
WEST 18TH STREET MANUFACTURED GAS PLANT SITE HISTORY REPORT

Prepared For:



Consolidated Edison Company of New York, Inc.

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Long Island City, New York 11105

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AUGUST 2002

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AUGUST 2002

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EXECUTIVE SUMMARY

Consolidated Edison Company of New York (Con Edison) contracted Parsons to conduct historical research of former manufactured gas plants (MGPs) and associated facilities that were used either by Con Edison or predecessor companies of Con Edison. Parsons was assigned a group of sites located in the Borough of Manhattan. This report presents the results of the historical research conducted for the West 18th Street MGP. The objective of the MGP research is to obtain information necessary to rank and prioritize the sites for future investigation or other management actions under the pending Voluntary Cleanup Agreement (VCA) between Con Edison and the New York State Department of Environmental Conservation (NYSDEC). To meet this objective, data was compiled to provide information on site setting, current and past site ownership and use, MGP development and operations, site physiography and hydrogeology, potential on-site and off-site historic waste materials, and potential public and environmental receptors.

The West 18th Street MGP formerly existed on three city blocks (Blocks 688, 689, and 690) and portions of three more (Blocks 691, 666, and 715) in the Chelsea section of the Borough of Manhattan, New York City and New York County, New York. The West 18th Street MGP operated from circa 1834 through the early 1900s. Historical research and site reconnaissance identified the following key items for consideration in the prioritization of the former MGP sites:

- Industrial activities were conducted in the vicinity of the former West 18th Street MGP prior to the construction of the MGP. Industries identified included a steam mill, paint factory, whiting factory, wagon factory, distillery and “manufactory” of compressed yeast, and rectifying distillery.
- The former West 18th Street MGP operated from 1834 through the early 1900s. The gas plant was located on Block 689, and gas holders and storage yards were located on Blocks 688 and 690 and portions of Blocks 691, 666, and 715. Production of coal gas began at the site in 1834 by the Manhattan Gas Light Company and was continued by the Consolidated Gas Company, formed in 1884. The MGP continued to produce gas from coal until the early 1900s. Large-scale operations were discontinued in 1902-1903 when the City of New York obtained the western portions of Blocks 688, 689, 690, and 691 for the reconfiguration of 11th Avenue and the inland extension of the piers. Con Edison continued to use the buildings on Block 689 several years longer for distribution, shops, and experimental activities. Those gas holders that were not demolished for road reconfiguration continued to be used: the holders on Block 691 were taken out of service in 1909 and the holders on Blocks 690 and 715 were shut down in 1914. Some of the site structures on Block 689 were used by other tenants through the 1920s, but appear to have been demolished in the 1930s.
- Various lots from the former MGP were sold beginning in 1915 and new structures were built on portions of the site after the MGP structures were razed. The disposition of the materials from the razed structures is not documented. Some gas holders were offered for sale.

- With the exception of Block 715 that was always on solid ground, the entire West 18th Street MGP is located on landfill material. The nature and source of the fill material is unknown. Some of the fill was later excavated for the inland expansion of the piers. The disposition of the excavated material is unknown.
- The disposition of wastes and byproducts generated by the former MGP is not well documented.
- Based on the site reconnaissance and historical research, one structure associated with the former MGP may remain. This building is a warehouse that formerly housed two gas holders on Lot 59 on Block 715.
- Areas of the site that have not had significant excavation and redevelopment may retain remnants of the former MGP structures and may contain possible MGP residuals below the ground surface as found on Block 689 during subsurface investigation for a proposed FedEx facility.
- The area of the former West 18th Street MGP is a mixed use area with commercial properties including art galleries, office space, warehousing, trucking, parking lots, the Roxy night club, and high-rise and brownstone apartments. Schools are located within 0.25 miles of the site. The Chelsea Piers recreational facility is just west of the site.
- The Environmental Data Resources, Inc. (EDR) report indicates the potential exists for spills and leaks from other sources within the area. The report identified 15 Resource Conservation and Recovery Information System (RCRIS) small quantity generators and nine large quantity generators within 0.25 miles of the site. In addition, there are 29 underground storage tanks (USTs) and one bulk chemical storage tank within 0.25 miles and 53 leaking tanks within 0.5 miles of the former West 18th Street MGP.
- Soil sampling on Block 689 conducted by Melick-Tully and Associates, P.C. (MTA) in 1998 identified total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs) in soils and/or groundwater above NYSDEC soil or groundwater criteria (MTA, 1998c).
- Sampling by Allee, King, Rosen, & Fleming, Inc., (AKRF) for the Route 9A reconstruction project identified lead, PAHs, benzene, toluene, ethylbenzene and xylene (BTEX), and cyanide in samples collected near the former MGP (AKRF, 1994).
- If impacts are present at the site, potential receptors would include workers, nearby residents, and tourists visiting the area. Most of the former site is covered with pavement and buildings. Therefore, no exposure pathways for surface and subsurface soil are present. Workers conducting excavation or intrusive construction activities could encounter residues from past operations. There is no groundwater usage so the groundwater pathway is not complete. The EDR report shows a public water supply system site at 424 West 51st Street. However this is not the location of a well or production facility, it is the address of the owner of an upstate water supply located in Liberty, New York.
- The Hudson River is within 0.25 miles of the former MGP and could be impacted if MGP residuals are migrating from the site or if past disposal practices included disposal of MGP related materials in or near the Hudson River.

SECTION 1

OBJECTIVE

1.1 PROJECT BACKGROUND

Con Edison contracted Parsons to conduct historical research of former MGPs and associated facilities that were either owned by Con Edison or predecessor companies of Con Edison. Parsons was assigned a group of sites located in the Borough of Manhattan. This report presents the results of the historical research conducted for the West 18th Street Gas Works, a former MGP located in the Chelsea section of Manhattan.

1.2 PURPOSE

This report documents the results of the historical research completed on the West 18th Street MGP, a former MGP located between West 16th Street and West 20th Street and 10th Avenue and the Hudson River (with one additional parcel on the block bounded by West 17th Street, West 18th Street, 9th Avenue and 10th Avenue) in western Manhattan, New York (Figure 1). The purpose of the historical research was to:

- Determine the physical limits of the former MGP operations.
- Develop an understanding of past operations at the former MGP.
- Identify products, byproducts, waste handling procedures, waste streams and potential hazardous substances and usage of the site to assess potential impacts if any, to adjacent properties and current site occupants.
- Develop historical and current site data that will support prioritization of the former MGP sites based on potential, actual, and perceived human health exposure risks, environmental impacts, sensitive receptors, current site usage, the surrounding community, potential for development, site control and ownership, and size of the former MGP operation.

1.3 INVESTIGATION METHODOLOGY

Investigations for this report consisted of historical research to summarize site ownership, occupancy, use, and operations over time (including pre-MGP use, use during the MGP operation, and post-MGP use); a site reconnaissance to determine current conditions and neighboring property use; and a review of federal, state, and local databases to assess other sites in the vicinity that may be impacting the former MGP site and the neighboring properties.

Research undertaken as part of this report included a review of in-house documents and photographs provided by Con Edison, as well as materials gathered at the Municipal Archives of the City of New York, the Municipal Reference and Research Center of the City of New York, the New York City Recorder of Deeds office, the New York City Department of Buildings, the New York Public Library, the Library of Congress, the New York State Department of

Environmental Conservation, the Environmental Protection Agency, and various web sites that post historical maps and journal articles. EDR compiled the radius search data for the site.

The following is a summary of the resources reviewed during the research and preparation of this report; a detailed list of references is provided in Section 11:

- Consolidated Edison internal records and files (including remediation files and reports, Real Estate records, In-plant Property records, and historical photographs);
- Consolidated Edison personnel interviews;
- Historical maps, including Sanborn Fire Insurance Maps, Dripps Maps, Perris and Browne Insurance Maps, Bromley Atlases, and Taylor City Map;
- Deeds and site surveys for the properties;
- Nineteenth century tax assessment records;
- New York City Department of Buildings records;
- Books and articles detailing manufactured gas company histories and operating procedures;
- Manufactured gas industry publications (including the *American Gas Light Journal*, in later years called the *American Gas Journal*);
- Brown's Directory of American Gas Companies;
- Public Service Commission (PSC) reports;
- Nineteenth and twentieth century newspaper and journal articles (such as the *New York Times* and *Harpers*);
- Environmental studies undertaken within and adjacent to the properties; and
- EDR radius search information.

Ms. Susan Shelton and Ms. Julie Abell Horn of Parsons conducted the site reconnaissance on May 15, 2002. Tasks included a windshield and pedestrian survey (where possible) of the property, photographing buildings, structures, and roadways on and adjacent to the former MGP site, documenting current conditions and possible receptors, and creating an overall site map.

SECTION 2

PROPERTY DESCRIPTION

2.1 PROPERTY DESCRIPTION

The former West 18th Street MGP site is located in the Borough of Manhattan, New York City and New York County, New York (Figure 1). The former West 18th Street MGP site covers portions of five modern city blocks, parts of 11th Avenue/Marginal Street/Route 9A, and parts of the Chelsea Piers (Figure 2). Specifically, the former MGP includes:

- Block 688, Tax Lots 1001 and 1002 (entire block bounded by West 16th Street, West 17th Street, 10th Avenue and 11th Avenue/Route 9A);
- Block 689, Tax Lot 17 (entire block bounded by West 17th Street, West 18th Street, 10th Avenue and 11th Avenue/Route 9A);
- Block 690, Tax Lots 12, 20, 29, 40, 42, and 54 (entire block [except Tax Lot 46] bounded by West 18th Street, West 19th Street, 10th Avenue and 11th Avenue/Route 9A);
- Block 691, Tax Lots 1 and 11 (western end of block bounded by West 19th Street, West 20th Street, 10th Avenue and 11th Avenue/Route 9A);
- Block 715, Tax Lot 59 (northwestern area of block bounded by West 17th Street, West 18th Street, 9th Avenue and 10th Avenue);
- The line of 11th Avenue, Route 9A, and Marginal Street between West 16th Street and West 20th Street (formerly parts of Blocks 688, 689, 690 and 691); and
- Portions of the Chelsea Piers (Piers 59, 60, 61 and 62) designated Block 662, (formerly part of Blocks 666, 688, and 689).

The western ends of Blocks 688, 689, 690, and 691 were truncated for the inland extension of the Hudson River piers (now designated Block 662, City 3, 7, 11, 16, 19, and 62) and the reconfiguration of 11th Avenue and Marginal Street in the early twentieth century, and the later construction of the West Side Highway (Route 9A) during the 1920s and 1930s. Block 666, a wedge-shaped area formerly located west of Blocks 688, 689, and 690 along the Hudson River's edge, was condemned when the piers were extended inland. It should be noted that the existing Tax Lots are an amalgam of smaller real estate lots, which were historically sold to the Manhattan Gas Light Company (Con Edison's predecessor company) by individual owners. Section 5 of this report provides histories of the Tax Lots. Figure 3 shows the current street configuration with an overlay of the former MGP structures.

SECTION 3

CURRENT USAGE

3.1 GENERAL

The current usage of the former MGP property was determined from a site reconnaissance conducted on May 15, 2002. The site reconnaissance was supplemented with title search information, tax map information, and aerial photographs. The West 18th Street MGP site is located between West 16th Street and West 20th Street and 10th Avenue and the Hudson River (with one additional parcel on the block bounded by West 17th Street, West 18th Street, 9th Avenue and 10th Avenue) in western Manhattan, New York (Figure 1). The site is located in a mixed usage area with commercial properties including store front retail facilities to the east and west and a sports/entertainment complex located to the west and adjacent to the site. A mixture of commercial office/warehouse facilities, art galleries and residential properties are located to the north and adjacent to the site. An office facility and high-rise apartment building are located to the south. Details of current land use are described in the following paragraphs. Photographs of the site are provided in the Photo Log in Appendix A. Tables 3.1 through 3.4 present a summary of the current ownership and usage.

The former West 18th Street MGP site covers portions of five modern city blocks, parts of 11th Avenue/Marginal Street/Route 9A, and parts of the Chelsea Piers (Figure 2). Specifically, the former MGP includes:

- Block 688, Tax Lots 1001 and 1002 (entire block bounded by West 16th Street, West 17th Street, 10th Avenue and 11th Avenue/Route 9A);
- Block 689, Tax Lot 17 (entire block bounded by West 17th Street, West 18th Street, 10th Avenue and 11th Avenue/Route 9A);
- Block 690, Tax Lots 12, 20, 29, 40, 42, and 54 (entire block [except Tax Lot 46] bounded by West 18th Street, West 19th Street, 10th Avenue and 11th Avenue/Route 9A);
- Block 691, Tax Lots 1 and 11 (western end of block bounded by West 19th Street, West 20th Street, 10th Avenue and 11th Avenue/Route 9A);
- Block 715, Tax Lot 59 (northwestern area of block bounded by West 17th Street, West 18th Street, 9th Avenue and 10th Avenue);
- The line of 11th Avenue, Route 9A, and Marginal Street between West 16th Street and West 20th Street (formerly parts of Blocks 688, 689, 690 and 691); and
- Portions of the Chelsea Piers (Pier 59) designated Block 662 (formerly part of Blocks 666, 688, and 689).

3.2 BLOCK 688 LAND USE

Current land use on Block 688, consists a mixture of commercial and residential within multi-story structures. The western portion of Block 688, Tax Lot 1002 (frontage on 11th Avenue) is occupied by Manhattan Mini-Storage. Entrance to the storage facility may be gained along West 17th Street only (Photographs 6 and 8). Photographs are included in Appendix A. The eastern portion of Block 688, Tax Lot 1001 is occupied by a high-rise apartment building and commercial office facility. A parking facility is located within this building and vehicular entry/exit may be obtained along 10th Avenue. An elevated railroad easement runs along the northeastern corner of the lot. A spur from the elevated rails intersects the building located on Lot 1001 along 10th Avenue (Photograph 2).

During the site reconnaissance performed on May 15, 2002, no remnants of the former MGP were observed on this block. Based upon historic documentation, Block 688 formerly contained gas holders and coal yards. Due to limited site access, the status and condition of the building interiors could not be verified. The building and surrounding pavement did not display areas of extreme wear or degradation. Hazardous waste and petroleum usage, storage, or disposal was not observed at any of the structures on Block 688 during the site visit. No municipal solid waste containers were observed on or along the exterior of the structure. With the exception of wind-blown refuse and general litter, the area appeared well maintained.

Table 3.1 – Former MGP Lots In Block 688

| Lot Number | Current Owner | Current Usage |
|------------|--------------------------------------|---|
| Lot 1001 | Able Empire Group, L.P. | Commercial office space and residential high-rise building. |
| Lot 1002 | Tenth Avenue Mini Storage Associates | Storage facility. |

Zoning Data:

Block 688, M1-5 – Light Manufacturing District (High Performance)

3.3 BLOCK 689 LAND USE

The portion of the site that includes Block 689, encompasses the entire block bounded by West 17th Street and West 18th Streets and 10th Avenue and 11th Avenues. The entire Block is designated as Tax Lot 17. An elevated railroad easement crosses the eastern portion of the lot (Photograph 15). Tax Lot 17 consists of a public/private parking lot (Photograph 9). Access to the parking facility may be obtained from 10th Avenue. The property is surrounded by chain-link fence topped with circular razor-wire. Partitioning material placed along the fencing reduced visibility into the facility. During the site reconnaissance performed on May 15, 2002 no remnants of the former MGP were observed on this block. Due to limited site access, the status and condition of the pavement could not be verified.

Table 3.2– Former MGP Lots In Block 689

| Lot Number | Current Owner | Current Usage |
|-------------------|---------------------------|----------------------------|
| Lot 17 | Edison Mini Storage Corp. | Public/Private Parking Lot |

Zoning Data:

Block 689, M1-5 – Light Manufacturing District (High Performance)

3.4 BLOCK 690 LAND USE

The portion of the site that includes Block 690, encompasses the entire block bounded by West 18th and West 19th Streets and 10th and 11th Avenues. Specifically, the former MGP occupied modern Tax Lot 12 and parts of 20, 29, 40, 42, and 54. Similar to Block 689, Block 690 also has an elevated rail easement crossing its eastern end, from West 18th Street to West 19th Street (Photograph 18).

The current land use on Block 690 represents a mixture of commercial usage. The western portion of the Block, with frontage along 18th Street, consists of a three story warehouse /garage facility (Photographs 11 and 12). During the performance of the site reconnaissance, no remnants of former MGP were observed on this portion of the block. Due to limited site access, the status and condition of the building interiors could not be verified. During the performance of the site reconnaissance on May 15, 2002, Lot 54 (with frontage along 11th Avenue) was vacant and surrounded on three sides by a privacy fence (Photograph 10). Due to the limited visibility caused by the fencing, the condition of the lot could not be verified. The eastern portion of Block 690, Lot 29 contains a commercial trucking parking lot (Photographs 17 and 18). The parking lot consisted of concrete and asphalt pavement. In some areas, asphalt patch appeared to cover cracks and/or areas of degraded concrete. In some areas, degraded asphalt patch material was also observed. The surface of the parking area did not appear to be flat and even. The parking lot is located over the former location of two gas holders.

Table 3.3 – Former MGP Lots In Block 690

| Lot Number | Current Owner | Current Usage |
|-------------------|--|------------------------------|
| Lot 12 | Cotard Realty Associates | Garage/warehouse |
| Lot 20 | Cotard Realty Associates | Garage |
| Lot 29 | Somatic Realty | Commercial Trucking Facility |
| Lot 40 | Haleakala, Inc. | Movie studio/warehouse |
| Lot 42 | J. Craig Johnson and Henriette Johnson | Warehouse |
| Lot 54 | | Vacant Lot |

Zoning Data:

Block 690, M1-5 – Light Manufacturing District (High Performance)

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3.5 BLOCK 691 LAND USE

Block 691 is bounded by West 19th and West 20th Streets and 10th and 11th Avenues. Tax Lots 1 and 11 constitute the former gas company holdings within Block 691. Tax Lot 1 is located on the eastern portion of the block with frontage along 11th Avenue, West 19th, and West 20th Streets. The eastern portion of the block is currently occupied by commercial offices, art galleries, a parking facility and a warehouse (Photographs 19, 24, 25, 28, 30, 31, 32, and 34). The structures on Tax Lot 1 are in the same location as one of three former gas holders on Block 691. Tax Lot 11 is currently occupied by a parking facility that is in the location of another of the three former gas holders. The location of the third former gas holder is under modern 11th Avenue. During the performance of the site reconnaissance, no remnants of the former MGP were observed. Due to limited site access, the status and condition of the building interiors could not be verified.

Table 3.4 – Former MGP Lots In Block 691

| Lot Number | Current Owner | Current Usage |
|-------------------|--|----------------------|
| Lot 1 | New York State Urban Development Corp. | Commercial usage |
| Lot 11 | Dora Heller et al. | Parking facility |

Zoning Data:

Block 691, M1-5 – Light Manufacturing District (High Performance)

3.6 FORMER BLOCK 666 AND MARGINAL STREET LAND USE

The portion of former Block 666 that was owned by the gas company is currently occupied by a portion of Pier 59 and partially under water. Pier 59 currently operates as a sports and entertainment complex with frontage along 11th Avenue to the east and the Hudson River to the west (Photographs 4, 5 and 7). During the performance of the site reconnaissance on May 15, 2002, access to the buildings interior was limited. A visual inspection of the water surface along the pier and bulkhead did not reveal remnants of historic gas operations. Because odors associated with the high traffic area located adjacent to the pier were predominant, odors typically associated with historical MGP operations, if present, were not distinct.

The original western ends of Blocks 688, 689, 690, and 691 are now under the current alignment of 11th Avenue and Marginal Street. This area currently supports a multiple-lane, at-grade roadway separated by a median strip. During the performance of the site reconnaissance, no remnants of historic MGP operations were revealed. The roadway appeared to be in good condition (Photograph 7) and relatively well maintained.

SECTION 4

SITE SETTING

4.1 INTRODUCTION

This section describes the demography, current zoning, characteristics of the neighboring properties, topography, geology, and hydrogeology. Information in this section was developed during the site reconnaissance visit conducted on May 15, 2002 and through the collection and review of New York City tax and zoning files, historical reports, the radius search report, and USGS topographic maps.

4.2 DEMOGRAPHY

The population of the Manhattan Borough is 1,537,195 people. Census Tract 99 encompasses Blocks 688, 689, 690, and 691 (the site), the two blocks to the south, approximately 17 blocks to the north (to West 38th Street), and 11 blocks to the northwest (to West 39th Street). Census Tract 99 is wedge-shaped with the site falling near the southern point. Census Tract 99 widens to the north, becoming two blocks wide at 22nd Street. The site is bordered by Census Tracts 83 (8 blocks) and 89 (8 blocks). The population in Census Tract 99 is 1,155 people. The total population is ethnically diverse with 57-percent White, 31-percent Black, and 12 percent other races. There are slightly more females than males. The median age is 36.5 years. There are 309 renter occupied housing units and only 61 owner occupied housing units in Census Tract 99. The two Census tracts to the east of the former West 18th Street MGP are more heavily populated. Census Tract 83, adjacent to the southern half of the former MGP, has a population of 3,477 people and Census Tract 89, adjacent to the northern half of the former MGP has a population of 5,320 people. Renter occupied housing units significantly outnumber owner occupied housing units in both of these Census tracts too.

4.3 ZONING

Within the general geographic area of the site, property usage is light commercial, light industrial, local service district, and residential. All of the Tax Lots contained on the Blocks (688, 689, 690, and 691) that comprise the former MGP site are zoned as M1-5 and are defined as Light Manufacturing District - High Performance.

4.4 CHARACTERISTICS OF NEIGHBORING PROPERTIES

Within a one-quarter mile radius of the 18th Street site the neighboring properties consist of apartment buildings, restaurants, retail stores, art galleries, schools, parking lots, and warehouses. Two and three story apartment buildings are present to the north, south, and east of the site along 10th Avenue. Store front retail facilities are located to the east of the site as well with frontage along Amsterdam Avenue. The Chelsea Piers complex, an entertainment and recreational complex, is located to the west of the site along the Hudson River with frontage along 11th Avenue. During the site reconnaissance, the area buildings were observed to be generally well maintained. The roadways were observed to be in good repair with few pot holes observed. The

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area maintains a high population density due to local apartments and the presence of the Chelsea Piers entertainment complex, art galleries, warehouses, and retail facilities as well as the influx of the workforce population on any given day of the work week.

