been guarded in their recommendations with respect to further conservation efforts:

"The potential for the recovery of prehistoric archaeological resources in the west harbor section of the study area is low. This area was part of the extensive mudflats, fully submerged at high tide, along the west side of the harbor, during early historic times. It is possible that some Plaeoindian and Early to Middle Archaic remains may have been submerged in this area by the post-Pleistocene rise in sea level, especially near the confluence of the East Creek channel with what would have been the main channel of the Quinnipiac. However, even if they exist, these sites would remain deeply buried under the ten or more feet of historic landfill and at unknown depths within the alluvial deposits which created the mudflats" (ES 1991:34).

"It is possible that the resources dating to the earliest periods of prehistory could be contained within alluvial deposits under the landfill both south of Water Street and east of East Street, but...the deposits would be deeply buried at unknown depths. In addition, underwater prehistoric remains may be present in the alluvial deposits near the confluence of the Mill and Quinnipiac rivers. Submergence of the Connecticut coast resulting in the creation of the estuaries of these rivers has been occurring for at least 10,000 years. Archaeological sites often occur at the confluence of rivers and streams, and this location would thus have been a favorable habitat prior to its inundation..." (ES 1991:35).

Some limited subsurface testing along the northern end of the harbor has revealed negative results with respect to prehistoric cultural resources, but at the same time demonstrate the potential for preservation of materials submerged within the harbor:

"The Contract B project impact areas were previously assessed as having low sensitivity for precontact period Native American resources (Raber 2001). Despite this low expectation for Native American resources, the machine excavations... encountered deeply buried oyster and clam
shell deposits. Both of these areas lie in filled lands that were originally inundated by the Mill River near its confluence with New Haven Harbor. ...no cultural materials were recovered in association with the shell during hand testing. The shell deposits were determined to be located in natural organic, river bottom soil strata. Because of an absence of cultural deposits, the shell layers are interpreted as pre-fill historic period river detritus and no further archaeological investigations are recommended" (Deaton and Cherau 2003a:119).

On the east side of the harbor, test borings revealed some deeply buried sand deposits on the order of six to twelve feet below the surface and layers of fill and/or petroleum-affected soils, and above substrata of weathered bedrock that could have supported prehistoric contexts, although these contexts were not determined as being sensitive for potential prehistoric cultural resources in that study (Deaton and Cherau 2003c). The study only notes that early historic maps reveal the project area to have been within a tidal marsh, as confirmed by soil borings, that would have also been true for the late prehistoric period (Deaton and Cherau 2003c:19), but does not specifically address the relationship between rising sea levels and the implications for prehistoric cultural resource sensitivity for the entire prehistoric era.

Another soil boring was taken during a survey just east of the project area to the south of Water Street and east of Hamilton Street (Deaton and Cherau 2003a:80). The boring revealed layers of fill up to eight feet deep, followed by a layer of red-brown sand and some substratum materials to ten feet deep, and then fines between 10 and 12 feet deep with a water table at 11 feet deep. This profile demonstrates the projected sand over fines that could have afforded a time of prehistoric occupation following glacial lake deposition and prior to inundation by rising sea levels and subsequent historic filling. Even closer to the project area, other soil borings revealed variable stratigraphy, in some cases entirely fill up to 12 feet deep or more, but in at least one case sand between six and ten feet below the surface and layers of fill (Deaton and Cherau 2003b:74-76). Many of these borings closest to the project area were apparently affected by leaked petroleum.

A cultural resource study prepared for the parking garage project to the north of Union Station to the west of the project area analyzed soil boring data from various locations in and around that property, and generated a composite stratigraphy typical for the area (Artemel et al. 1982:14-18). This included a fill layer of compact sand, gravel, and man-made materials (e.g. "cinders") ranging from two to twelve feet below the surface, followed by alternating layers of sand and organic clay ranging from two to twenty feet in thickness each. The alternating layers indicate alternating conditions of swamp or open habitats. Thicker fill deposits were generally found seaward, as expected, while water was encountered between four and ten feet below the surface. These data correspond well with paleoenvironmental data for the broader area, and confirm potentially habitable surfaces during multiple episodes in the past during the deposition of coarser sediments (i.e. sand). In the five borings conducted within the north garage property at Union Station, borings revealed about five to ten feet of fill overlying an alluvial sand somewhere between 10 and 20 feet deep. An organic layer was then ubiquitously present up to 23 feet deep, followed by more sand to 34 feet deep or more feet. Overall, this demonstrates a series of depositional changes that include the tapering edge of the salt marsh post-dating deeper fines found in borings of the surrounding area up to about 50 feet deep. The fines represent the former glacial lake that once occupied the New Haven harbor area, with underlying glacial sand found in the surrounding borings to as deep as 86 feet below the surface.
The Union Station northern parking garage survey appropriately accounted for a paleoenvironmental reconstruction of the specific project area in determining prehistoric sensitivity:

"site-specific information provided by the geological soil borings indicates that even though several post-glacial lakes were in the Project Area, their banks were to the south, west and east of the impact area, with the lake bed beneath the proposed garage area. It is likely, therefore, that even if a significant prehistoric site remains below the existing ground surface, cultural material relating to that site use and occupation would not be within the impact area.