4.5 TOPOGRAPHY AND SURFACE WATER DRAINAGE

The general site topography is subtly sloping from the east to west toward 11th Avenue and subsequently to the Hudson River. The elevation near the intersection of West 18th Street and 10th Avenue is approximately 12 feet above mean sea level (amsl) and the elevation near the intersection of West 18th Street and 11th Avenue is approximately 8 feet amsl. The elevation change across the site is approximately 4 feet.

Based upon observations made during the site reconnaissance visit, the apparent surface water drainage is west toward 11th Avenue and subsequently to the Hudson River. Storm sewers are present along 11th Avenue and 10th Avenue to collect surface water runoff from the adjacent side streets.

4.6 REGIONAL GEOLOGY

The bedrock underlying the project site is the Manhattan Formation, a gray to black mica schist that has been intensely folded and deformed by the two major episodes of mountain building during the Paleozoic Era, more than 200 million years ago. The depth of the bedrock surface in the southwestern Manhattan area varies from more than 150 feet bgs in the Chelsea section near 21st Street to approximately 80 feet bgs, near the site (AKRF, 1994). Borings drilled on Block 689 encountered bedrock as deep as 90 to 100 feet (MTA, 1998a).

Bedrock is generally overlain by Pleistocene glacial deposits. During the past 35,000 years of the Pleistocene Epoch (the Ice Age), bedrock has been abraded and eroded by four episodes of glaciation. During the Wisconsinian Stage (the last of the four stages), large volumes of sand, gravel, and rock have been deposited along the margins of the Hudson River Valley (AKRF, 1994).

4.7 SITE GEOLOGY

The geology directly beneath the site is based on two borings (H-17 and BH-16) drilled as part of the Route 9A Reconstruction Project (AKRF, 1994) and 31 borings and three monitoring well borings drilled on Lot 689 by MTA, (1998a). Fill material is widespread in this region and consists of dredged river sediment, coal plant refuse, and construction debris in thicknesses of approximately 3-25 feet. Pockets of silts and sand are found between the fill and bedrock. (AKRF, 1994). Boring BH-16 encountered brown fine to coarse sand, with traces of silt and fine to medium gravel, brick, and ash fill to a depth of 13 feet, where the boring was terminated. Water was encountered at approximately five to 6 feet. Boring H-17 encountered fill consisting of black slag-like material with brick-like material and glass from near the surface to approximately 3 feet. Below the fill was light brown sand with silt and some gravel. Black-brown coarse to fine sand with abundant rock fragments and slight odor was encountered at approximately 9 feet. Water was encountered at approximately 6 feet. The boring was terminated at 10 feet. AKRF reports that in general, the overburden materials in the area consist of up to 35 feet of construction debris that may include brick, weathered schist, sand, silt, clay,

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stone, and wood above a 10 to 40 foot layer of organic silt above a layer of up to 50 feet of glacial till (AKRF, 1994).

MTA conducted a subsurface investigation for a proposed Federal Express Distribution Center that would cover Block 689, (MTA, 1998a). MTA found roughly 20 to 40 feet of fill in Block 689 described as a heterogeneous mixture of silty sand, gravel, cinders, and frequent obstructions (upper 5 to 10 feet, particularly). The obstructions were concrete and brick rubble with other building demolition materials anticipated. Below the fill was up to 15 to 20 feet of organic silt found at depths of 20 to 25 feet near 10th Avenue and approximately 50 feet near 11th Avenue, when present. Below the organic silt is silty sand with cobbles and or boulders (inferred by drillers based on drilling characteristics). Discontinuous layers of medium to stiff clayey silt, from 5 to 15 feet thick, with varying amounts of sand were encountered at varying depths within and above the silty sand stratum on Block 689. MTA reported schist bedrock from 60 feet below the ground surface (bgs) near 10th Avenue to 100 feet bgs near the center of Block 689 (MTA, 1998a). The upper 5 to 20 feet of bedrock was found to be highly weathered. Groundwater was encountered at approximately eight to 11 feet below grade on Block 689. Results from rising head field permeability tests in monitoring wells found coefficients of permeability ranging from approximately 4×10^{-5} cm/second to 5×10^{-4} cm/second (0.1 to 1.3 feet per day), (MTA, 1998a).

4.8 HYDROLOGY/HYDROGEOLOGY

Manhattan is an island encompassing approximately 22 square miles and is surrounded by brackish or salty tidal water. The Hudson River is located less than 0.25 miles west of the site, and the East River is located less than two miles east of the site. The Hudson River is a Class I surface water body adjacent to the West 18th Street site (NYSDEC, 2001). Class I waters fall within the Interstate Sanitation District. Class I waters are suitable for secondary contact recreation and any other use except primary contact recreation and shellfishing for market purposes.

The area is characterized by a relatively mild climate with an average precipitation of approximately 45 inches per year. The primary source of groundwater is precipitation; however, recharge precipitation in Manhattan is probably much less than 50 percent because the majority of surface area is paved. Secondary sources of groundwater recharge are leakage from sewer and water lines, and infiltration of surface water. Manhattan's drinking water is obtained from reservoirs located greater than 25 miles north of the city. No drinking water supply wells were identified in the vicinity of the site (EDR, 2002 and NYSDOH, 1982). An EDR report for a site located at 42nd Street did identify a public supply at 424 West 51st Street. However, this is actually the location of the supply owner and not the supply. The public supply is actually located upstate in Liberty, New York. The usage of local groundwater is not likely since the public water supply is readily available. However, the fresh groundwater would be compared to Class GA groundwater standards.

Prior to significant construction and development, Manhattan was drained by approximately 12 shallow creeks, which emptied into the Hudson, Harlem, and East Rivers. Most of these creeks are now filled in and covered by buildings and streets. However, the old channels may have some influence on the occurrence and movement of shallow groundwater in the region.

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Depths to groundwater at the western end of the former West 18th Street MGP are approximately five to six feet (ADRF, 1994) and depths to groundwater on Block 689 are approximately 8 to 11 feet (MTA, 1998a). Depths to groundwater on the eastern end of the site are unknown. Groundwater is expected to flow in a northwesterly direction toward the Hudson River. Groundwater elevation contour maps are not available for the former West 18th Street MGP site.

SECTION 5

PAST OWNERSHIP

5.1 INTRODUCTION

This section describes the past ownership of the site. Ownership history is divided into three parts; pre-MGP, the MGP period, and the post-MGP period. In addition to the title search results that are presented in Appendix D, Sanborn Insurance Maps from 1895 to 1996 and other historical maps and atlases were used to develop the chain of ownership and evolution of site operations.

The former West 18th Street MGP site occupied portions of five modern city blocks, parts of 11th Avenue/Marginal Street/Route 9A, and parts of the Chelsea Piers (see Section 2.1). The large Tax Lots originally included a number of smaller real estate lots (referred to throughout this report simply as Lots), which were sold to the Manhattan Gas Light Company (Con Edison's predecessor company) by individual owners. Over time, these smaller lots were merged into the larger Tax Lots and renumbered.

5.2 PRE-MGP OWNERSHIP AND USE

The West 18th Street MGP property supported various structures prior to its use as a MGP. The following text summarizes use on the properties on a block-by-block basis during these years. Of note, all of the blocks west of 10th Avenue were once under water, with the Hudson River shoreline located roughly along what would become 10th Avenue. The 1865 Viele map (Figure 4) shows the original topography and hydrology of Manhattan Island, the location of the original shoreline, and the 1865 shoreline. The stippled pattern identifies the areas that were filled between the original shoreline and the 1865 shoreline. The 1836 Colton map (Figure 5) shows an intermediate extent of filling with the eastern portions of Blocks 688, 689, 690, and 691 being reclaimed. By the early 1850s, Blocks 688, 689, and 690 were completely filled in, although Block 691 was still only partially filled. The 1852 Dripps map (Figures 6a through 6d) illustrates the extent of landfilling activities by this time. Other maps used to illustrate development in the following descriptions include the 1859 Perris and Company map (Figures 7a through 7e), the 1867 Dripps map (Figures 8a and 8b), and the 1869 Perris and Browne map (Figures 9a through 9d).

Block 688 (bounded by West 16th and West 17th Streets, 10th and 11th Avenues)

As described above, Block 688 was completely under water until the 1830s, when landfilling began west of 10th Avenue. By the late 1830s and early 1840s the eastern half of the block, now reclaimed from the river, supported two houses along 10th Avenue (Assessed Valuation of Real Estate 1836 through 1842). By 1857, there were fifteen houses along 10th Avenue; six houses, a stone yard, and two sheds on the south side of West 17th Street; and two houses east of 11th Avenue (Assessed Valuation of Real Estate 1857). These structures are depicted on the 1852 Dripps map (Figure 6a). On the eastern end of the block, various

residences, shops, a “Whiting Factory,” a wagon factory, and a wood yard appeared on the 1859 Perris and Company map (Figure 7a) and the 1869 Perris and Browne map (Figure 9a).

Block 689 (bounded by West 17th and West 18th Streets, 10th and 11th Avenues)

There was little or no development on Block 689 prior to its use as an MGP. Until the early 1830s, the block was completely under water. Once the eastern end of the block had been filled, the Manhattan Gas Light Company purchased the lots along West 18th Street and part of 10th Avenue in 1833 from various owners. Concurrently, individuals bought lots and constructed five houses at the southeast end of the block, right next to the MGP (Assessed Valuation of Real Estate 1836 through 1842; 1857). The 1852 Dripps map (Figure 6a) shows the location of these structures on the block. These houses endured until the late 1850s, when the gas company bought these lots and razed the houses to make room for additional MGP buildings.

Block 690 (bounded by West 18th and West 19th Streets, 10th and 11th Avenues)

The earliest development on Block 690 was a steam mill, constructed by William Hockman on the south side of the block along the newly filled shoreline by the late 1830s or early 1840s (Assessed Valuation of Real Estate 1836 through 1842). The steam mill is visible (although unlabeled) on the 1852 Dripps map (Figure 6b). Individuals continued to own and occupy areas of the block adjacent to the MGP from the time that the Manhattan Gas Light Company began purchasing lots in 1848 until 1870, when the gas company acquired the last of the lots on the block. By the late 1850s, in addition to the property occupied by the gas company, the block contained a lumber yard, a coal yard, several houses, and various sheds and shanties (Assessed Valuation of Real Estate 1857). The 1859 Perris and Company map (Figure 7b) shows that in addition to the gas company structures, the block now contained a “Distillery and Manufactory of Compressed Yeast” complex, a paint factory, a cooperage (repair and making of barrels and tubs), and the “Manhattan Pottery” complex. The 1869 Perris and Browne map (Figure 9b) indicates the yeast factory was now a “Rectifying Distillery” and part of the Manhattan Pottery complex now housed the “Providence Chemical Works.”

Block 691 (bounded by West 19th and West 20th Streets, 10th and 11th Avenues)

Block 691 contained primarily residences from the 1830s, when its eastern end was reclaimed from the Hudson River, through 1866, when the gas company purchased its first lots on the block. In the late 1830s and early 1840s, the block supported a stable and 8 houses (Assessed Valuation of Real Estate 1836 through 1842). The 1852 Dripps map (Figure 6b) illustrates the location of these structures. By 1857, the block had 19 houses, 8 lots with sheds, and a lumber yard (Assessed Valuation of Real Estate 1857). The 1859 Perris and Company map (Figure 7c) shows that the block now included a factory, a stone works, a cooperage, and a kindling wood yard in addition to the houses and two gas holders. Of note, it is likely that the 1859 Perris and Company map edition is actually an updated version of the map, changed sometime after 1866 to reflect a period after the gas company purchased the land on the block and erected its two gas holders there.

Block 715 (bounded by West 17th and West 18th Streets, 9th and 10th Avenues)

Unlike the blocks west of 10th Avenue, which were originally under water, Block 715, located east of 10th Avenue, was on solid ground. By the 1830s and 1840s, the block supported a number of houses and shops, although Tax Lot 59, the property later owned by the gas company, was vacant during these years (Assessed Valuation of Real Estate 1836 through 1842). In 1845 and 1846, individuals sold what would become Tax Lot 59 to the Manhattan Gas Light Company for construction of a building to house two gas holders.

Former Block 666 (bounded by West 16th and West 19th Streets, 11th and 13th Avenues)

The wedge-shaped portion of land created west of the original 11th Avenue alignment, between West 16th and West 19th streets, was designated Block 666 prior to its condemnation for inland pier extensions in the early twentieth century. Historic maps and documents divide this block into three parts: north, center, and south. The block was under water through the 1830s and early 1840s, but had been filled by the early 1850s, as shown on the 1852 Dripps map (Figure 6d). The southern part of Block 666 appears undeveloped. One unidentified structure is shown within the center part of Block 666 on the 1952 Dripps map. The gas company purchased the central part of Block 666 in 1846 and 1849 and the southern part in 1858. The unidentified structure is not present, replaced by a coal yard, in the 1859 Perris and Company map.

5.3 MGP HISTORY

The West 18th Street MGP had its beginnings in 1833. This was the year the Manhattan Gas Light Company purchased its initial property on the eastern end of Block 689 (the western end still being under water). The Manhattan Gas Light Company had formed in 1830, and by 1833, had acquired a franchise to provide gas to all of Manhattan north of Grand and Canal streets. It was the city's second gas company; the New York Gas Light Company began providing gas to the area south of Grand and Canal streets in 1825, using a plant at Hester and Centre streets. The West 18th Street MGP was to be the second gas plant in the city, and the first erected by the Manhattan Gas Light Company. Construction of the West 18th Street MGP began in the fall of 1833, and continued for the next year. Much of the original machinery was shipped from England. By November 1834, the plant was manufacturing and distributing coal gas to customers (Collins, 1934).

During the nineteenth century, the West 18th Street MGP grew as the Manhattan Gas Light Company continued to purchase land and construct additional parts of the facility. Table 5.1 summarizes the major land purchases associated with the West 18th Street MGP from the 1830s through 1870s.

Table 5.1 Summary of Land Purchases During the Nineteenth Century

| Block | Historic Lot(s) | Modern Lot(s) | Year(s) Acquired |
|--------------|------------------------|----------------------------|-------------------------|
| 689 | 34-47 | 17 | 1833 |
| 715 | 51-59 | 59 | 1845, 1846 |
| 666 | Center | Block 662, City 11 | 1846, 1849 |
| 689 | 19-33 | 17 | 1848 |
| 690 | 28-37 | 29 | 1848 |
| 689 | 17 | 17 | 1849 |
| 688 | 22, 43-45 | 1001, 1002 | 1858 |
| 689 | Unspecified | 17 | 1858 |
| 666 | South | Block 662, now under water | 1858 |
| 690 | 14-17, 48-53 | 12 | 1866 |
| 691 | 11-14, 52-57 | 1, 11 | 1866 |
| 690 | 18-19 | 12 | 1868 |
| 688 | 23-42 | 1001, 1002 | 1869 |
| 690 | 20-27, 40, 42-45 | 20, 40, 42 | 1870 |

As described above, the first property the company bought was on the south side of West 18th Street, at the eastern end of Block 689. Here, it built the nucleus of the MGP: a retort house, condensers, washers, and purifying house, likely contained in one or two structures. In 1845 and 1846, the company purchased lots on Block 715 and built its first gas holders, enclosed in a brick warehouse-type structure along the south side of West 18th Street. Around the same time, it purchased the center section of former Block 666, newly created by landfilling, which allowed direct access to the river and a company pier. It used this area as a coal yard as well. The purchase of more property at the eastern end of Block 689 in 1848 and 1849 allowed the MGP to expand its operations by constructing a new, detached purifying house at the northeastern corner of the block. This new purifying house implemented the dry-lime process (Collins, 1934 and Hartgen, n.d.). The company also bought land at the eastern end of Block 690, directly to the north, and constructed its first pair of large, open gas holders. The 1852 Dripps map (Figure 6a-d) illustrates the status of development at the West 18th Street MGP

after the first expansion of the facility on Block 689, the construction of the covered gas holders on Block 715, and the open gas holders on Block 690.

In 1853, the West 18th Street MGP was producing 300,000,000 cubic feet of gas annually, more than any other plant in the United States. Among its “modern improvements” were a high chimney for the retort house and pipes to transport its waste products (like tar, ammonia, and waste lime) directly into the river, polluting the area and driving away the fish. However, despite the company’s efforts to get rid of some byproducts, residents still complained of the smell from the lime purifying process, at one point circulating a petition that finally prompted the company to install special ventilators that used new washing and purifying setups to remove the worst of the odors (Collins, 1934).

The 1859 Perris and Company map (Figures 7a through 7e) shows the next phase of the West 18th Street MGP configuration, and provides further details about existing site components. In 1858, the Manhattan Gas Light Company purchased the western two-thirds of Block 688, and the southern section of former Block 666. The company erected four additional gas holders in the middle of Block 688 and used the western end of that block as a coal yard. The newly purchased part of former Block 666 was used for a lime yard. The 1859 map indicates that the four new gas holders on Block 688 each held 250,000 cubic feet of gas, whereas the pair on Block 690 each had a capacity of 225,000 cubic feet. No dimensions are given for the two covered gas holders on Block 715, but other accounts indicate they were each 84 feet in diameter and held 205,000 cubic feet of gas each (PSC, 1909 and Collins, 1934). Two new gas holders are also shown on Block 691, in the location that the gas company purchased in 1866, suggesting either that the gas company was leasing this property before buying it, or more likely, that this map was updated between the 1859 and 1869 editions by “pasting over” pertinent sections, a common practice for insurance maps in the nineteenth century.

The 1859 Perris and Company map also shows the new layout of the MGP on Block 689. By this time, the retort house had been expanded to include six groups of 160 retorts each, for a total of 960 retorts. To the west of the retort house was a large coal house, where coal was stored after being unloaded from the adjacent waterfront pier, and prior to use in the retort house. To the east of the retort house was a laboratory along West 18th Street, and south of that, a building containing condensers, scrubbers and washers. Along 10th Avenue, the purifying house had been expanded and now stretched the entire length of the block. Adjoining the purifying house to the west was a series of structures labeled “Fresh Lime,” “Meter House,” and “Refuse Lime.” Next to these structures, on the West 17th Street side of the block, were an engine and boiler house, and a bank of workshops. The interior of the block was designated a coke yard.

In 1862, a long article appeared in *Harper’s New Monthly Magazine* describing the West 18th Street MGP and providing illustrations of the exterior plant buildings and gas holders, as well as a number of interior scenes. The article recounted a tour given by the chief engineer to the author and his nephew, in which they visited the draughting room (where architectural plans were rendered), the laboratory (where gas experiments occurred), the photometer room (where the candle strength of the gas was gauged), two rooms containing miniature gas manufacturing equipment to test the quality of coal, the retort house, the condensers, the washers, the purifying house, the gas holders, and the governor. The full article and accompanying illustrations are included in Appendix C. The *Harper’s* article devoted particular attention to the Manhattan

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Company's laboratory and other testing rooms, a sentiment that also had been made two years earlier in the *American Gas Light Journal*. That article explained "The Manhattan Company's new laboratory is the most extensive and costly in the United States; it may almost be called a National Laboratory, so general is the dependence of minor gas works upon the Manhattan Company for scientific experiments" (quoted in Collins, 1934:137).

The Manhattan Company's unqualified success during its first decades of operation allowed it to extend its facility even further during the ensuing years. In the late 1860s, the company purchased additional property on Blocks 688 and 690, as well as its first lots on Block 691. The MGP was expanded to include several large coal yards on Blocks 688, 690, and 691, a pipe yard on Block 690, and another pair of large gas holders on Block 691. In the early 1870s, the two gas holders on Block 715 were replaced (PSC, 1909 and Collins, 1934). The 1867 Dripps map (Figures 8a and 8b), the 1869 Perris and Browne map (Figures 9a through 9d), and the 1874 Perris and Browne map (Figures 10a through 10e) show the pace of development at the West 18th Street MGP during these years. The 1879 Taylor bird's eye drawing (Figure 11) illustrates the entire MGP for the first time, and clearly shows the massive coal piles on Blocks 688 and 690.

The West 18th Street MGP continued to operate through the final decades of the nineteenth century, although it did not acquire any additional property or change its configuration markedly during that period. After the Manhattan Gas Light Company joined with five other local gas companies to form the Consolidated Gas Company in 1884, some changes were made, such as the installation of new coal handling equipment at the West 18th Street MGP, and in the early 1890s, erection of a very large gas holder at the far western end of Block 691 (Collins, 1934). The 1887 Perris and Browne map (Figures 12a through 12d) and the 1895 Sanborn map (Figures 13a and 13b) illustrate the West 18th Street MGP during this period.

During the last decades of the nineteenth century, the city began plans to lengthen the Hudson River piers from West 11th Street to West 23rd Street, so as to accommodate longer ships. Originally, the hope had been to build the piers further into the river channel, but the Secretary of War rejected this idea, because it would have impeded navigation. Instead, the city decided to extend the piers inland, locating about one-third of their total length on solid ground. This procedure required excavating many of those areas that had been landfilled during the 1830s, and moving Marginal Street further inland. As a result, during the first decade of the twentieth century, the western ends of Blocks 688, 689, 690, and 691 were truncated, while 13th Avenue and Block 666 were eliminated completely (Hartgen, n.d.).

The West 18th Street MGP appears to have operated only one or two years into the twentieth century before it began to taper off production in preparation for the inland pier extension and road configuration work. The Docks and Ferries Department had a number of maps created from 1901-1905, illustrating the structures on the blocks that would be affected by the pier and road configuration, and numbering those structures that were to be sold at auction. Figure 14 is a sketch of Blocks 688 and 689, made in 1901. Figure 15 shows the large gas holder on Block 691 in 1903, Figure 16 illustrates the structures to be sold on Block 689 in 1904, and Figures 17 and 18 show the gas holders on Block 688 for sale in 1904 and 1905.

Documents describing the sale of gas holders on Blocks 688 and 691 during 1903-1905 included detailed descriptions. On Block 691, the text from the bid pamphlet in 1903 read:

The iron gas holder which extends practically from the northerly side of West Nineteenth Street to the southerly side of West Twentieth Street, and from a point about 10 feet east of the east side of Eleventh Avenue, easterly about 180 feet. This holder is about 180 feet in diameter, built in three lifts of about 45 feet each. All the iron or steel work of this holder including the columns and girders on the exterior, are to be removed down to the surface of the concrete foundation, which is about 5 feet below the sidewalk level. This removal includes the bottom iron plating on top of concrete foundation. The weight of the iron and steel to be removed is 3,600,000 pounds as estimated on the drawings of the structure. In connection with the holder above described, the one story brick building 13 feet by 20 feet, which is situated on the southeast side of the holder, is to be removed (Department of Docks and Ferries, 1903).

For Block 688, the text included this description of the gas holders and the conditions of sale in 1905 (no text for the sale in 1904 of the other two gas holders on Block 688 was found):

Part of each of two iron gas holders, which extend practically from the northerly side of West Sixteenth Street to the southerly side of West Seventeenth Street, and from a line about 270 feet westerly from the westerly side of Tenth Avenue to a line about 350 feet westerly from the westerly side of Tenth Avenue. These gas holders are each about 85 feet in diameter and are built in two lifts of about 30 feet each. All the iron or steel work of these holders lying to the west of the easterly line of the marginal street including the columns and girders on the exterior are to be removed down to the surface of the brick or concrete foundations.

That portion of the southerly gas holder which is to be removed according to the terms of this sale is estimated to contain about 150,000 pounds of iron or steel and its length along the circumference of the tank is 145.49 linear feet as shown on the accompanying map. That portion of the northerly gas holder which is to be removed according to the terms of this sale is estimated to contain about 36,000 pounds of iron or steel and its length along the circumference of the tank is 76.92 linear feet as shown on the accompanying map.

All the materials of every class and description composing the gas holders and their foundation shall be torn down to the level of the existing curb, except the materials composing the tanks or gas holders proper, which may be removed down to the level of the bottoms of the gas holders, said bottoms being about 22 feet down from the top of the brick wall which surrounds the gas holders, and all the material shall be entirely removed from the premises (Department of Docks and Ferries, 1905).

The remaining structures associated with the West 18th Street MGP continued to be used by the gas company after the western ends of Blocks 688, 689, 690, and 691 had been truncated. The 1904 Sanborn map illustrates the blocks after the streets had been reconfigured (Figure 19). According to the Public Service Commission, in 1907 the MGP was being “used for shops, distribution and experimental work, etc.” (PSC, 1908:651). Six gas holders still remained in use at the MGP: two each (open) on Blocks 690 and 691 (holding 250,000 cubic feet each), and two (covered) on Block 715 (with a capacity of 205,000 cubic feet each), for a total capacity of 1,410,000 cubic feet (PSC, 1908 and 1909). In 1909, the two gas holders on Block 691 were

demolished, and in 1914, the remaining gas holders on Blocks 690 and 715 were razed (PSC, 1910 through 1914). During the 1910s, the gas company began to sell its property on the West 18th Street MGP blocks to other owners, marking the end of the MGP history.

5.4 POST-MGP OWNERSHIP AND USE

Con Edison no longer owns any of the former MGP property on Blocks 688, 689, 690, 691, or 715. The following discussion addresses use of these areas after the MGP was demolished in the mid-1910s, on a block-by-block basis. Sanborn maps (Figures 20 to 35) illustrate the sequence of development.

Block 688 (bounded by West 16th and West 17th Streets, 10th and 11th Avenues)

This block was owned entirely by the gas company, and now is designated Tax Lots 1001 and 1002. In 1916, the Consolidated Gas Company sold the whole block to the Merchants Refrigerating Company, and the following year the new owner constructed a ten-story warehouse with basement, covering the entire block. The refrigeration company operated from 1916 to 1982. The property was purchased by the Able Empire Group in 1982 and by the Tenth Avenue Mini Storage Associates in 1984. This building, although somewhat modified since its initial construction, still stands on the lot in its original location. Today it is occupied by condominiums and a mini storage facility.

Department of Building records indicate that prior to construction of the warehouse, engineers did subsurface testing to determine the stability of the soil. A report made in 1915 reveals that the water table was approximately 8.5 feet below grade, and that the amount of fill material extended from the ground surface to between 5-34 feet below the surface, depending on the location on the block (and the relationship to the original shoreline). In some cases, wood was noted within the fill, suggesting cribbing or docking material had been included with the soil, which was mostly sand. The report mandated that all foundations for the new building be excavated to “good sharp sand” (BIN 1012278).

Block 689 (bounded by West 17th and West 18th Streets, 10th and 11th Avenues)

Like the block to the south, Block 689 was owned entirely by the gas company, and is now designated Tax Lot 17. In 1917, the Consolidated Gas Company sold the whole block to the New York State Realty and Terminal Company. From 1932-1960, the property was owned by the New York Central Railroad Company. Since 1960, the block has been owned by a series of realty companies and corporations.

After the gas company sold the property, some of the former MGP buildings on the block were used for other purposes. The 1921 Sanborn map (Figure 20) shows by that period the retort house had been razed, but most of the other structures on the block were still standing. Some of the Sanborn maps have sections that are unreadable. This is the result of scanning or reproduction methods and the quality of the original maps (paste-over techniques were historically used to update maps). Information was gleaned from more readable copies located in archives visited. Along West 17th Street, the buildings were designated a “Wood Pulp Doll Factory,” lumber storage, and a cooperage. The old purifying house, meter house, and lime house complex along 10th Avenue was being used by the United Electric Light and Power

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Company for cable and pipe storage. The old condenser house in the interior of the block was designated “box storage,” and the former laboratory along West 18th Street was marked “Packing Box Factory” and “Foundry.” A small store, constructed after the retort house was demolished, was located along 11th Avenue near the intersection of West 18th Street.

The remainder of the old MGP buildings were razed after the railroad acquired the property, and a railroad yard (with tracks) was built in their place. Later, the tracks were covered and the block was used as surface parking for cars. The 1950 Sanborn map (Figure 21) shows the former railroad lines entering the block from 10th Avenue, with the later automobile parking lot superimposed. A small building labeled an office is located along West 17th Street. In the mid-1950s, an automobile service station and garage were also built along West 17th Street, near 11th Avenue, and first appear on the 1969 Sanborn map (Figure 22). The buildings were demolished in the 1980s. Today, the block is used exclusively as a parking lot. An overhead railroad viaduct crosses from West 17th Street to West 18th Street, near the eastern end of the block. The site has been evaluated for a multistory FedEx distribution center (MTA, 1998a, b, and c).

Block 690 (bounded by West 18th and West 19th Streets, 10th and 11th Avenues)

After Block 690 had its western end condemned for pier and roadway reconfigurations, nearly all of the remaining property on the block belonged to the Consolidated Gas Company. Specifically, the former MGP occupied modern Tax Lots 12, part of 20, 29, part of 40, 42, and 54. The various Tax Lots are identified in Figure 2. The following is a breakdown of development and use on these individual lots after being sold by the gas company from 1917 through 1923. Like the block to the south, Block 690 also has an overhead railroad viaduct crossing its eastern end, from West 18th Street to West 19th Street.

- Tax Lot 12 was used as a wagon yard until 1922, when a large garage (with buried gasoline tanks), was built over nearly the entire lot. This structure, with some modifications, still stands in its original location. It has three stories and a basement, and is made of steel and reinforced concrete.
- On Tax Lot 20, a large garage was erected over the portion fronting West 18th Street in 1919, and is still standing in its original location. It is several stories, and has/had buried gasoline tanks. The smaller portion of Tax Lot 20 along West 19th Street contained two row houses, built in the 1890s. They were razed for construction of a private garage, erected in 1947, which is still standing.
- Tax Lot 29 was used as a wagon yard after the gas holders were razed; it later became an automobile parking lot, and last, a truck parking lot. Two structures located on the southeast corner of the lot were built in the mid-1920s. The larger structure was originally a diner, but then changed its function to an office. The smaller structure was a watchman's house, and now serves as an office. The lot contains underground gasoline tanks.
- Tax Lot 40 originally contained two halves: the Consolidated Gas Company owned one part, and used it as a pipe yard, while the second part was owned by other individuals, and contained a shop, which later became an automobile repair facility. In 1923, the Huntoon Ice Company purchased both halves of the lot, and in 1929, constructed a warehouse for ice storage over the entire lot. In 1969, Eli Studios

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purchased the building and lot; the former warehouse has been used as a movie studio since that time.

- Tax Lot 42 was sold to the Huntoon Ice Company in 1922, which erected a two-story warehouse the following year. The building later was occupied by a spring water company. It is still standing in its original location.
- Tax Lot 46 was never owned by the gas company, but was surrounded by the MGP property on all sides. The lot was used as a lumber yard during the MGP period, and by the 1920s, a garage had been built, which is still standing.
- After sale by the gas company, tiny triangular Tax Lot 54 located at the corner of West 19th Street and 11th Avenue contained a two-story hotel, which later burned. The lot has been vacant since the 1960s.

Block 691 (bounded by West 19th and West 20th Streets, 10th and 11th Avenues)

Modern Tax Lots 1 and 11 constitute the former gas company holdings on Block 691. After the gas holders were demolished, Tax Lot 1 contained a small office building at its northwest corner while the rest of the property was vacant and used as a “house wrecker’s yard.” The eastern portion of Tax Lot 11 was used for the Department of Street Cleaning’s wagon yard. The American Red Cross had a structure along the 11th Avenue side of the block during the 1920s, covering parts of Tax Lots 1 and 11. In 1929, the YMCA of New York purchased Tax Lot 1, and the following year constructed an eight-story building (with basement) for use of its members (after the American Red Cross building was razed). This building, with minor alterations, remains on the lot in its original location today. Tax Lot 11 has been vacant since the American Red Cross building was demolished, and currently is used as a parking lot.

Block 715 (bounded by West 17th and West 18th Streets, 9th and 10th Avenues)

Tax Lot 59 contains the former gas holder house, now used as a garage. Although the gas holders have been removed and the building has been retrofitted, the exterior shell of the building has changed little.

Former Block 666 (bounded by West 16th and West 19th Streets, 11th and 13th Avenues)

The gas company formerly owned the southern and central thirds of Block 666. When the piers were extended inland and the roads reconfigured, this block was eliminated. The southern and northern parts of former Block 666 are now under water, while the center section falls partially within the current footprint of Pier 59 (Chelsea Piers Sports and Entertainment Center), and partially under water.

11th Avenue/Marginal Street (between West 16th and West 20th Streets)

The original western ends of Blocks 688, 689, 690, and 691 are now under the current alignment of 11th Avenue and Marginal Street or were removed during waterfront modifications, which were laid out in the first decades of the twentieth century. By the 1930s, this roadway also supported the elevated Miller Highway, which was demolished in the early 1970s

(Hartgen, 1994). Today this area supports multiple-lane, at-grade roadways separated by a wide median strip.

5.5 SUMMARY

Tables 5.2 through 5.6 present a summary of the significant property transfers on Blocks 688, 689, 690, 691, and 715 which occurred during the formation of the West 18th Street MGP, during the operations of the MGP, and the dissolution of the MGP after the early twentieth century.

Table 5.2

Block 688 – Property Transfers

| Date of Transaction | Tax Lots | Seller/Grantee | Purchaser/Grantee | Comments |
|----------------------------|---------------------|---------------------------|--------------------------------------|--|
| 1858 | 22, 43-45, and pier | Johnson family | Manhattan Gas Light Co. | Now Tax Lots 1001 and 1002, 11 th Ave. and Marginal Street. |
| 1869 | 23-42 | Trustees of Ellen Ward | Manhattan Gas Light Co. | Now Tax Lots 1001 and 1002. |
| 1885 | Entire block | Manhattan Gas Light Co. | Consolidated Gas Co. | Consolidated Gas Co. organized in 1884. |
| 1916 | Entire block | Consolidated Gas Co. | Merchants Refrigerating Co. | Now Tax Lots 1001 and 1002. |
| 1982 | Entire block | Buffalo Refrigerating Co. | Able Empire Group, L.P. | Property split into Tax Lots 1001 and 1002 in 1983. |
| 1984 | 1002 | Able Empire Group | Tenth Avenue Mini Storage Associates | Company now called Tenth Avenue Mini Storage Associates, LLC. |

Table 5.3**Block 689 – Property Transfers**

| Date of Transaction | Tax Lots | Seller/Grantee | Purchaser/Grantee | Comments |
|----------------------------|-----------------|----------------------------------|----------------------------------|--|
| 1833 | 34-47 | Various owners | Manhattan Gas Light Co. | Now Tax Lot 17. Split ownership of lots. |
| 1848 | 19-33, 38-47 | Sheriff of New York | Manhattan Gas Light Co. | Now Tax Lot 17. Sheriff's office selling for City of NY, foreclosed or condemned lots. |
| 1849 | 17 | Mayor of New York | Manhattan Gas Light Co. | Now Tax Lot 17. |
| 1885 | Entire block | Manhattan Gas Light Co. | Consolidated Gas Co. | Consolidated Gas Co. organized in 1884. |
| 1917 | Entire block | Consolidated Gas Co. | NY State Realty and Terminal Co. | |
| 1932 | Entire block | NY State Realty and Terminal Co. | NY Central Railroad Co. | |
| 1960 | Entire block | NY Central Railroad Co. | 10-42 Corp. | |
| 1964 | Entire block | 10-42 Corp. | Irving Maidman | |
| 1965 | Entire block | Irving Maidman | Chatham Associates, Inc. | |
| 1971 | Entire block | Chatham Associates, Inc. | Avon Associates, Inc. | |
| 1978 | Entire block | Avon Associates, Inc. | Empire Associates Realty Co. | |
| 1983 | Entire block | Empire Associates Realty Co. | Edison Mini-Storage Corp. | |

Table 5.4**Block 690 – Property Transfers**

| Date of Transaction | Tax Lots | Seller/Grantee | Purchaser/Grantee | Comments |
|----------------------------|-------------------------|----------------------------------|--|---|
| 1848 | 28-37 | William and Marianna Powers | Manhattan Gas Light Co. | Now Tax Lot 29. |
| 1866 | 14-17, 48-53 | Hockman family | Manhattan Gas Light Co. | Now Tax Lot 12. |
| 1868 | 18-19 | Mary Handley | Manhattan Gas Light Co. | Now Tax Lot 12. |
| 1870 | 20-27, 40, 42-45 | Various owners | Manhattan Gas Light Co. | Now Tax Lots 20, 40, 42. |
| 1885 | 14-37, 40, 42-45, 48-53 | Manhattan Gas Light Co. | Consolidated Gas Co. | Consolidated Gas Co. organized in 1884. |
| 1917 | 28-37 | Consolidated Gas Co. | NY State Realty and Terminal Co. | |
| 1919 | 20-27 | Consolidated Gas Co. | Moriana Realty Corp. | Now part of Tax Lot 20. |
| 1922 | 12 | Consolidated Gas Co. | Ambro Stores and Garage Corp. | |
| 1922 | 42 | Consolidated Gas Co. | Huntoon Ice Co. | |
| 1923 | Part of 40 | Consolidated Gas Co. | Huntoon Ice Co. | |
| 1925 | 12 | Alfred Towney, referee | Whitlock Ave. 156 th St. Realty Co., Inc. | |
| 1928 | 20-27 | Moriana Realty Corp. | U.S. Trucking Corp. | Now part of Tax Lot 20. |
| 1933 | 29 | NY State Realty and Terminal Co. | NY Central Railroad Co. | |
| 1943 | 12 | Thomas Chimera, referee | Trustees of Columbia University | |
| 1946 | 12 | Trustees of Columbia Univ. | National Garage Corp. | |

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Table 5.4**Block 690 – Property Transfers (Continued)**

| Date of Transaction | Tax Lots | Seller/Grantee | Purchaser/Grantee | Comments |
|----------------------------|-----------------|------------------------------|--|-----------------|
| 1956 | 40, 42 | Rubel Corp. | Kenmar Corp. | |
| 1959 | 29 | NY Central Railroad Co. | National Garage Co. | |
| 1959 | 40, 42 | Kenmar Realty | Mar-Ken Realty Corp. | |
| 1961 | 40 | Mar-Ken Realty Corp. | Jeff Rich Realty Corp. | |
| 1961 | 42 | Maidmor Realty Corp. | Irving Maidman | |
| 1969 | 40 | Jeff Rich Realty Corp. | Eli Studios | |
| 1970 | 42 | Eagle Spring Water Co., Inc. | Foremost McKesson, Inc. | |
| 1977 | 42 | Foremost McKesson, Inc. | Criette Realty, Inc. | |
| 1978 | 20 | United States Trucking Corp. | Cotard Realty Associates | |
| 1979 | 40 | General Stage 19, Ltd. | Dia Art Foundation, Inc. | |
| 1981 | 12, 29 | National Garage Co. | Cotard Realty Associates | |
| 1986 | 42 | Criette Realty, Inc. | J. Craig Johnson and Henriette Johnson | |
| 1987 | 40 | Dia Art Foundation, Inc. | Haleakala, Inc. | |
| 2001 | 29 | Cotard Realty Associates | Somatic Realty LLC | |

Table 5.5**Block 691 – Property Transfers**

| Date of Transaction | Tax Lots | Seller/Grantee | Purchaser/Grantee | Comments |
|----------------------------|-----------------|-------------------------|--|---|
| 1866 | 11-14, 52-57 | Clement Moore heirs | Manhattan Gas Light Co. | Now Tax Lots 1 and 11. |
| 1885 | 11-14, 52-57 | Manhattan Gas Light Co. | Consolidated Gas Co. | Consolidated Gas Co. organized in 1884. |
| 1910 | 1, 11 | Consolidated Gas Co. | Warwick Thomson Co. | |
| 1926 | 1, 11 | Warwick Thomson Co. | City Real Estate Co. | |
| 1926 | 1, 11 | City Real Estate Co. | Consolidated Gas Co. | |
| 1929 | 1 | Consolidated Gas Co. | YMCA of NY | |
| 1945 | 11 | Consolidated Gas Co. | Deposit Realty, Inc. | |
| 1947 | 11 | Deposit Realty, Inc. | Chelsea Holdings, Inc. | |
| 1961 | 11 | Chelsea Holdings, Inc. | Nathan and Dora Heller | |
| 1965 | 11 | Nathan and Dora Heller | Nathan Heller et al. | |
| 1984 | 11 | Dora Heller | Dora Heller et al. | |
| 1993 | 1 | State of New York | New York State Urban Development Corp. | |

Table 5.6**Block 715 – Property Transfers**

| Date of Transaction | Tax Lots | Seller/Grantee | Purchaser/Grantee | Comments |
|----------------------------|-----------------|--|--|--|
| 1845 | 51-57 | Samuel H. Turner | Manhattan Gas Light Co. | Now Tax Lot 59. |
| 1846 | 58-59 | John and Helen Ferguson | Manhattan Gas Light Co. | Now Tax Lot 59. |
| 1885 | 51-59 | Manhattan Gas Light Co. | Consolidated Gas Co. | Consolidated Gas Co. organized in 1884. |
| 1944 | 59 | Consolidated Gas Co. | 440 West 18 th St. Realty Corp. | Property had been leased to others since 1915. |
| 1983 | 59 | 440 West 18 th St. Realty Corp. | Retaco Holding Corp. | |

SECTION 6

PAST SITE OPERATIONS

6.1 INTRODUCTION

This section describes the operations conducted at the former West 18th Street MGP in addition to significant operations conducted before and after the MGP. This section is divided into three parts; pre-MGP operations, MGP operations, and Post MGP operations. Information used to develop the operational history was obtained from:

- Consolidated Edison internal records and files (including remediation files and reports, Real Estate records, In-plant Property records, and historical photographs);
- Consolidated Edison personnel interviews;
- Historical maps, including Sanborn Fire Insurance Maps, Dripps Maps, Perris and Browne Insurance Maps, Bromley Atlases, and Taylor City Map;
- Books and articles detailing manufactured gas company histories and operating procedures;
- Manufactured gas industry publications (including the *American Gas Light Journal*, in later years called the *American Gas Journal*);
- Brown's Directory of American Gas Companies;
- PSC reports;
- Nineteenth and twentieth century newspaper and journal articles (such as the *New York Times*); and
- Environmental studies undertaken within and adjacent to the properties.

6.2 PRE-MGP OPERATIONS

6.2.1 Summary of Pre-MGP Operations

Prior to the existence of the West 18th Street MGP, Blocks 688, 689, 690, 691, and 715 supported a variety of structures. Historic maps and tax assessment records indicate that most of the pre-MGP uses of these blocks were for houses and sheds, as well as storage yards for coal, lumber, and stone. In addition, however, several blocks supported industrial operations. Block 690 contained a steam mill, a compressed yeast distillery and factory (later a rectifying distillery), a paint factory, a cooperage, a pottery, and a chemical works. Block 691 included a factory, a stone works, and a cooperage. Other operations on the blocks included landfilling associated with shoreline extension.

6.2.2 Pre-MGP Wastes and Byproducts

Little information is documented about the wastes and byproducts generated and the waste handling practices used by the various operations that were conducted on the properties before

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the MGP began operations. Potential wastes generated may include scrap wood and stone from the storage yards and scrap wood from the cooperage. The pottery would have scrap pottery from broken or off-spec. pottery products. The pigments and glazes may have contained contaminants. The paint factory could have solvents, pigments, and possibly lead used in the making of the paints. The chemical factory could have had a wide range of products, byproducts, and wastes. The yeast distillery and rectifying distillery likely had byproducts left after the distilling process. The various operations needed sources of energy (steam mill, distillery, paint factory, pottery, chemical works, and stone works). Depending on the nature of the energy and storage, various contaminants could be released. Metals could leach from coal piles. The various operations likely used grease and other lubricants. The landfilling operation associated with the shoreline extension could have used or incorporated ash, cinders, and other solid wastes or byproducts from the nearby industries.

6.3 MGP OPERATIONS

6.3.1 Summary of Site Gas Production

The processes and practices described in the following sections are drawn from *Harper's New Monthly Magazine* (1862), historic maps, Con Edison records, Collins (1934), Hartgen (n.d.), Public Service Commission (PSC) Records, Brown's Directories, Eng (1985), Hornby (1911), Alrich (1934), Downing (1934), Stewart (1958), and EEI (1984).