The statistical prehistoric landscape sensitivity model developed by ACS additionally demonstrates that while settings in proximity to tidal estuaries or major rivers tend to rank very high for potential prehistoric site locations, settings where a bay or sound is the closest body of water actually rank very low. The main explanation for this relates to the rich resources provided by tidal estuaries, and that the fresh water available further upstream was critical for survival. Historic maps of the project area reveal that it was at a critical juncture at the mouth of the East and West Creeks that helped define the historic boundaries of the New Haven Green, and additionally would have provided an important tributary setting near the northwest corner of New Haven Harbor. Thus not only would the project area contain appropriate sediments at depths that date to regional prehistoric occupation, but the historic geographic position at or near the mouth of this tributary would have very likely attracted a concentration of prehistoric settlement and activity.

Past cultural resource management surveys of the New Haven Harbor area have provided different guidance concerning potential prehistoric site sensitivity, including one or more of the following: not fully addressing the potential for submerged sites; suggesting that currently built-up condition indicates substantial subsurface disturbance; indicating that exposed subsurface conditions lacked cultural deposits; dismissing further archaeological work based on minimal impacts by structural footings; concluding that high costs to conduct a survey do not match the potential to gain valuable information through further study; recommending the monitoring of construction activity or examining machine-assisted excavations; or even recommending elaborate proposals to conduct extensive underwater archaeology (e.g. Moeller et al. 1977; Artemel et al. 1982; ES 1991; Raber 2001; Deaton and Cherau 2003a, 2003b, 2003c; Clouette 2009), although these studies generally do not rely on a comprehensive combination of detailed prehistoric settlement data and paleoenvironmental reconstruction to evaluate prehistoric sensitivity. The combination of various lines of paleoenvironmental and archaeological evidence in this case provides the basis for a recommendation of archaeological monitoring for any construction within the project area that takes place in potentially undisturbed subsurface contexts at depths greater than six feet below the current surface, with higher contexts likely limited to historic fill overlying natural harbor sediments.
Historic Sensitivity

As with prehistoric sensitivity of the project area, historic sensitivity must also take into account changes in environmental conditions over time. But instead of rising sea levels being a determinant issue, it was the historic progression of fill into the harbor that created the conditions of historic sensitivity at the project area not originally present at the time of the arrival of European explorers and settlers to southern New England. In general, the northern and western shores of the harbor have not been deemed historically sensitive because of the known distribution of early settlement in the area, although the boundary areas of the project area that coincide with the historic course of Water Street and the Long Wharf render it exceptional with respect to historic sensitivity:

"The north harbor section of the study area has low to moderate potential to yield historical archaeological resources. During the eighteenth and early nineteenth centuries, residences were located primarily along the north side of Water Street... Wharves extended south from Water Street..." (ES 1991:35).

"The concentration of historic structures in the immediate west harbor area were associated with Long Wharf... Although the New Haven Historic Resource Inventory concluded that little of the original wharf structure remains... portions of Long Wharf, probably dating from the construction campaigns of 1802 and 1811, could very well be uncovered in the course of construction. Archaeological investigation could yield important information about wharf construction technology of these periods. Structures were present on the wharf, and foundations of these early buildings may also be present. In addition, artifacts which fall or are discarded from wharves, warehouses, and vessels can provide important information about the economy of the area and trading patterns throughout the different periods of use..." (ES 1991:34).

With respect to the Long Wharf, Clouette and Harper (2008) gave valuable information regarding the history of the wharf including incorporation into fill contexts, with interpretations as to current potential dispositions of buried portions of the structure and associated features:

"...underneath the modern concrete-slab and riprap structure there remain substantial portions of stonework dating from the extension of the wharf in 1810... The visible remnant represents about half of the total 1,500 feet built in 1810; the rest of that part of the wharf is buried beneath the embankment for I-95... Engineering drawings suggest that the fill deposited for the highway lies at a considerable depth over the 1810 portions of the wharf, and there is no indication that the remains of the wharf were disturbed in the process of filling for the highway. There is no way to know what remains of the earlier wharf that extended for more than 2,000 feet northward to Water Street, which in the 18th century was literally on the water. This portion of Long Wharf, built in several stages beginning in the early 18th century or even earlier, was a timber and earth structure which gradually disappeared as the area was taken over in the 19th century for railroad facilities and other industrial purposes. ...a minimum of disturbance occurred as fill was deposited to construct yards, freight terminals, and engine houses, so it may be that... portions of the earlier wharf could remain as significant archaeological resources."