The West 18th Street MGP manufactured retort or coal gas from 1834 to the early 1900s (Collins, 1934 and Department of Docks and Ferries 1903 through 1905). Anthracite coal for coal gas production was delivered by barge or lighter to the Hudson River waterfront piers, and then by cart to the plant itself, located on Block 689. The West 18th Street MGP used both English and American coals, mixing them together to create a blend (*Harper's*, 1862). The coal was stored in a large "coal house" at the western end of the block, then transported to the retort house. At the eastern ends of the retort house were the condensers and scrubbers. Last, the gas went through the purifying house, located at the far eastern end of the block. From the purifying house the gas went to the holders at various locations on Blocks 688, 690, 691, and 715 for storage before being distributed to customers. At its peak, the West 18th Street MGP had 11 gas holders, with a combined capacity of approximately 3,500,000 cubic feet (PSC, 1908). The following text summarizes the coal gas manufacturing process, from delivery of the coal to the retorts, to the piping of gas to the holders.

6.3.2 Summary of Process Configurations

As described above, coal gas was produced at the West 18th Street site between 1834 and the early 1900s. Coal was delivered by barge or lighter and unloaded at the company's Hudson River pier, and may also have been delivered by rail, as tracks ran along 10th Avenue on the eastern side of the MGP. By-products may have been shipped from the plant by barge or rail also.

The retort house was constructed of brick, and consisted of a furnace supporting a series of clay retorts on brick benches. Each bench contained 15 retorts, and there were 64 benches, for a total of 960 retorts (Perris and Company, 1859 and *Harper's*, 1862). The retorts were heated by lighting fires below them, which then surrounded the chamber and heated the coal inside the

retorts without air. Prior to the 1880s, when mechanized chargers and dischargers were installed at the plant, groups of workers loaded and unloaded coal into the retorts manually, using large shovels each holding about 100 pounds of coal. Once the retorts were filled with coal (or “charged”), the retort was heated for several hours until gas resulted. Once the gas was removed, the coal (at this stage called “coke”), now enlarged to nearly twice its original size (although much less dense) was removed from the retorts. According to the *Harper’s* article, in the 1860s half of the coke produced was used at the plant to heat the retorts again or for other purposes, and half was sold. The spent coal or coke was discharged through the bottom of the oven and immediately quenched with water to prevent combustion (*Harper’s*, 1862; Hartgen, n.d.; and EEI, 1984).

The retort gas was passed through a series of processes to recover byproducts and impurities. Once the raw gas was driven from the coal, it was drawn from the retort and through a hydraulic main located on the roof of the retort house. The main was sealed and contained water, which permitted steam, tar vapors, and some ammonia compounds to settle out before continuing to the condensers. From the hydraulic main, the gas traveled to the air condenser, located immediately east of the retort house. The air condenser cooled the gas by indirect contact cooling water to remove heavy tars and water vapor. Tar byproducts were siphoned off at this stage, for reuse or sale. The gas was then fed through a second, water cooled condenser, located just east of the air condenser, to remove additional impurities. Next, the gas flowed through an exhauster, situated south of the condensers, which blew the gas through the scrubber or washer (located east of the condensers) to remove ammonia and some sulfur. The *Harper’s* article noted that 8-10 gallons of ammonia could be extracted from the gas produced by one ton of coal. The scrubber was a cylindrical structure filled with coke; materials in the scrubber were sprayed with water, and those water soluble impurities settled to the bottom of the chamber, where they were collected (*Harper’s*, 1862 and Hartgen, n.d.).

The final stage in the removal of impurities from the gas stream, purification, was the removal of sulfur. Sulfur was removed from the gas stream by the formation of calcium sulfate as the coal gas was passed through lime purifiers. The purifiers consisted of square tanks in which stacked trays containing damp, powdered lime, were situated. The gas was forced up from beneath the trays, in the process removing sulfurous compounds like hydrogen sulfide through reaction with the calcium in the lime. At the West 18th Street MGP, a fresh lime house was attached to one side of the purifying house, while a foul lime house was located at the other end. The spent lime could then be sold for fertilizer (*Harper’s* 1862, and Hartgen, n.d.).

From the purifiers, the gas was metered and then passed into a storage holder, ready for distribution to the customers. The West 18th Street MGP began with only two gas holders (on Block 715), but over time constructed a number of others. By the turn of the twentieth century, there were eleven holders on four contiguous blocks, with a combined capacity of 3,500,000 cubic feet.

6.3.3 By-Products and Waste Disposal

A complete record of by-product quantities, reuse, sale, and disposal is not available. PSC reports began publication in 1908, after the West 18th Street MGP had essentially stopped

producing gas. During the period that the West 18th Street MGP operated, there were no known published reports detailing byproduct output and sales.

Typical wastes and byproducts produced at an MGP would include coal tar, ammonia, purifier wastes (calcium sulfate and/or spent ferric oxide impregnated wood chips), sulfur, coal ash and cinders. It is not known if purifier waste (calcium sulfate and/or ferric oxide) was stock piled prior to or after use on-site. The disposal history of purifier waste is unknown. The coal tar was sold as a byproduct as was the sulfur. The coal tars could be distilled producing ammonia liquors, light oils, creosote oils, anthracene oils, and pitch. The light oils could be further rectified yielding benzol, solvent naphtha, carbolic acid, and anthracene. Improvements to the MGP around 1853 included pipes to transfer waste products directly into the river, resulting in pollution of the area and driving the fish away (Collins, 1934).

6.4 POST-MGP OPERATIONS

Section 5.4 describes the history of the West 18th Street MGP site footprint after the property was sold to other owners. The following is a summary of the post-MGP operations, on a block-by-block basis.

Block 688 (bounded by West 16th and West 17th Streets, 10th and 11th Avenues)

The portion of this block not truncated by roadway reconfiguration consists of Tax Lots 1001 and 1002 (which are parts of the same lot). The entire expanse of Tax Lots 1001/1002 has, since 1917, contained a ten-story building with basement, covering the entire block. Over most of its use-life the building was used as a warehouse, and today it is occupied by condominiums and a mini storage facility. Wastes and potential contamination associated with the warehouse would be related to the types of materials stored. The far western part of the block overlies the area of the MGP formerly containing gas holders, while the remainder of the block overlies the gas company's former coke yard (Sanborn 1895, 1904). Before acquisition by the gas company for the coke yard, the eastern part of the block contained various residences, shops, a "Whiting Factory," a wagon factory, and a wood yard (Perris and Company 1859; Perris and Browne 1869). Department of Docks and Ferries documents indicate that the gas holders had to be removed down to the top of their foundations (at approximately 5 feet below grade), but were permitted to be removed to the base of these foundations (at approximately 22 feet below grade), presumably if bidders wished to recoup additional resale value of the foundation materials. Sometimes the holders were reconstructed at a new location. However, it is not known whether all of the foundations were in fact removed. In 1915, though, Department of Building records indicate that the foundations of the current building on the block were to be excavated deeply, through the landfill to underlying natural sand. Since the existing building has a basement, it is likely that if the foundations for the gas holders had not been completely dismantled in 1905, they were removed prior to construction of the new building.

The western end of original Block 688 is currently under 11th Avenue and Marginal Street. This section of the block once contained gas holders and a coal yard. If the bidders for the gas holders on this section of the former block did not completely remove the foundations, it is likely they may still be extant below parts of the roads, although reconstruction of Route 9A and installation of various utilities may have destroyed some of these resources.

Block 689 (bounded by West 17th and West 18th Streets, 10th and 11th Avenues)

The remaining MGP site footprint on this block not truncated by roadway reconfiguration consists of Tax Lot 17, which encompasses the entire modern block. After the MGP closed, a number of the buildings on the block were reused for other purposes. The structures along West 17th Street were occupied by a “Wood Pulp Doll Factory,” lumber storage, and a cooperage. Along 10th Avenue, the former purifying house was used by the United Electric Light and Power Company for cable and pipe storage. On West 18th Street, the old gas company laboratory was a “Packing Box Factory” and a foundry, while in the center of the block, the former condenser house was used to store boxes (Sanborn, 1921). Wastes associated with the foundry would be similar to some of the MGP wastes and would likely include ash, cinders, and metals. Wastes associated with the other operations could include wood, paint, wood pulp, and metals.

After the New York Central Railroad acquired the block in 1932, these structures were all demolished, and a railroad yard was built in their place. Wastes associated with the rail yard would include petroleum products and anything that was contained within the train cars that was spilled. Later, the railroad tracks were covered over by asphalt, and the block was used as an automobile parking lot. From the mid-1950s through the 1980s, a gas station and garage existed on the southwest corner of the block. Today, the block is used strictly for parking, with an overhead railroad viaduct crossing overhead.

As with Block 688 to the south, the western end of original Block 689 now lies under 11th Avenue, Marginal Street, or the Hudson River. Portions of the former MGP under this area include the retort house and the coal house. Remaining remnants of these buildings were not observed but may exist in the subsurface below 11th Avenue and Marginal Street.

Block 690 (bounded by West 18th and West 19th Streets, 10th and 11th Avenues)

After roadway reconfiguration, the former MGP site footprint on Block 690 consisted of Tax Lots 12, part of 20, 29, part of 40, 42, and 54. Tax Lots 12, 20, 40, 42, and 54 overlay the gas company’s former coal yard, pipe yard, and (later) store yard, while Tax Lot 29 overlays the former gas holders and several ancillary structures. Some of the lots were used as wagon yards (Tax Lots 12, 29) after initial sale by the gas company. Tax Lot 29 later became an automobile parking lot, and last, a truck parking lot. Two structures stand along the southern part of Tax Lot 29, and are now used as offices. Additional areas on the block had automobile garages built on them, some with basements (Tax Lots 12, 20, and 46 [not part of the gas company holdings, but surrounded by it]). The remaining lots on the block were developed with warehouse-type structures (Tax Lots 40 and 42) and a small hotel (Tax Lot 54). Buried gasoline tanks are known to exist or have once existed on Tax Lots 12, 20, 29, and possibly 40. These operations with tanks could have leaked petroleum products. Block 690 also has an overhead railroad viaduct crossing its eastern end, from West 18th Street to West 19th Street.

As with the blocks to the south, the western end of original Block 690 now lies under 11th Avenue and Marginal Street. However, most of the land that was condemned was not owned by the gas company (the exception was a part of Lot 12 that had been used as a coal yard).

Block 691 (bounded by West 19th and West 20th Streets, 10th and 11th Avenues)

Tax Lots 1 and 11 are the only portions of Block 691 formerly owned by the gas company. They once contained two gas holders and several ancillary structures; the third and largest gas holder on the block was demolished prior to pier extension and road configuration. After sale of the lots by the gas company, they were used as a “house wrecker’s yard” (Tax Lot 1) and a wagon yard (Tax Lot 11). In the 1920s, a building occupied by the American Red Cross was located across the two modern tax lots, along the 11th Avenue frontage of the block. By 1930, this building had been razed and a YMCA building (eight stories with a basement) had been constructed on Tax Lot 1, which still stands in its original location. Tax Lot 11 has been used as an automobile parking lot since the 1930s. The former YMCA building on Tax Lot 1 has a basement, and the building application on file at the Department of Buildings indicated the foundations (concrete-filled casings) would be excavated to hard rock. It is likely little if any remains of the gas holders still exist on this lot. Wastes and contamination from the YMCA and American Red Cross would be limited to trash and refuse disposed off-site. However, since Tax Lot 11 has been used primarily as a surface parking lot, it is possible the foundations of the gas holders still may be located beneath the current ground surface. Likewise, for the former area of Block 691 now under 11th Avenue and Marginal Street, portions of the large gas holders’ foundation still may be extant, as Department of Docks and Ferries documents indicate that bidders wishing to purchase the gas holder only had to remove the structure down to the top of its foundations (at approximately 5 feet below grade). The remaining extent of the foundation was not necessarily removed at this time.

Block 715 (bounded by West 17th and West 18th Streets, 9th and 10th Avenues)

The portion of Block 715 once owned by the gas company is restricted to Tax Lot 59, along West 18th Street. This lot contains a garage, but is the same structure built to cover the gas holders, albeit with interior modifications. Subsurface foundation remnants of the gas holders could survive under the garage floor. Wastes associated with the garage operation would include petroleum products.

Former Block 666 (bounded by West 16th and West 19th Streets, 11th and 13th Avenues)

Before inland pier extension, the southern and central thirds of old Block 666 belonged to the gas company. Today, only a section of the center third, formerly used as a coal yard and later a store yard, is not under water. The footprint of Pier 59 overlaps this area, and likely has destroyed the former ground surface during construction of the pier, and later rebuilding of the pier in the 1960s (AKRF et al., 1993). The Chelsea Piers project is an 18.86 acre project that includes Piers 59, 60, 61, and 62. The sports and entertainment complex includes television and movie studios, golf driving range, track and gymnastics centers, two Olympic-size ice skating rinks, three restaurants, parking, retail space, a small boat marina, and excursion boating. Wastes generated from the site may include petroleum or sewage discharges or leaks from pleasure boats and excursion boats and general refuse from the other operations.

11th Avenue/Marginal Street (between West 16th and West 20th Streets)

The current alignment of 11th Avenue and Marginal Street overlies the former western ends of Blocks 688, 689, 690, and 691. The roads were laid out in the early 1900s, at the same time the piers were extended inland. From the 1930s to the 1970s, this roadway also supported the elevated Miller Highway (Hartgen, 1994). Today this area supports multiple-lane, at-grade roadways separated by a wide median strip. AKRF, Inc. conducted drilling and sampling along the Route 9A reconstruction corridor. Results for the segment near the former West 18th Street MGP are presented in Section 7.2.

6.5 SUMMARY OF OPERATIONAL HISTORY

Tables 6.1 through 6.10 present a summary of the progression of the significant operations conducted on each of the tax lots that comprised the former West 18th Street MGP. Details of the operations and historical progression have been presented in Sections 6.1 through 6.4.

Table 6.1

Block 688 Tax Lot 1001/1002

| Year | Usage | Owner | Comments |
|--------------|---|---|---|
| Pre-MGP | Houses, stone yard, whiting factory, wagon factory, wood yard | Various | Factories and wood yard existed in 1850s and 1860s. |
| 1858-1900s | Gas holders, coal yards | Manhattan Gas Light Co. then Consolidated Gas Co. of NY | |
| 1917-Present | Warehousing and condominiums | First owner Merchant's Refrigerating Co., current owner Able Empire Group LP and Tenth Avenue MS Properties | Currently contains condos and a Mini Storage. Building has 10 stories and a basement. |

Table 6.2**Block 689 Tax Lot 17**

| Year | Usage | Owner | Comments |
|--------------|--|---|--|
| Pre-MGP | Under water | Various | Eastern end of block filled in early 1830s. |
| 1833-1900s | MGP | Manhattan Gas Light Co. then Consolidated Gas Co. of NY | Main structures were retort house, condensers, scrubbers, purifying house, laboratories and shops. |
| 1917-1932 | Wood Pulp Doll Factory, lumber storage, cooperage, cable and pipe storage, packing box factory, box storage, foundry | New York State Realty and Terminal Co. | Reuse of old gas company buildings. |
| 1932-1960 | Railroad yard, later parking lot, automobile service station and garage | New York Central Railroad Co. | |
| 1960-present | Parking lot | Various corporations | Gas station removed in 1980s. |

Table 6.3**Block 690 Tax Lot 12**

| Year | Usage | Owner | Comments |
|--------------|-----------------------------------|--|---|
| Pre-MGP | Steam Mill, paint factory | William Hockman | Steam mill shows on historical maps in 1852, paint factory in 1859. |
| 1860s-1900s | Gas company coal yard, wagon yard | Manhattan Gas Light Co. then Consolidated Gas Co. of NY | |
| 1922-Present | Garage | First owner Ambro Stores and Garage Corp. (current owner Cotard Realty Associates) | Multiple stories with a basement. |

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Table 6.4

Block 690 Tax Lot 20

| Year | Usage | Owner | Comments |
|--------------|---|---|---|
| Pre-MGP | Steam Mill, Distillery and Manufactory of Compressed Yeast complex, later Rectifying Distillery | William Hockman | Steam mill shows on historical maps beginning 1852, other factories by 1859. |
| 1870s-1900s | Gas company coal yard, pipe yard, store yard | Manhattan Gas Light Co. then Consolidated Gas Co. of NY | |
| 1919-Present | Garages | Various (current owner Cotard Realty Associates) | Garage on W. 18 th St. built 1919, smaller garage on W. 19 th St. built 1947. |

Table 6.5

Block 690 Tax Lot 29

| Year | Usage | Owner | Comments |
|--------------|--|---|---|
| Pre-MGP | Undeveloped | William and Marianna Power | |
| 1848-1914 | Gas holders | Manhattan Gas Light Co. then Consolidated Gas Co. of NY | |
| 1917-Present | Wagon yard, automobile parking lot, truck parking lot, two small offices | Various (current owner Cotard Realty Associates) | Lot has had underground gasoline tanks. |

Table 6.6**Block 690 Tax Lot 40**

| Year | Usage | Owner | Comments |
|--------------|--|--|--|
| Pre-MGP | Shop, later automobile repair facility | Estate of William Hockman and others | West half of modern lot, building not razed until 1920s. |
| Pre-MGP | Undeveloped | Estate of William Hockman | East half of modern lot. |
| 1870-1900s | Gas company pipe yard | Manhattan Gas Light Co. then Consolidated Gas Co. of NY. | East half of modern lot. |
| 1900s-1923 | Vacant | Consolidated Gas Co. of NY | East half of modern lot. |
| 1923-1969 | Ice storage warehouse | Huntoon Ice Company | East and west halves joined. |
| 1969-present | Movie studio | Eli Studios and others | Retrofitted ice storage warehouse. |

Table 6.7**Block 690 Tax Lot 42**

| Year | Usage | Owner | Comments |
|--------------|--|--|--|
| Pre-MGP | Distillery and Manufactory of Compressed Yeast complex, later Rectifying Distillery. | Estate of William Hockman and others | Factories shown on 1859 and 1869 historic maps |
| 1870-1900s | Gas company coal yard, store yard. | Manhattan Gas Light Co. then Consolidated Gas Co. of NY. | |
| 1900s-1922 | Vacant | Consolidated Gas Co. of NY | |
| 1922-present | Ice company warehouse, spring water warehouse. | Huntoon Ice Company and others. | |

Table 6.8**Block 691 Tax Lot 1**

| Year | Usage | Owner | Comments |
|--------------|---|---|---|
| Pre-MGP | Undeveloped | Estate of Clement Moore | Lot under water through 1850s. |
| 1866-1900s | Gas holders, coal yard | Manhattan Gas Light Co. then Consolidated Gas Co. of NY. | Two gas holders built after 1866, third built in early 1890s. |
| 1900s-1930 | American Red Cross building, small office building, "house wrecker's yard". | Consolidated Gas Co. of NY and others. | |
| 1930-present | Office building (originally YMCA). | YMCA and others (current owner New York State Urban Development Corp.). | |

Table 6.9**Block 691 Tax Lot 11**

| Year | Usage | Owner | Comments |
|--------------|--|--|---|
| Pre-MGP | Undeveloped | Estate of Clement Moore | Lot under water through 1850s. |
| 1866-1900s | Gas holders, coal yard. | Manhattan Gas Light Co. then Consolidated Gas Co. of NY. | Two gas holders built after 1866, third built in early 1890s. |
| 1900s-1930 | American Red Cross building, wagon yard. | Consolidated Gas Co. of NY and others. | |
| 1930-present | Parking lot | Various (current owner Heller et al.) | |

Table 6.10**Block 715 Tax Lot 59**

| Year | Usage | Owner | Comments |
|--------------|-----------------------------------|---|---|
| Pre-MGP | Undeveloped | Samuel Turner | |
| 1845-1914 | Gas holders in covered warehouse. | Manhattan Gas Light Co. then Consolidated Gas Co. of NY. | |
| 1915-present | Garage | Consolidated Gas Co. of NY and others (current owner Retaco Holding Corp.). | Former gas holder building retrofitted; Con Ed sold property in 1944. |

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SECTION 7

ENVIRONMENTAL/REGULATORY AGENCIES AND DATABASES

7.1 EDR PROFILE SEARCH

A search of site environmental databases was conducted by EDR on March 12, 2002. The search included New York State and Federal databases. The complete listing of sites is presented in the EDR report in Appendix B. All sites identified in the EDR search report are at equal or higher elevation than the 18th Street site.

Mappable Sites

Mappable sites in the vicinity of the 18th Street site were identified on the area map provided in the EDR profile search. A list of acronyms and definitions are included in the database search report in Appendix B. The following is a summary of the findings:

The database search identified nine large quantity and 15 small quantity sites where hazardous wastes are generated, transported, stored, treated, and/or disposed within 0.25 miles of the site. Fifty-three leaking tanks and 29 USTs were identified within 0.5 and 0.25 miles of the site, respectively. One chemical bulk storage AST was identified within 0.25 miles of the site. The leaking tanks identified within 0.25 miles of the site have the potential to impact the site depending on the ages of the releases, types of releases, quantities of releases, and distances from the site. Current releases and associated impacts from the other sites listed have not been identified. Releases and associated impacts from these other sites described above would have the potential to impact the site if a release occurred.

The EDR Proprietary Historical Database revealed one coal gas site owned by Consolidated Gas Company at 450 W 18th Street. The site was a gas holder and is located on the south side of W. 18th Street between Tenth Avenue and Ninth Avenue. This site is on Block 715 and has been included in the historical research presented in this report.

Table 7.1**Summary of Environmental Database Findings (Mappable Sites)**

| Jurisdiction | Program Database | Radius (Miles) | Number of Sites |
|---------------------------------|--|-----------------------|------------------------|
| Federal | NPL – National Priority List | 1 | 0 |
| | Proposed NPL – Proposed NPL Site | 1 | 0 |
| | CERCLIS – Comprehensive Environmental Response, Compensation, and Liability Information System | 0.5 | 0 |
| | CERC-NFRAP – CERCLIS No Further Action Planned | 0.25 | 0 |
| | CORRACTS – Corrective Action Report | 1 | 0 |
| | RCRIS-TSD – Resource Conservation and Recovery Information System | 0.5 | 0 |
| | RCRIS (Lg. Gen.) – RCRIS Large Quantity Generator | 0.25 | 9 |
| | RCRIS (Small Gen.) – RCRIS Small Quantity Generator | 0.25 | 15 |
| Federal Supplemental | CONSENT – Superfund (CERCLA) Consent Decrees | 1 | 0 |
| | ROD – Record of Decision | 1 | 0 |
| | Delisted NPL – NPL Deletions | 1 | 0 |
| | MINES – Mines Master Index File | 0.25 | 0 |
| State | SHWS – Inactive State Haz. Waste Disposal Sites in NYS- | 1 | 0 |
| | SWF/LF – Facility Register | 0.5 | 0 |
| | LTANKS – Leaking Storage Tank Incident Report Filed | 0.5 | 53 |
| | UST – Underground Storage Tank Database | 0.25 | 29 |
| | CBS UST – Underground Chemical Bulk Storage Tank | 0.25 | 0 |
| | MOSF AST – Major Oil Storage Facilities Database | 0.5 | 0 |
| | VCP – Voluntary Cleanup Agreement | 0.5 | 0 |
| | SWTIRE – Registered Waste Tire Storage & Facility List | 0.5 | 0 |
| | SWRCY – Registered Recycling Facility List | 0.5 | 0 |
| State/Local Supplemental | HSWDS – Hazardous Substance Waste Disposal Site Inventory | 0.5 | 0 |
| | CBS AST – Above-ground Chemical Bulk Storage Tank | 0.25 | 1 |
| | MOSF AST – Major Oil Storage Facilities Database | 0.5 | 0 |
| EDR Proprietary | Coal Gas – Manufactured Gas (Coal Gas) Site | 1 | 1 |

Unmappable Sites (Zip code ID)

Unmappable sites were identified on New York and Federal databases. The sites were not mappable because the addresses provided to EDR by regulatory agencies were incomplete. The unmappable sites were identified by zip code, city name or county. Details on the unmappable sites are provided in the EDR Search Report in Appendix B and are summarized in Table 7.2.

Table 7.2 Summary of Environmental Data Base Findings (Unmappable Sites)

| Jurisdiction | Program Database | Number of Sites |
|---------------------|------------------------------|------------------------|
| Federal | SHWS, FINDS, RCRIS-LQG, MLTS | 1 |
| | RCRIS-SQG, FINDS | 1 |
| State | LTANKS | 4 |
| | UST | 3 |

7.2 ADDITIONAL RECORDS SOURCES

Files at Con Edison and the Department of City Planning were searched for records of additional sites and results of sampling. A freedom of information request was filed with the NYSDEC that requested information on sites within the investigation area.

The western end of the West 18th Street MGP was sampled by AKRF, Inc. as part of the Route 9A reconstruction project (AKRF et al, 1994). Six test borings were drilled between the former MGP and the Hudson River and piers, three during Phase 1A and three during Phase 1B. One monitoring well was installed two blocks south of the former MGP and one well was installed approximately two blocks north of the former MGP during Phase 1A. A site map is included in Appendix C. Analytical results for samples collected in the vicinity of the former MGP found:

- Leachable lead was found in H-27 at 26 mg/kg but below the EP Toxicity lead level.
- Heavy metals were detected in most samples but below EP Toxicity levels.
- PAHs were detected in most samples.
- BTEX at 132 mg/L, PAHs at 63 mg/L and many metals were detected two blocks south of the site in W-25. The elevated levels of PAHs and metals were attributed to high turbidity in the samples.
- VOCs were detected in B-14 from 8 to 12 feet at 0.4 mg/kg.
- PAHs were detected in subsurface samples from B-14 at (88 mg/kg, 85 mg/kg, and 19 mg/kg).
- TPH was detected in BH-16 at a relatively low concentration.

- Cyanide was detected at 1.1 mg/kg in surface sample BH-14 collected west of 18th Street.
- Groundwater from BW-13, located mid-block along West 16th Street, contained 1 mg/L of BTEX, 0.063 mg/L of PAHs and had a strong “petroleum” odor. However, the sample was turbid.

MTA performed a Phase I and Limited Phase II environmental site investigation in 1998 on Block 689 (MTA, 1998b and MTA, 1998c), AKRF prepared a summary document, *Soil Sample Summary and Result for Soil Safe Criteria* in April 1999 (AKRF, 1999), and Blasland, Bouck and Lee, Inc (BB&L) prepared a remediation Work Plan in November, 1999 (BB&L, 1999). Composite samples from two depth intervals (0 to 8 feet and 8 to 20 feet) were analyzed during the MTA Phase II investigation. A site map showing sample locations is included in Appendix C. Sampling results are summarized below:

- A UST was identified at the boring B-14 location.
- VOCs and PAHs were detected in soils across the site.
- VOCs from 0 to 8 feet did not exceed NYSDEC Soil Cleanup Criteria.
- One PAH sample from 0 to 8 feet exceeded the NYSDEC Soil Cleanup Criteria of 500 mg/kg (boring pair B-1 and B-10 located on the western end of Block 689).
- Total VOC concentrations exceeded the NYSDEC Soil Cleanup Criteria of 10 mg/kg in samples collected from 8 to 20 feet in seven boring pairs. The borings were primarily located in the central and western portions of Block 689 in boring pairs B-1 and B-10, B-2 and B-11, B-3 and B-12, B-5 and B-14, B-6 and B-15, B-7 and B-16, B-9 and B-18.
- Total PAHs were detected at concentrations exceeding the NYSDEC Soil Cleanup Criteria of 500 mg/kg in three composite samples collected from between 8 and 20 feet in boring pairs B-5 and B-14, B-1 and B-10, and B-3 and B-12 located in the central and western portions of Block 689.
- Worldwide Geosciences, Inc. performed an interpretive characterization of TPH results from 71 samples collected on the eastern portion of Block 689 to finger print the source materials comprising the samples. The conclusion was that 56 of the 58 interpretable chromatograms were indicative of coal tar or MGP residues.
- BTEX and PAHs were detected in all three groundwater samples collected on Block 689. The highest BTEX and PAH concentrations exceeded NYSDEC Class GA groundwater standards in MW-2 located near the northwest corner of Block 689. Benzene and naphthalene exceeded the standards in MW-3 located at the eastern end of the site, and only benzene exceeded the standards in MW-1 located near the southwest corner of the Block.

SECTION 8

POTENTIAL RECEPTORS

8.1 SENSITIVE AREAS

Based upon the site reconnaissance conducted on May 15, 2002 and data reviews, sensitive areas and potential receptors were identified. Table 8.1 presents potential sensitive areas and possible receptors within 0.25 miles and Table 8.2 identifies possible pathways leading to impact.

Table 8.1 Potential Sensitive Receptors and Areas

| Sensitive Receptors (Human) | Distance From Site (miles) | Comments |
|---|---|---|
| Schools | <0.25 | General Theological Seminary between W. 20 th and W. 21 st St. and 10 th and 9 th Ave. |
| | <0.25 | Bayard Rustin High School for Humanities Humanities Preparatory Academy between W. 19 th and W. 18 th St. and 8 th and 9 th Ave. |
| | 0.25 | IS/JHS 414 and IS/JHS 899 between W. 17 th and 18 th St. and 8 th and 9 th Ave. |
| | 0.25 | PS 011 between 20 th and 21 st St. and 8 th and 9 th Ave. |
| Day Care Facilities | | NA |
| Parks | | NA |
| Libraries or Community Organizations | | NA |
| Tourist Attractions | <0.25 | Chelsea Piers Sports/Entertainment Complex |
| Sensitive Receptors/Habitats | | |
| Waterbodies | <0.25 | Hudson River |
| Wetlands | <0.25 | The EDR report identifies wetlands adjacent to the piers in the Hudson River. |
| Surrounding Land Use | | |
| Residential Only | NA | |
| Mixed Residential and Commercial/Industrial | <0.25 | High-rise housing, brownstone-type apartment buildings and commercial usage. 1,155 residents in Census Tract 99 and 3,477 and 5,320 people in adjacent Census Tracts 83 and 89 (Census 2000). |
| Commercial/Industrial Only | NA | |

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Table 8.2 Potential Exposure Pathways

| Pathway | Possible Exposure Yes/No | Comments |
|---|---------------------------------|--|
| Soils | | |
| Exposed Ground Surface | No | Surfaces are paved or occupied by buildings. |
| Subsurface | Yes | Sampling in Block 689 identified the presence of residues in the subsurface that may represent an exposure pathway to excavators and intrusive work. Similar conditions may exist on the other Blocks formerly occupied by the MGP. |
| Seeps/Vapors | Yes | Buildings have basements. Residues, if present, could seep into basements along with shallow groundwater, or as vapors. |
| Surface Water | Miles | Comments |
| Distance to Surface Water | <0.25 miles | Site runoff could reach the Hudson River via storm sewer discharges. |
| Distance to Surface Water Intakes | NA | No known intakes. |
| Distance to Wetlands | <0.25 miles | The EDR report shows wetlands adjacent to the piers east of the site. |
| Contaminated Runoff Potential | No | The site is paved and occupied with buildings. Contaminated runoff could occur during excavation if excavated soils are uncovered and runoff is not controlled. |
| Groundwater | | |
| Groundwater Used for Drinking in Manhattan? | No | The area is in the NYC water supply area supplied by upstate reservoirs. Groundwater is not used for drinking in Manhattan. |
| Drinking Water Wells | >12 miles | The nearest known drinking water wells are in the Jamaica-Queens Water Supply on Long Island. There are no potential impacts from the West 18 th Street site because of the separation by the East River and a groundwater divide. The EDR report identifies a public water system at 424 West 51 st Street. This is the address of the supply owner. The actual supply is located upstate in Liberty, NY. |
| Depth to Aquifer Used for Drinking | NA | No drinking water aquifers used in site vicinity. |

SECTION 9

DISCUSSION AND CONCLUSIONS

9.1 DISCUSSION

The following conclusions are based on the historical research and site reconnaissance visit to the former West 18th Street MGP:

- Industrial activities were conducted in the vicinity of the former West 18th Street MGP prior to the construction of the MGP. Industries identified included a steam mill, paint factory, whiting factory, wagon factory, distillery and “manufactory” of compressed yeast, and rectifying distillery.
- The former West 18th Street MGP operated from 1834 through the early 1900s. The gas plant was located on Block 689, and gas holders and storage yards were located on Blocks 688 and 690 and portions of Blocks 691, 666, and 715. Production of coal gas began at the site in 1834 by the Manhattan Gas Light Company and was continued by the Consolidated Gas Company, formed in 1884. The MGP continued to produce gas from coal until the early 1900s. Large-scale operations were discontinued in 1902-1903 when the City of New York obtained the western portions of Blocks 688, 689, 690, and 691 for the reconfiguration of 11th Avenue and the inland extension of the piers. Con Edison continued to use the buildings on Block 689 several years longer for distribution, shops, and experimental activities. Those gas holders that were not demolished for road reconfiguration continued to be used: the holders on Block 691 were taken out of service in 1909 and the holders on Blocks 690 and 715 were shut down in 1914. Some of the site structures on Block 689 were used by other tenants through the 1920s, but appear to have been demolished in the 1930s.
- Various lots from the former MGP were sold beginning in 1915 and new structures were built on portions of the site after the MGP structures were razed. The disposition of the materials from the razed structures is not documented. Some gas holders were offered for sale.
- With the exception of Block 715, which was always on solid ground, the entire West 18th Street MGP is located on landfill material. The nature and source of the fill material is unknown. Some of the fill was later excavated for the inland expansion of the piers. The disposition of the excavated material is unknown.
- The disposition of wastes and byproducts generated by the former MGP is not well documented.
- Based on the site reconnaissance and historical research, one structure associated with the former MGP remains. This building is a warehouse that formerly housed two gas holders on Lot 59 on Block 715.
- Areas of the site that have not had significant excavation and redevelopment may retain remnants of the former MGP structures and may contain possible MGP residuals below

the ground surface as found on Block 689 during subsurface investigation for a proposed FedEx facility.

- The area of the former West 18th Street MGP is a mixed use area with commercial properties including art galleries, office space, warehousing, trucking, parking lots, the Roxy night club, and high-rise and brownstone apartments. Schools are located within 0.25 miles of the site. The Chelsea Piers recreational facility is just west of the site.
- The EDR report indicates the potential exists for spills and leaks from other sources within the area. The report identified 15 RCRIS small quantity generators and nine large quantity generators within 0.25 miles of the site. In addition, there are 29 USTs and one bulk chemical storage tank within 0.25 miles and 53 leaking tanks within 0.5 miles of the former West 18th Street MGP.
- Soil sampling on Block 689 conducted by MTA in 1998 identified TPH, VOCs, PAHs in soils and/or groundwater above NYSDEC soil or groundwater criteria (MTA, 1998c).
- Sampling by AKRF for the Route 9A reconstruction project identified lead, PAHs, BTEX, and cyanide in samples collected near the former MGP (AKRF, 1994).
- If impacts are present at the site, potential receptors would include workers, nearby residents, and tourists visiting the area. Most of the former site is covered with pavement and buildings. Therefore, no exposure pathways for surface and subsurface soil are present. Workers conducting excavation or intrusive construction activities could encounter residues from past operations. There is no groundwater usage so the groundwater pathway is not complete. The EDR report shows a public water supply system site at 424 West 51 St. Street. However this is not the location of a well or production facility, it is the address of the owner of an upstate water supply located in Liberty, New York.
- The Hudson River is within 0.25 miles of the former MGP and could be impacted if MGP residuals are migrating from the site or if past disposal practices included disposal of MGP related materials in or near the Hudson River.

9.2 COMPLETENESS OF RESEARCH

Research undertaken as part of this report included review of in-house documents and photographs provided by Con Edison, as well as materials gathered at the Municipal Archives of the City of New York, the Municipal Reference and Research Center of the City of New York, the New York City Recorder of Deeds office, the New York City Department of Buildings, the New York Public Library, the Library of Congress, the New York State Department of Environmental Conservation, the Environmental Protection Agency, and various web sites that post historical maps and journal articles. EDR compiled the radius search data for the site.

The materials gathered to date provide a general synopsis of activities that occurred on the MGP site, both before its construction, during its operation, and after it was demolished and the property used for other purposes. The information compiled about the pre-MGP use and the post-MGP use is likely adequate for the purpose of this report. Information gaps still remain concerning specific operating procedures at the MGP itself, as well as byproduct production and

disposal activities. Because the MGP operated during years when this information was not published by the PSC, and since internal plant records do not survive for this MGP, it is unlikely these data will be recovered. However, second-hand accounts of the MGP and its operations may exist in newspaper or journal articles that have no indices and therefore are unlikely to be found without considerable additional time and effort.

SECTION 10

SUMMARY OF HISTORICAL RESEARCH FINDINGS

10.1 PRIORITIZATION SUMMARY AND CONCLUSIONS

Con Edison contracted Parsons to conduct historical research of former MGPs and associated facilities that were either owned by Con Edison or predecessor companies of Con Edison. Parsons was assigned a group of sites located in the Borough of Manhattan. This report presents results of the historical research conducted for the West 18th Street MGP, a former MGP located in the Chelsea section of Manhattan. Table 10.1 presents a summary of factors that will be used in the prioritization.

Table 10.1 Prioritization Criteria and Factors

| Prioritization Criteria | Prioritization Factors |
|---|---|
| Does Con Edison own and control access and site usage? | Con Edison does not own or control access or site usage. |
| Relative size of the former MGP. | The former MGP site was approximately 17 acres and occupied all of Blocks 688, 689, 690, and portions of Blocks 691, 715, and former Block 666. The remaining MGP area is approximately 7.5 acres. The rest is under Marginal Street, 11 th Ave. or was reclaimed for inland pier extension. |
| Potential for development. | The area has potential for development. Block 689 has been evaluated for a new multistory FedEx facility. The Chelsea Piers recreational complex was built west of and over the former MGP on Block 662. Much of the remaining former MGP consists of older buildings that could be replaced. |
| Current potential for direct exposure to impacted soils. | The former MGP footprint is either paved or has buildings on it. Direct exposure to impacted soils is limited to site workers conducting excavations and other intrusive activities. |
| Potential for site actions to be triggered by other regulatory means. | The EDR radius search identified nine RCRIS large quantity generators, 15 RCRIS small quantity generators, 29 UST sites, and one bulk chemical storage tank within 0.25 miles of the former MGP and 53 leaking storage tank sites within 0.5 miles. |

Table 10.1 Prioritization Criteria and Factors (Continued)

| Prioritization Criteria | Prioritization Factors | |
|--|-------------------------------|--|
| Presence and proximity of sensitive receptors. | Groundwater Use Aquifers | None |
| | Surface Water Bodies | The Hudson River is less than 0.25 miles west of the site. |
| | Groundwater Seepage Areas. | None |
| | Population | 1,155 residents in Census Tract 99 (includes the site) and 3,477 and 5,320 people in adjacent Census Tracts 83 and 89 and 1,537,195 people in Manhattan Borough (Census, 2000). |
| | Playgrounds/Parks | None identified nearby. |
| | Schools | General Theological Seminary between W. 20 th and W. 21 st St. and 10 th and 9 th Ave. Bayard Rustin High School for Humanities Humanities Preparatory Academy between W. 19 th and W. 18 th St. and 8 th and 9 th Ave. IS/JHS 414 and IS/JHS 899 between W. 17 th and 18 th St. and 8 th and 9 th Ave. PS 011 between 20 th and 21 st St. and 8 th and 9 th Ave. |
| | Residences | There are 401 residential units near the site (high-rise and brownstone apartments) in Census Tract 99 and 5089 housing units in the two adjacent Census Tracts (83 and 89). |
| | Gardens | None |
| Physical Site Factors | Wetlands | The EDR report identifies wetlands adjacent to the piers on the Hudson River less than 0.25 miles to the west. |
| | Topography | The site topography is gently sloping to the west with an elevation change of approximately 4 feet from east to west. |
| | Soil Types and Permeability | The soils are likely fill and urban soils with relatively high permeabilities. The site is covered limiting access and infiltration. |
| | Cover | The site is paved or covered with buildings. |

Table 10.1 Prioritization Criteria and Factors (Continued)

| Prioritization Criteria | Prioritization Factors | |
|--|---|--|
| Physical Site Factors (continued) | Depth to Groundwater | Approximately 6 to 11 feet based on data from limited site investigation results. |
| | Groundwater Use | No known use in vicinity. |
| | Surface Water Proximity and Use | The Hudson is less than 0.25 miles from the site. There are no known surface water intakes downstream of the site. |
| Presence of buildings with basements onsite or nearby. Volatilization/seepage exposure pathway to residents or workers. | Most of the surrounding buildings appear to have basements. The potential for seepage/volatilization into basements exists if impacted soils are present. Verification of the types of ventilation systems used was not possible. | |
| Ongoing or obvious impacts to surface water. | None observed during site reconnaissance. | |
| Degree and extent of impacts associated with other (non-MGP) site uses. | Impacts were not observed. | |

SECTION 11

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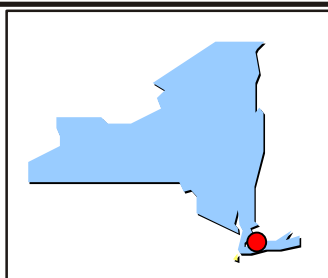
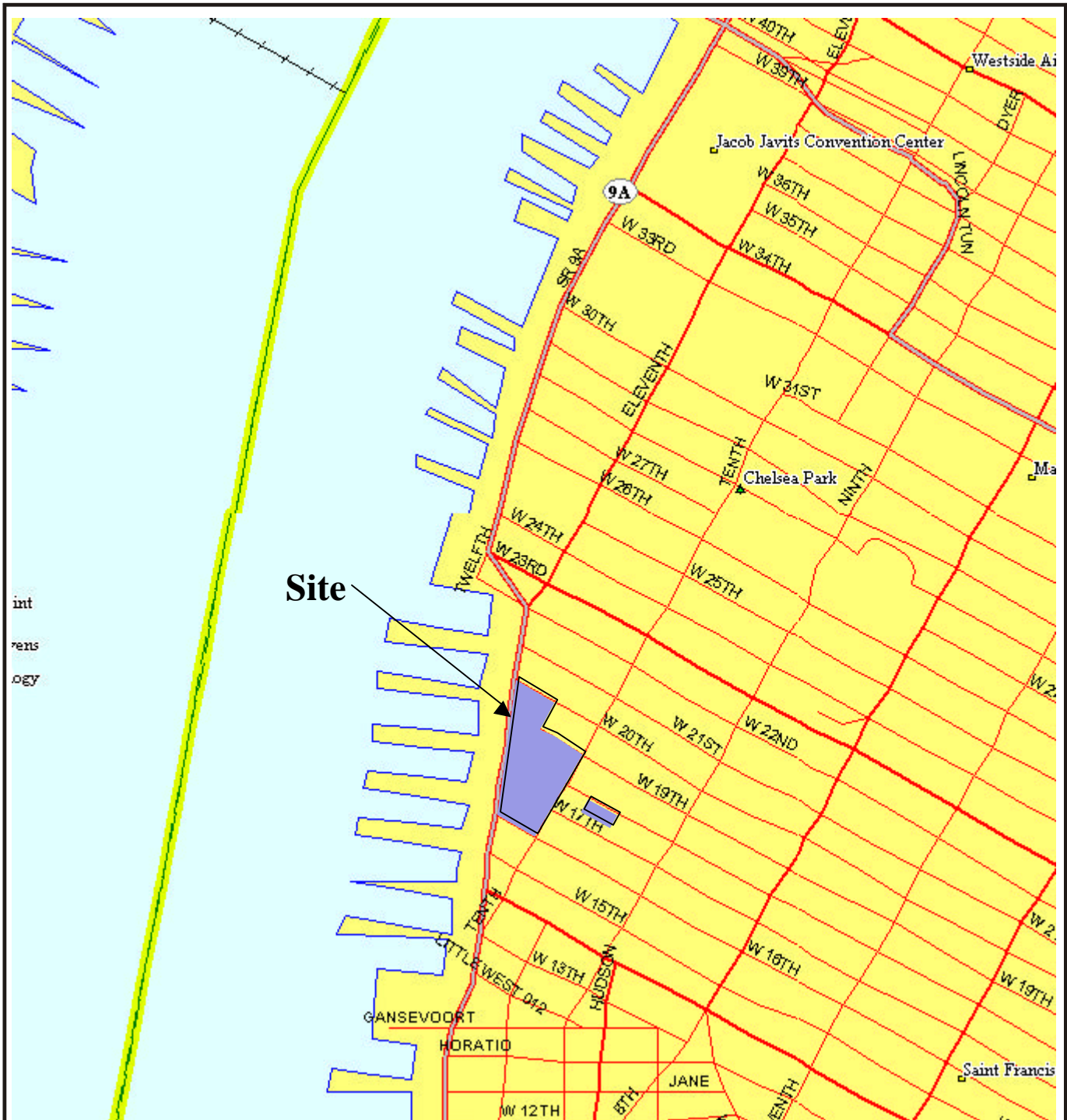
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FIGURES