Significant archaeological resources broadly includes artifacts dropped into the water, ship wreckage, ballast from around the world, and foundations of wharf buildings - some of which were constructed of brick and must have had more substantial foundations than the wood frame buildings of the wharves (see Hopkins 1888). The study further states that the wharf is eligible
for the National Register of Historic Places based on importance in the economic history of New Haven and Connecticut, association with a prominent African American figure who constructed the 1810 improvements, its example as a unique structure of vernacular marine engineering, and more generally the potential to reveal important historic information. While remains of the wharf were documented several feet below the surface near the current boundary of the harbor, any such remains for both the Long Wharf or the Water Street waterfront could be present at shallower depths. It is therefore recommended that archaeological monitoring should accompany any construction or excavations occurring within 25 feet of the northern or southwest boundaries of the project area at greater than one foot in depth (Figure 16).

In addition to the historic sensitivity of the project area with respect to its boundaries, the project area also bears a sensitivity with respect to early railroad features. In particular, the project area contained one of the region's earliest roundhouses, built around 1850 towards the beginning of the existence of the New Haven & Northampton line that was integrally a part of the leased operations of the larger New York & New Haven system, and then replaced around 1870 when the Northampton line was independent of the "New Haven" and poured considerable capital into the improvement of its facilities. The replacement was additionally within the project area, located immediately east of the existing building at 152 Water Street where there is now a paved parking surface. The roundhouses are important historic features for several reasons, including their uniqueness in construction and design, the ability to contain rich archaeological deposits because of the associated subsurface repair pit features, and their reflection of changes in the size, technology, and maintenance needs of the locomotives and rail cars that were serviced in them. Consider the conclusions of the archaeological study that documented remains of later roundhouses at the Lamberton Street yard of the New Haven line (Clouette 2003:9):

"[1] Although disturbed by later railroad and utility construction activities, the ...site retains a substantial number of significant features - repair bays, perimeter walls, and turntable pits - that provide information not only about these specific structures but also about the history of railroad engineering practice in general. The roundhouses join a relatively small number of comparable roundhouse / turntable sites that have been professionally investigated and reported on and thus make an important contribution to the knowledge base on this subject. This body of research suggests that brick was the material of choice for repair pits in the late 19th century, preceded by stone masonry and succeeded by reinforced concrete construction. Because not all of the roundhouse site was impacted by construction, comparable portions ...probably remain in place. [2] ...the study showed that significant remains can be expected from structures such as these even 70 or more years after their demolition. Later railroad use of the property had little effect below the immediate ground surface. [3] The materials of the roundhouses appear to be reflected in the demolition debris found in the fill. [4] ...the functional use of the structure - railroad-car construction and rebuilding - was directly reflected by the metal tools, fasteners, and car parts found in the fill. This suggests that in situ or redeposited scrap piles may be important in reconstructing activities at railroad-shop sites."

The 1870 improvements of the New Haven & Northampton facilities included the building at 152 Water Street. Historic maps and annual reports of the railroad reveal its function as a maintenance shop, and more specifically that it contained a blacksmith shop. Its companion building, the paint shop, was destroyed by fire in the 1990s and razed, although the grounds immediately surrounding both buildings contain the potential to retain late 19th Century features
Figure 16: Base map from a site plan provided by Parsons Brinckerhoff, 2011. The site plan includes the two USPS parcels (#2 and #3) that were being considered for acquisition at the commencement of the survey. Scale 1:2,400 (1” = 200’). In the absence of soil borings, the entire parcel should be considered sensitive for potential prehistoric cultural resources at depths greater than six feet below the surface where not documented as previously disturbed. For historic cultural resources and where not already impacted by foundations of the post office buildings, the project area should be deemed sensitive at one foot or greater below the surface within 25 feet of the Long Wharf Street and Water Street boundaries or the main repair facilities of the rail yard, including the two roundhouses or engine houses blacksmith shop, and paint shop. Historic sensitivity areas shown in blue, mid-19th Century repair facilities shown in yellow, late 19th Century repair facilities shown in green.
and artifacts related to the maintenance of railroad cars. It is therefore recommended that any excavations in excess of one foot below the surface within 25 feet of the mapped locations of the two roundhouses and associated repair shops be subject to archaeological monitoring. Alternatively, should it be determined that archaeological monitoring of either the former wharf areas or railroad repair sites is logistically not feasible because of construction protocols, evaluation through subsurface inspection may be warranted, in consultation and coordination with the Connecticut State Historic Preservation Office (SHPO). Such evaluation and documentation would require the use of heavy equipment to remove any overburden or fill over potential feature contexts, as had been done successfully in the prior study of the Lamberton Street roundhouses referenced above.