New York Quadrangle

LATITUDE: N40° 45' 41"
LONGITUDE: W73° 59' 58"



0.200 MI

Figure 1

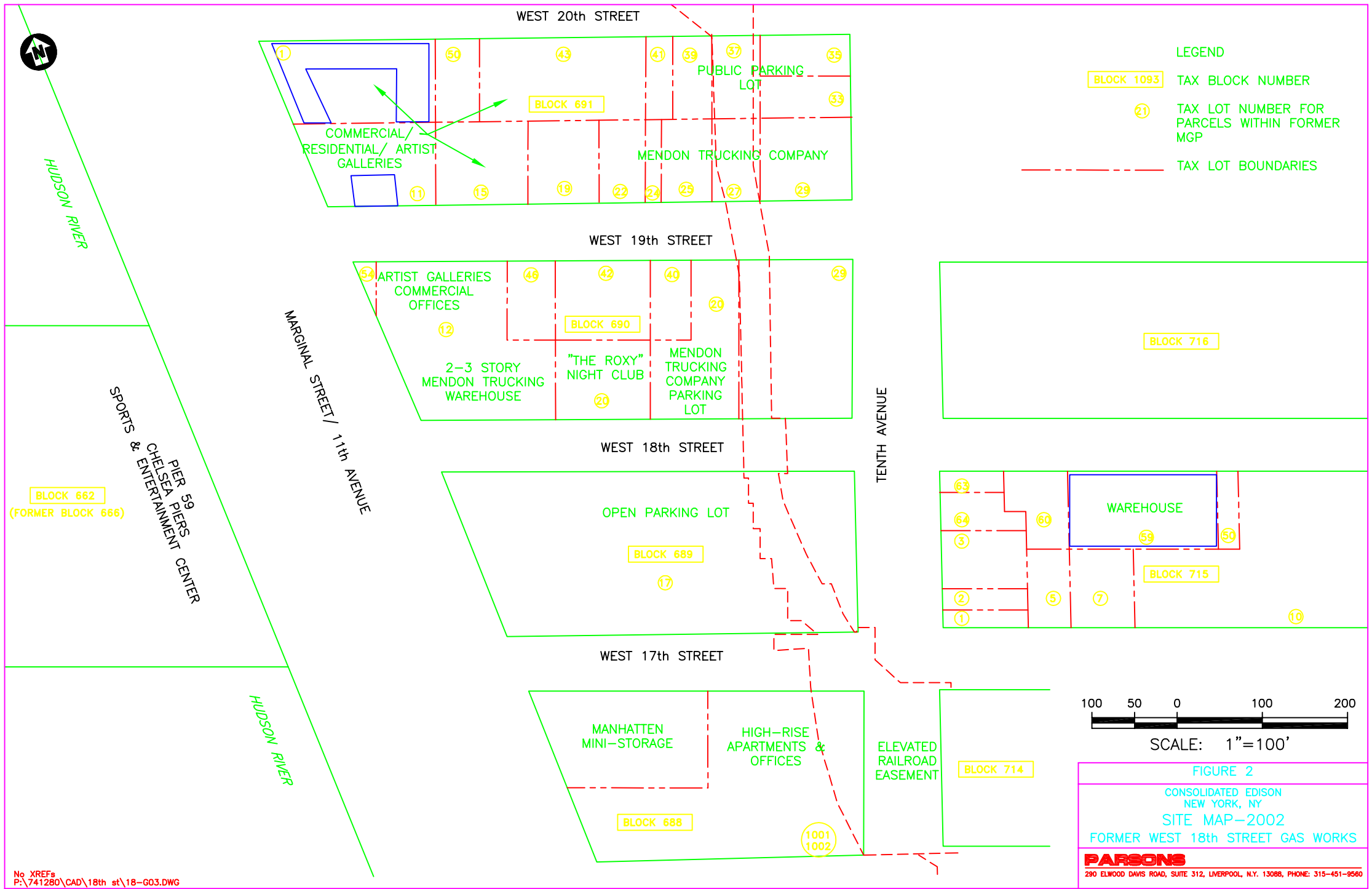
CONSOLIDATED EDISON
NEW YORK, NEW YORK

SITE LOCATION MAP FORMER WEST 18TH STREET GAS WORKS

PARSONS

DESIGN * RESEARCH * PLANNING

290 Elwood Davis Road, Suite 312, Liverpool, New York 13088 * (315) 451-9560
Offices in Principal Cities



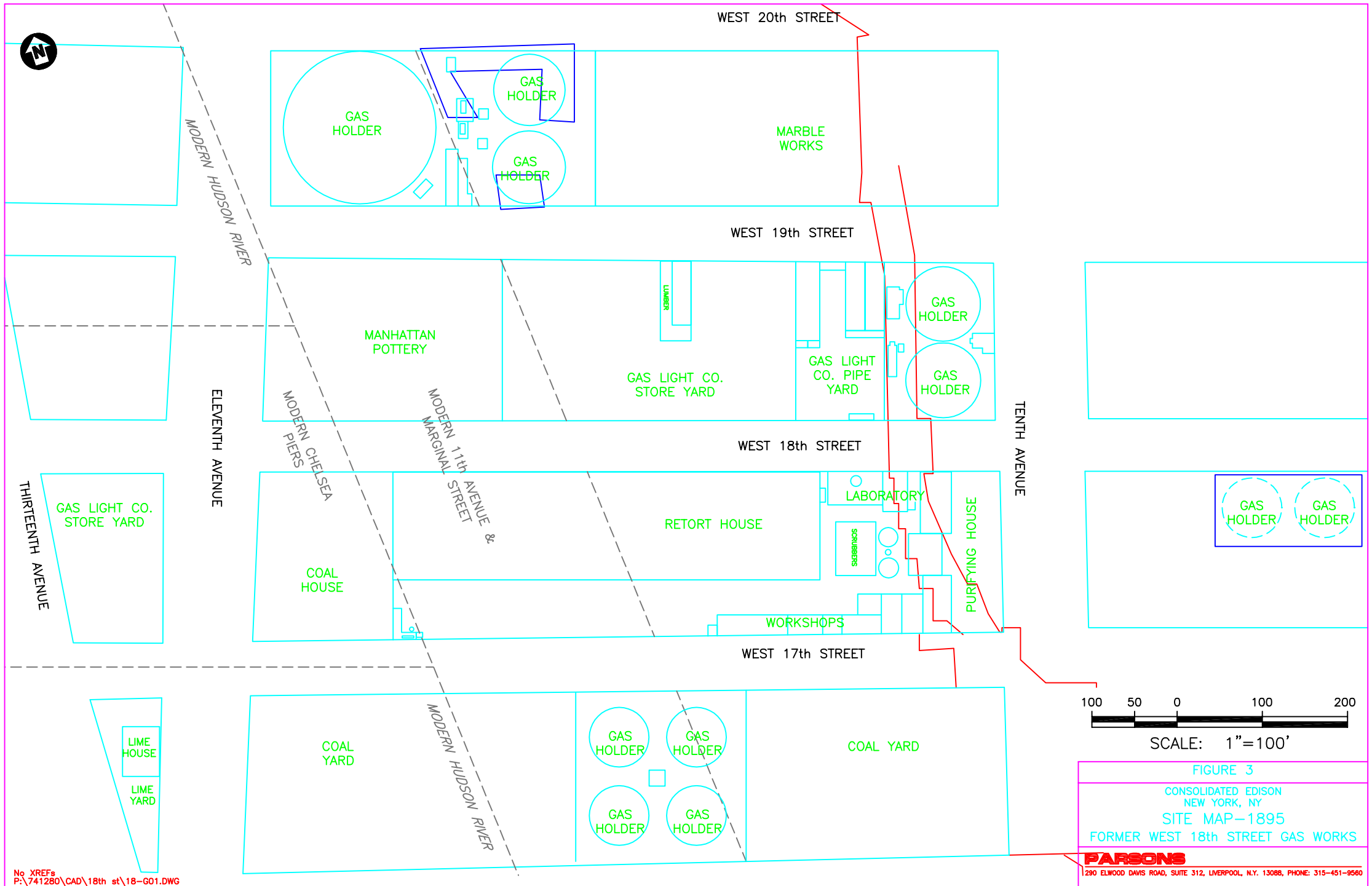


FIGURE 3
CONSOLIDATED EDISON
NEW YORK, NY
SITE MAP-1895
FORMER WEST 18th STREET GAS WORKS

PARSONS
1290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

Figure 4: 1865 Viele map

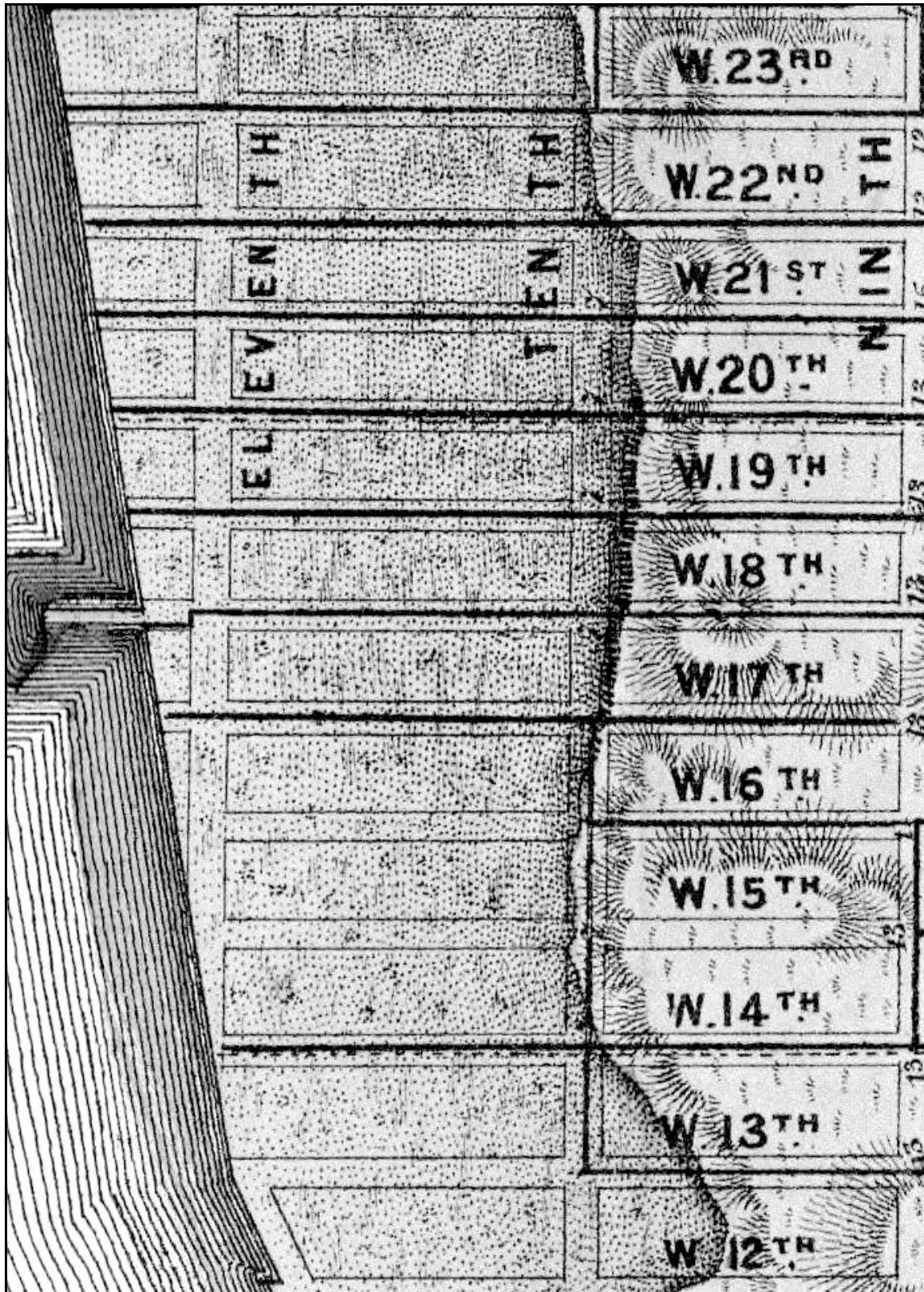


Figure 5: 1836 Colton map

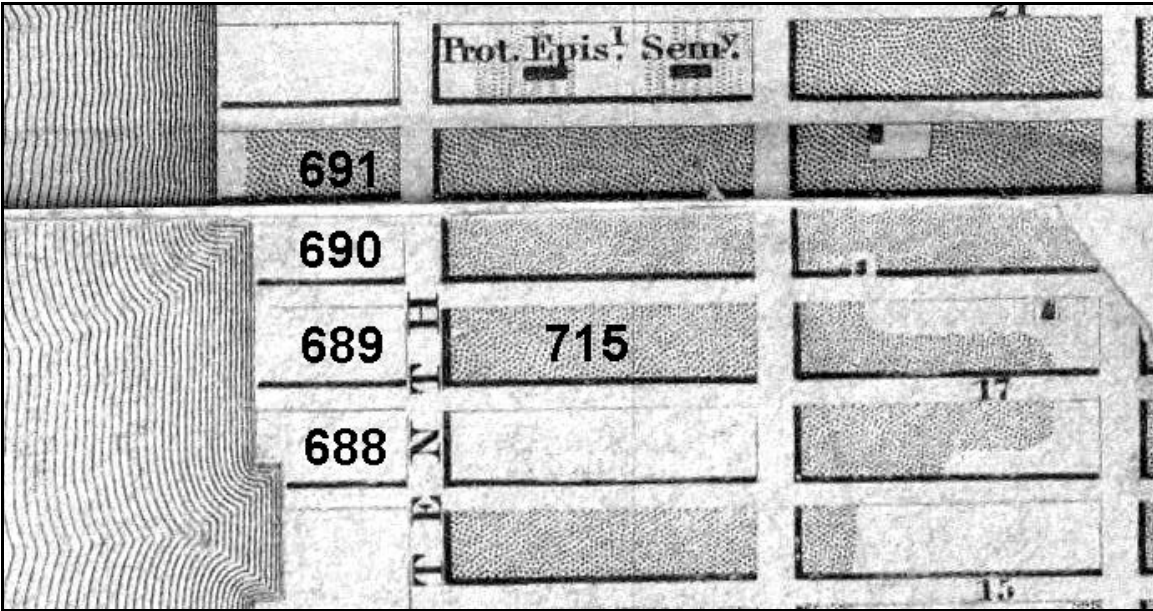


Figure 6a: 1852 Dripps map, Blocks 688 and 689

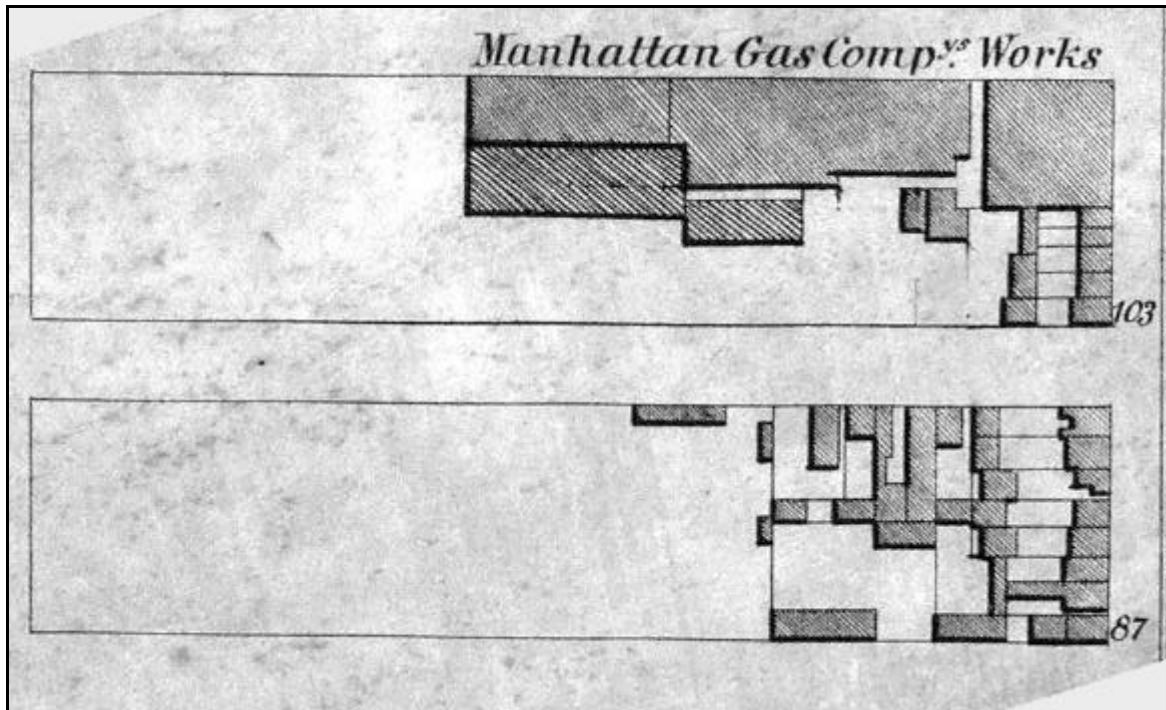


Figure 6b: 1852 Dripps map, Blocks 690 and 691

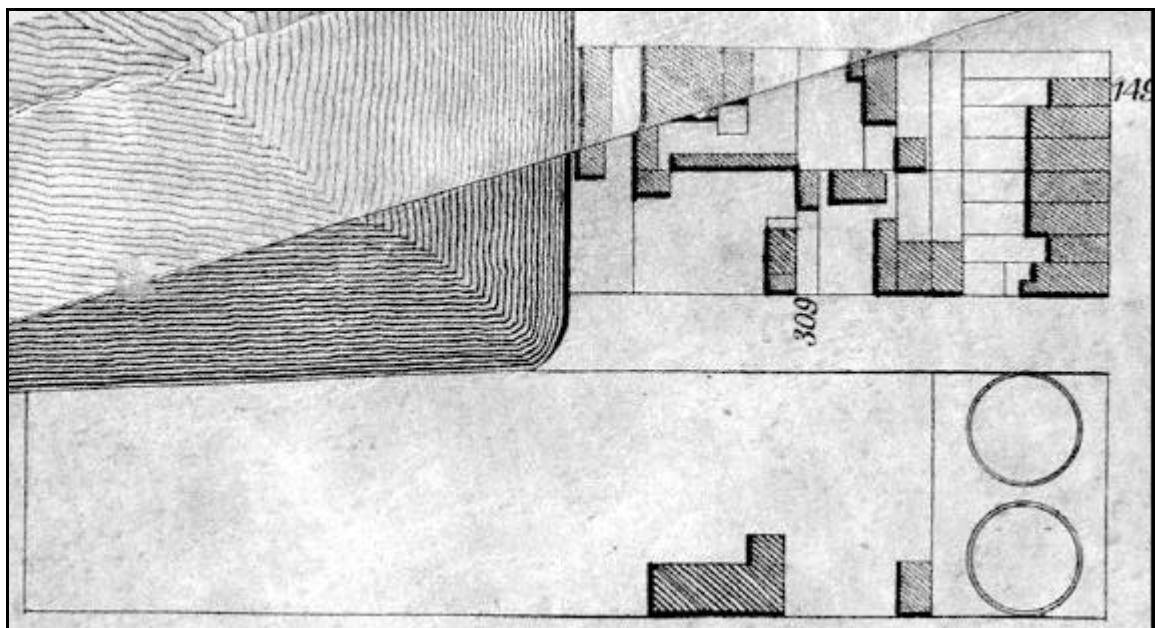


Figure 6c: 1852 Dripps map, Block 715

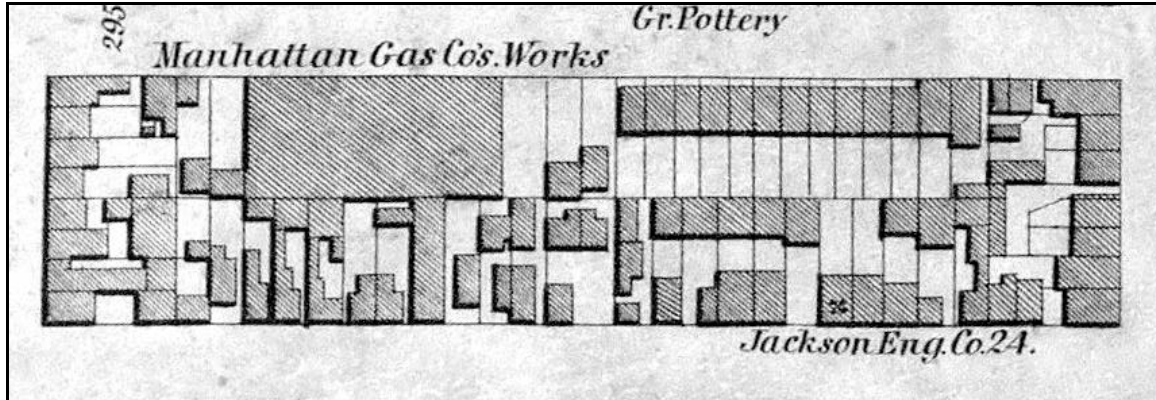


Figure 6d: 1852 Dripps map, Blocks 666 south and 666 center

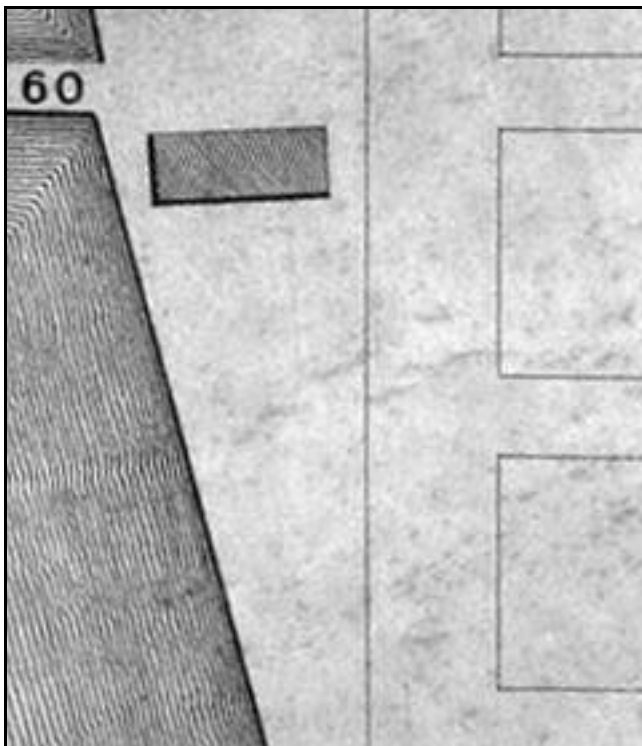


Figure 7a: 1859 Perris and Company map, Block 688

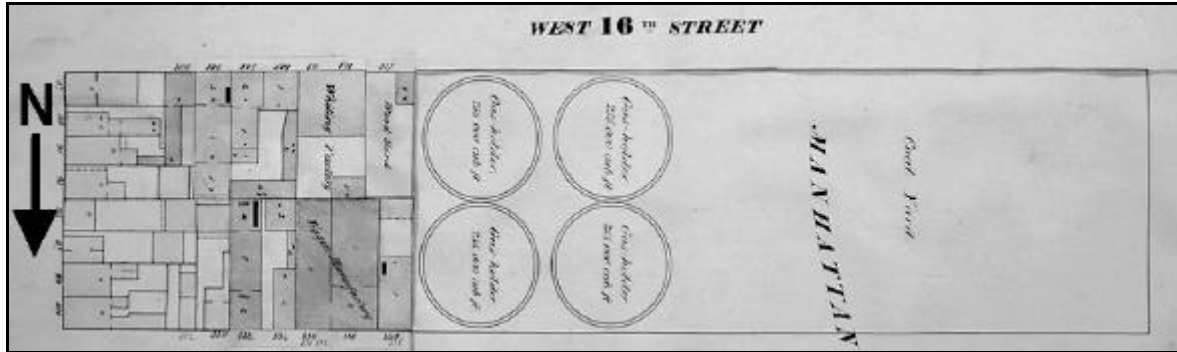


Figure 7b: 1859 Perris and Company map, Blocks 689 and 690

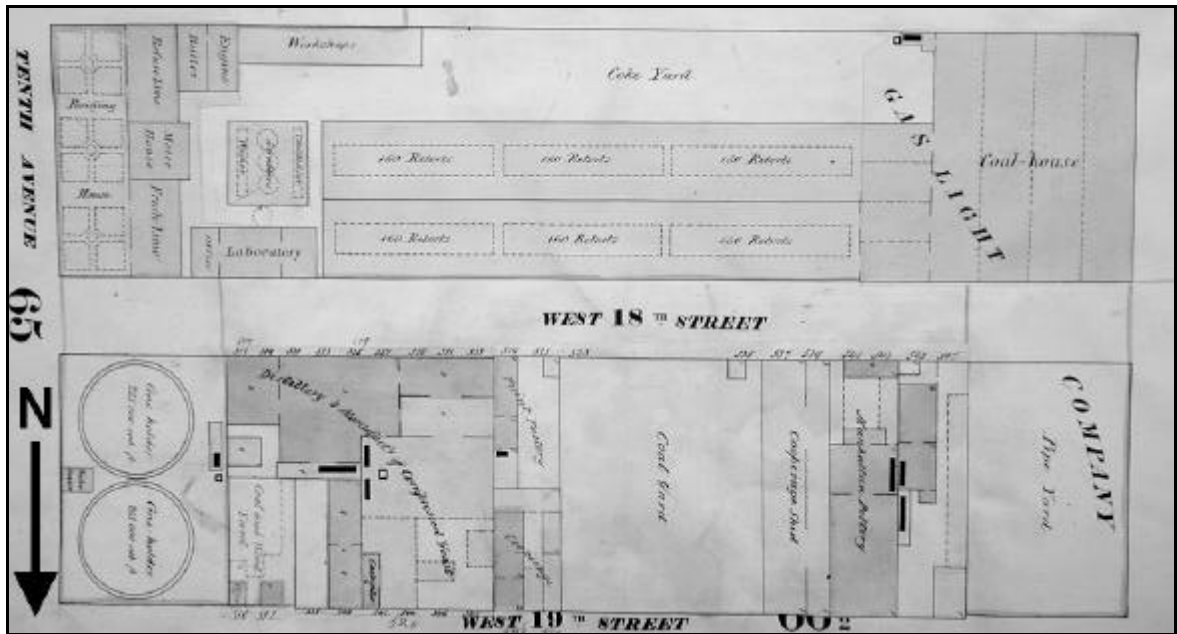


Figure 7c: 1859 Perris and Company map, Block 691

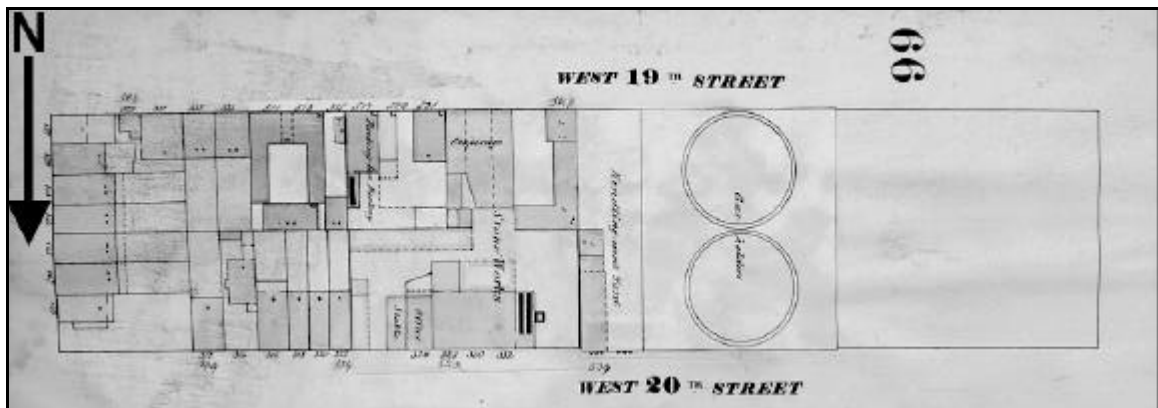


Figure 7d: 1859 Perris and Company map, Block 715

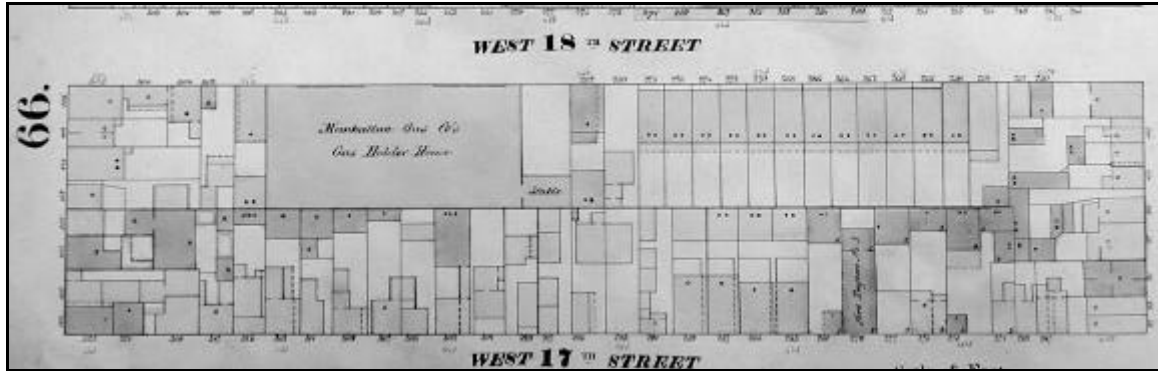


Figure 7e: 1859 Perris and Company map, Blocks 666 center and south

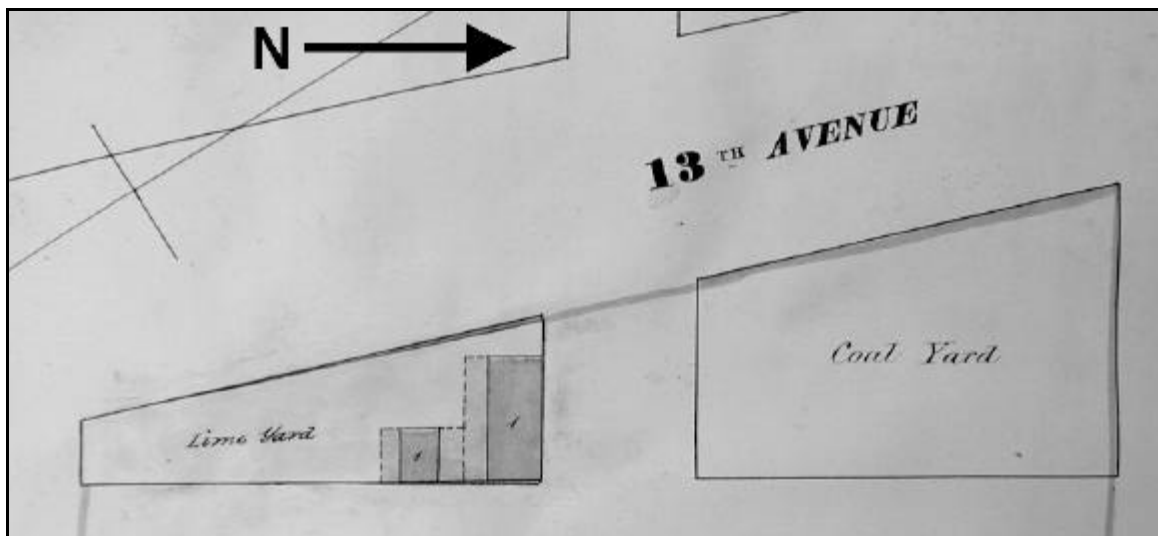


Figure 8a: 1867 Dripps map, Blocks 688-691

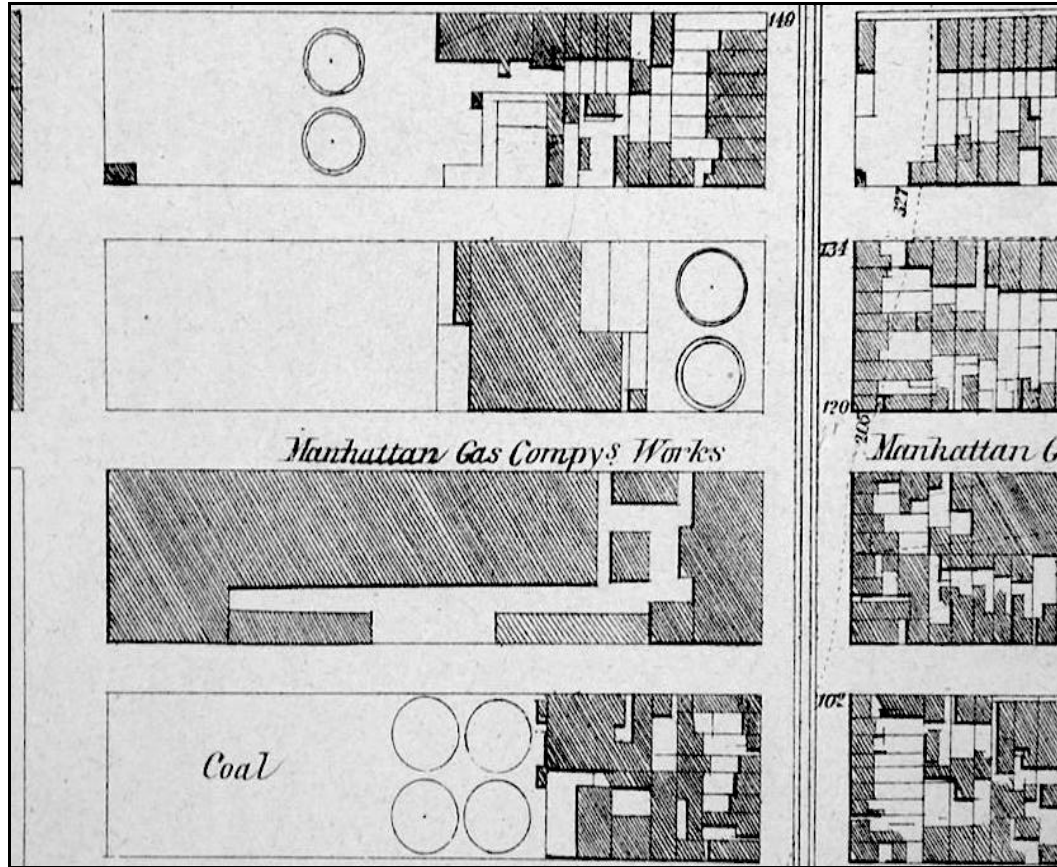


Figure 8b: 1867 Dripps map, Block 715

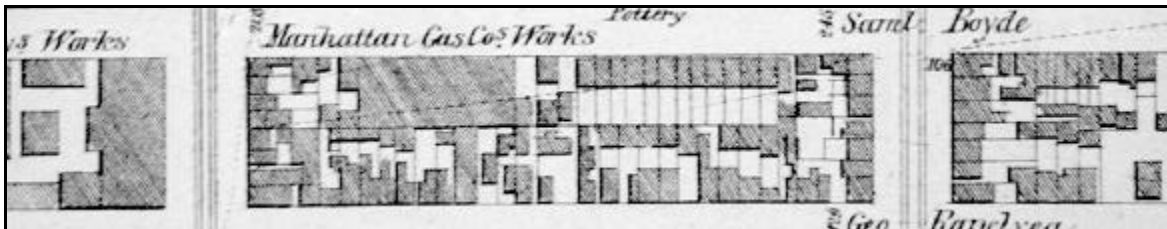


Figure 9a: 1869 Perris and Browne map, Blocks 688 and 689

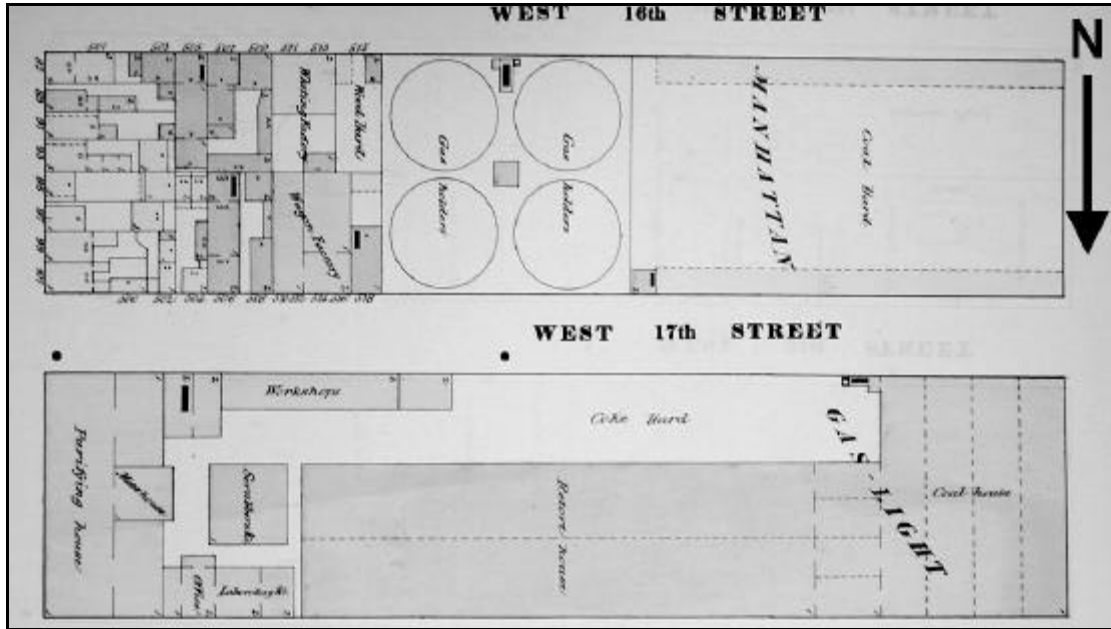


Figure 9b: 1869 Perris and Browne map, Blocks 690 and 691

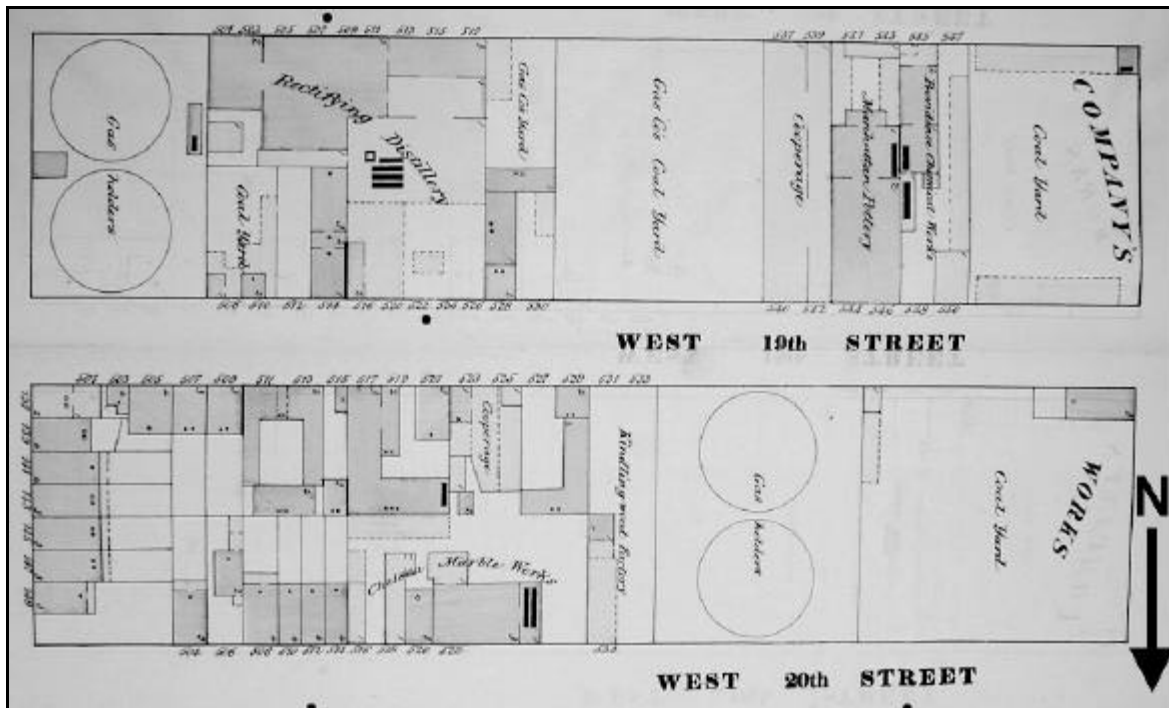


Figure 9c: 1869 Perris and Browne map, Block 715

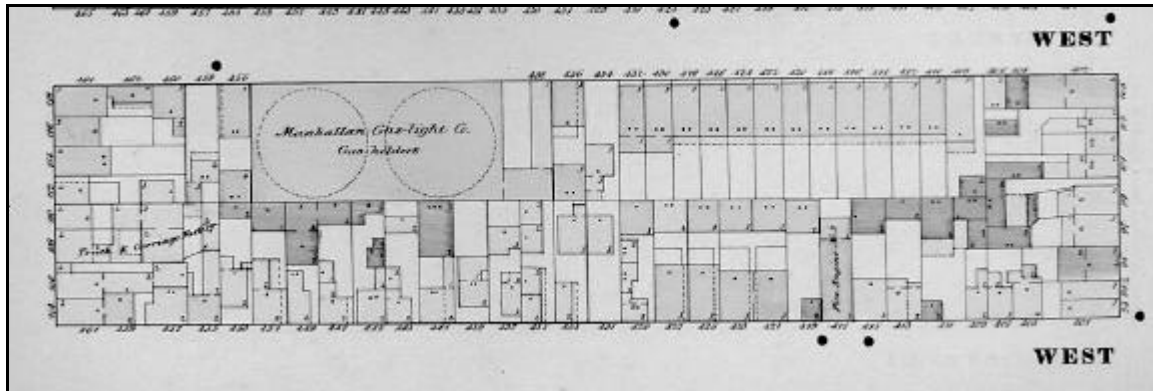


Figure 9d: 1869 Perris and Browne map, Blocks 666 center and south

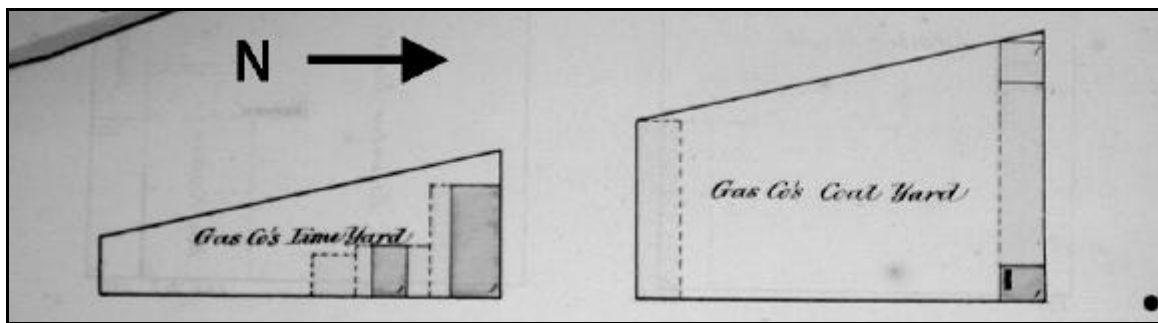


Figure 10a: 1874 Perris and Browne map, Block 688

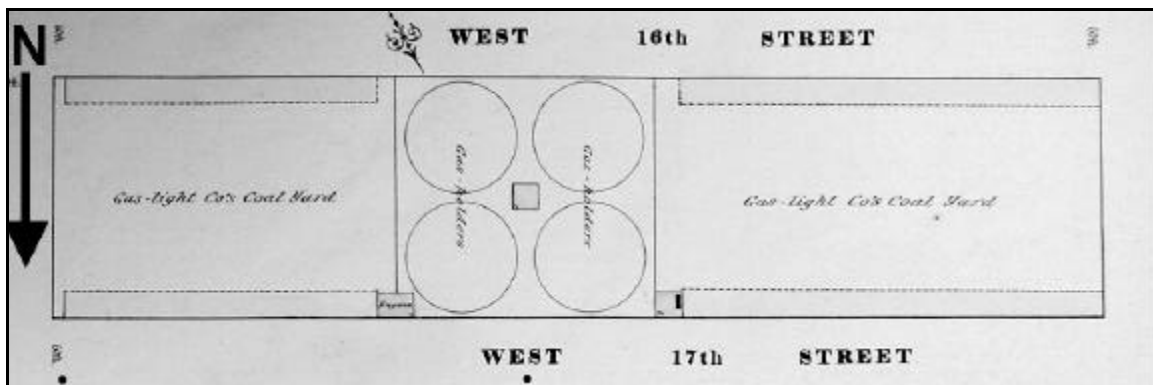


Figure 10b: 1874 Perris and Browne map, Block 689

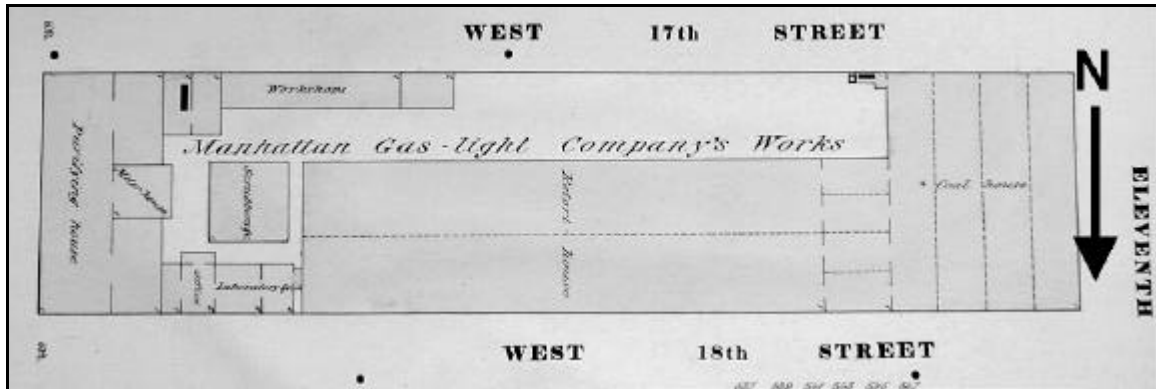


Figure 10c: 1874 Perris and Browne map, Blocks 690 and 691

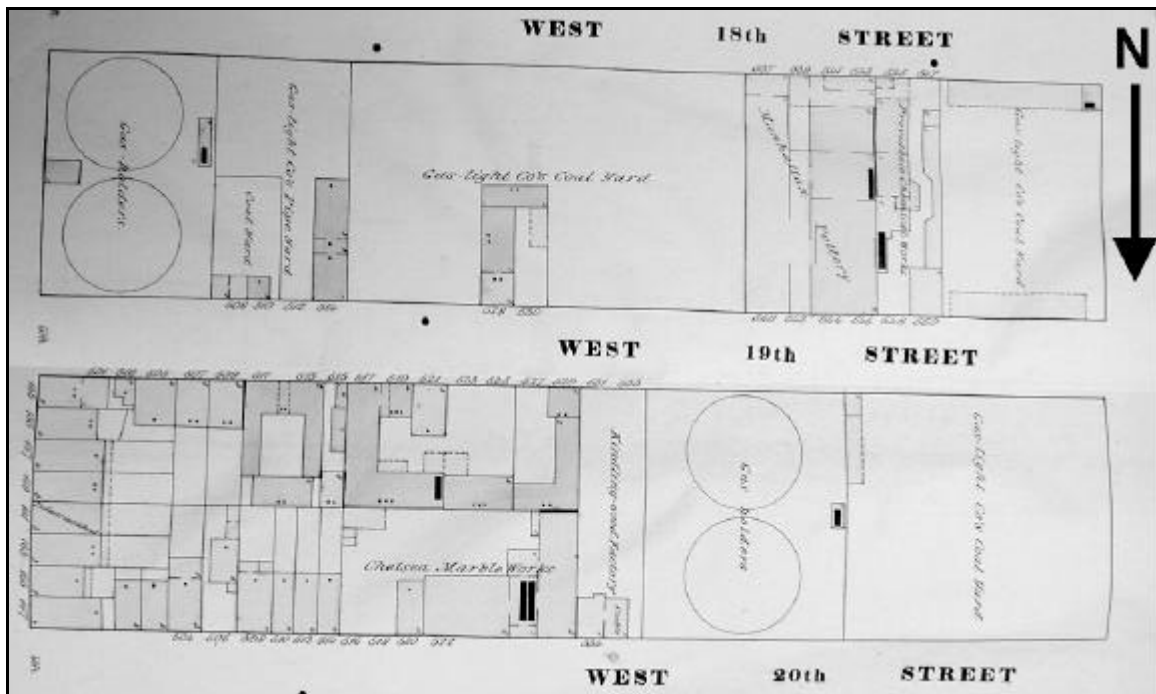