Technically, the larger of the post office buildings is in excess of 50 years old, and could be potentially eligible for the National Register of Historic Places (NRHP) on the basis of age, although the industrial building appears to lack unique qualities of design, construction, or historic functioning that could contribute to this potential eligibility. In contrast, the existing building at 152 Water Street has an important history related to the expansion of a successful railroad line that was the acquisition target of the "New Haven" in a time characterized by monopolization and the establishment of grand industrial empires. Mitigating the contribution of important historic associations, however, are the numerous alterations that have occurred to the structure over time, particularly in the entire replacement of the western half of the building with modern structural materials, and radical alterations to the interior of the eastern half of the structure. Building permits reflect a series of radical changes to the structure, and a site visit reveals that even the older interior eastern half of the building lacks any traces of original equipment or furnishings, original arched and hinged double-doors are missing, and windows and bays have been filled in with brick or concrete masonry (Figures 17-19). Thus the building lacks sufficient integrity to be eligible for the NRHP, although the exterior of the structure retains enough character and original architectural details that further conservation is warranted (Figures 20-22). Current plans call for no development of the postal parcels, and only a modification of the interior of the building at 152 Water Street other than the removal of a roof-top advertising sign that has been in place since the 1960s. For any proposed changes to the exterior of the eastern half of the building in the future, they should be contingent upon a review by SHPO of the proposed design to ensure that any proposed development meets the United States Secretary of the Interior's Standards for the Treatment of Historic Properties.

Several above ground features were noted in association with the main building that also warrant discussion with respect to conservation. A small brick sewage pumphouse (Figure 23) lying about 75 feet west of the main building appears to be mid to late 20th Century in origin, and therefore is not eligible for the NRHP nor warrants further conservation efforts. Nor do various 20th Century alterations to the exterior of the main building itself, including the concrete masonry loading platform or ramp on the northern side of the structure, or the canopy along its southern side. Various railroad features at 152 Water Street are also common in occurrence, date to the early to mid-20th Century, lacking in integrity, and/or are otherwise insignificant and not requiring further conservation efforts, including an isolated steel tower with concrete platform and steel cable guy wires, a partial steel stanchion with concrete base, rail lines leading to the building and bearing manufacturing dates of 1924, and the 1920-patented bumping post located at the eastern end of the main rail line into the lot (Figures 24-26).
Figure 17: East view of the rafters exposed in the eastern end of the original part of the building, and also the interior of the roof dormer that runs nearly the entire length of this part of the building.

Figure 18: Southwest view of two hinge pintles remaining in the doorway where former arch double-doors were hung.
Figure 19: Sliding Track Door

Figure 19: Southwest view of a 20th Century metal sliding track door partially exposing a former arch doorway. This doorway separates the older part of the building from the newer section to the west.

Figure 20: Canopy

Figure 20: Northwest view of the canopy built off the southern face of the original part of the building. Note the use of modern construction materials for the canopy in relation to the building face, as well as the bricked-in doorways.
Figure 21: Southeast view of the east end of the original part of the 152 Water Street structure, fronted by a modern wooden ramp. Note the bay that has been reworked, as well as the partially bricked in doorways to form windows.

Figure 22: Concrete Platform

Figure 22: Southeast view of the concrete masonry ramp that fronts the north face of the building’s eastern section. Note also the sign on the roof.
Figure 23: Pumphouse

Figure 23: Northwest view of the pumphouse located about 75 feet west of the main building at 152 Water Street.

Figure 24: Bumping Post

Figure 24: Bumping post located at the eastern end of the main rail line to the north of the building. The feature bears a patent date of August 3, 1920, and was made by the Mechanical Manufacturing Company of Chicago.
Figure 25: Steel Tower

Figure 25: Southwest view of the isolated steel tower supported by steel cable guy wires to the west of the pumphouse along the abandoned rail line.

Figure 26: Stanchion

Figure 26: Southwest view of the partial steel stanchion and its concrete base found near the steel tower.
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