Figure 10d: 1874 Perris and Browne map, Block 715

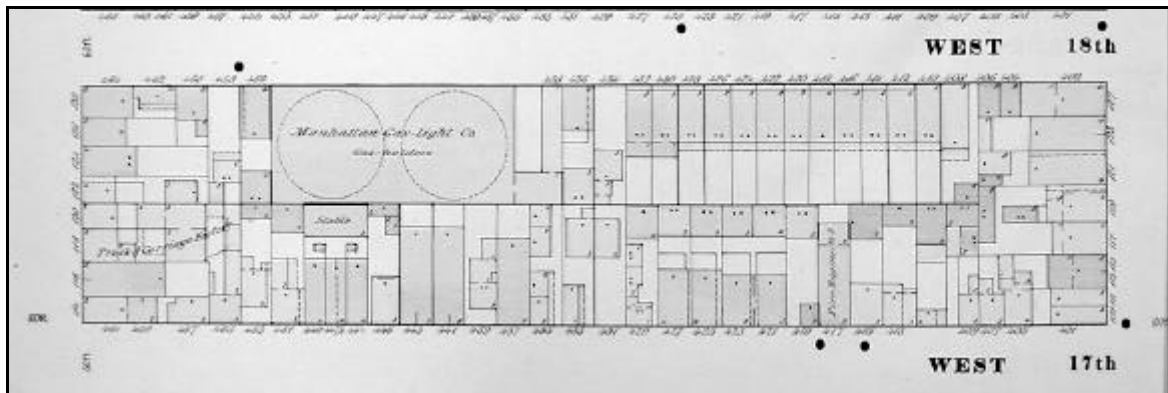


Figure 10e: 1874 Perris and Browne map, Blocks 666 south and 666 center

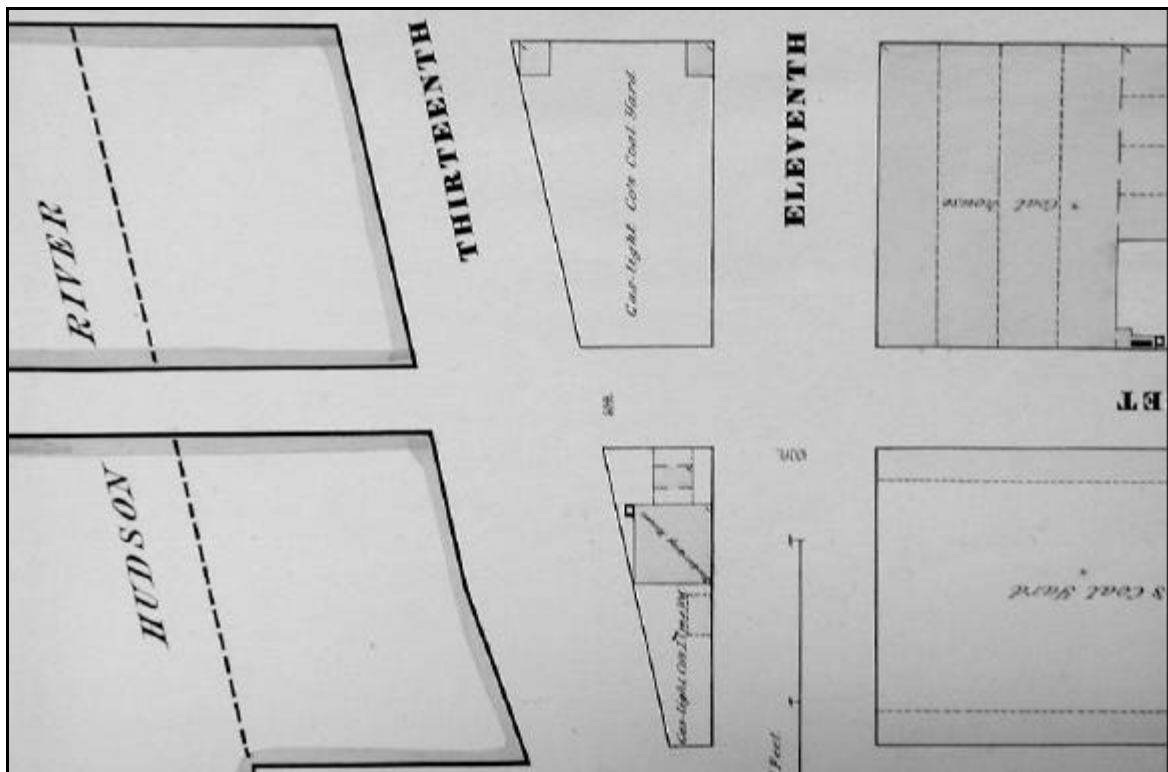


Figure 11: 1879 Taylor Bird's Eye Drawing

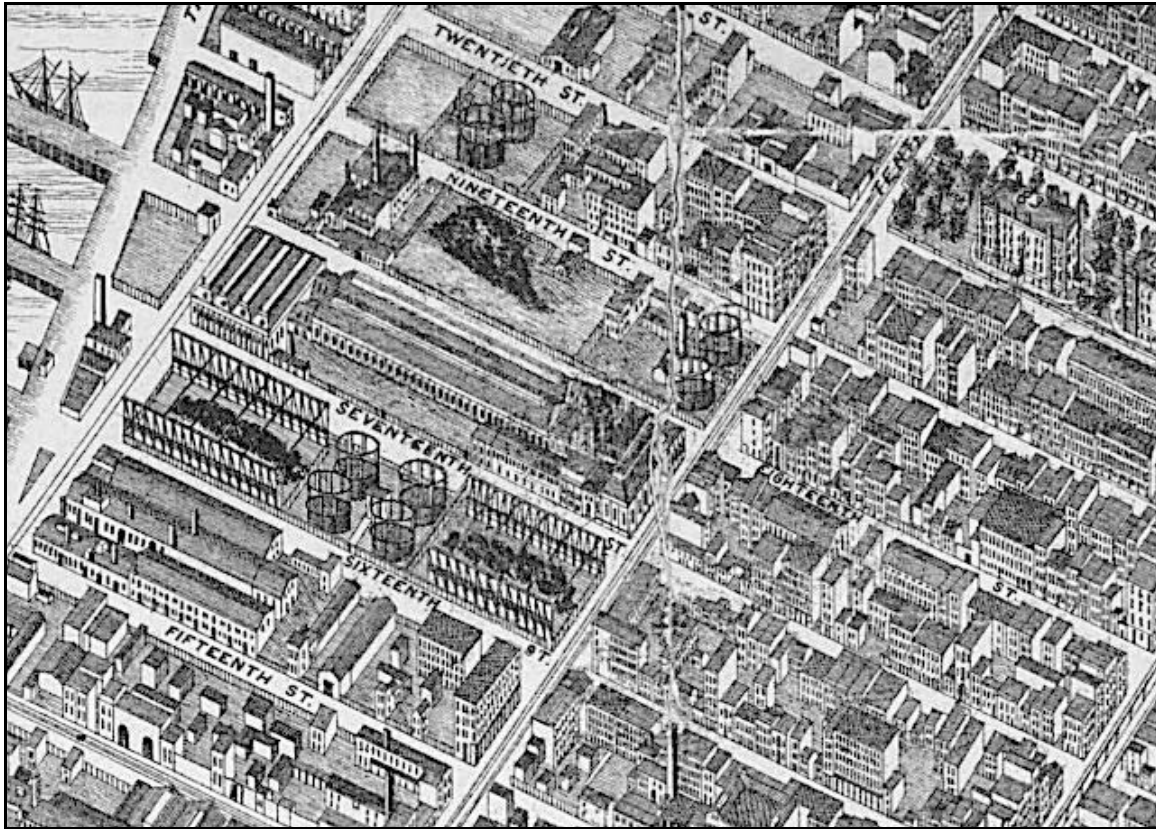


Figure 12a: 1887 Perris and Browne map, Blocks 688 and 689

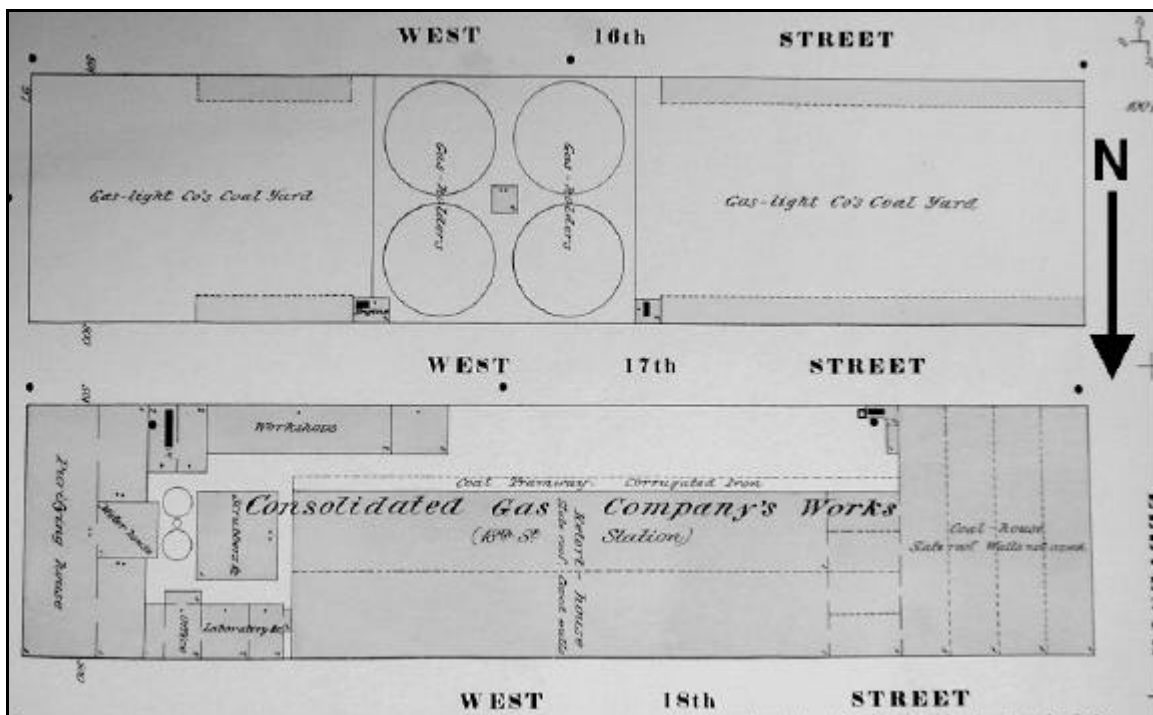


Figure 12b: 1887 Perris and Browne map, Blocks 690 and 691

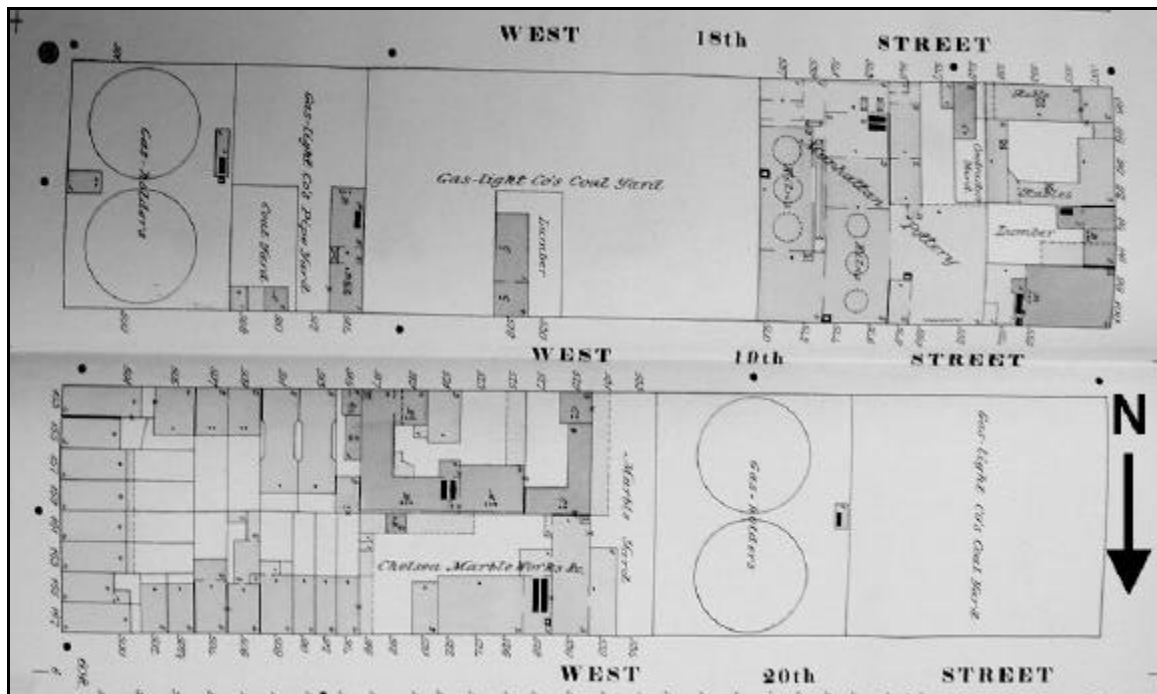


Figure 12c: 1887 Perris and Browne map, Block 715

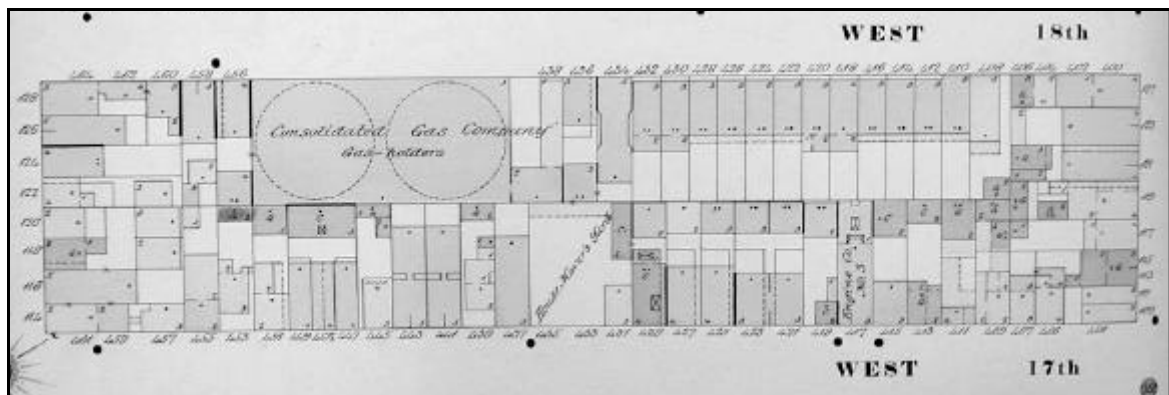
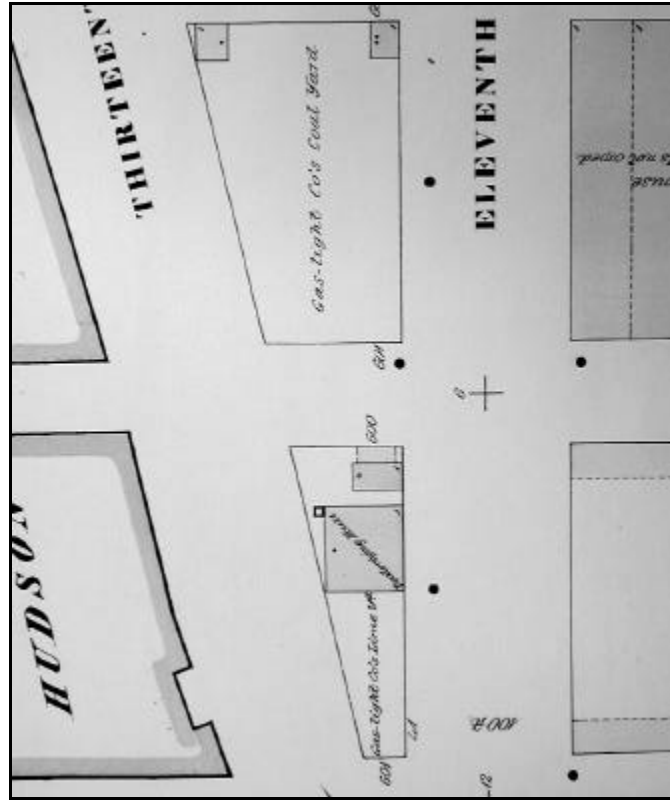


Figure 12d: 1887 Perris and Browne map, Blocks 666 south and 666 center



Architectural floor plan of a property at 44th Ave. The plan shows a large 2-story brick house (A) and a 1-story brick house (B) on the left, separated by a 17th St. alley. To the right of the alley is a large yard with four circular structures. Further right is another 1-story brick house (C) and a 1-story DA. Building (D). The plan includes various rooms like a kitchen, living room, and bedrooms, and is labeled with dimensions and street names.

Figure 15: 1903 Docks and Ferries Map (Block 691)

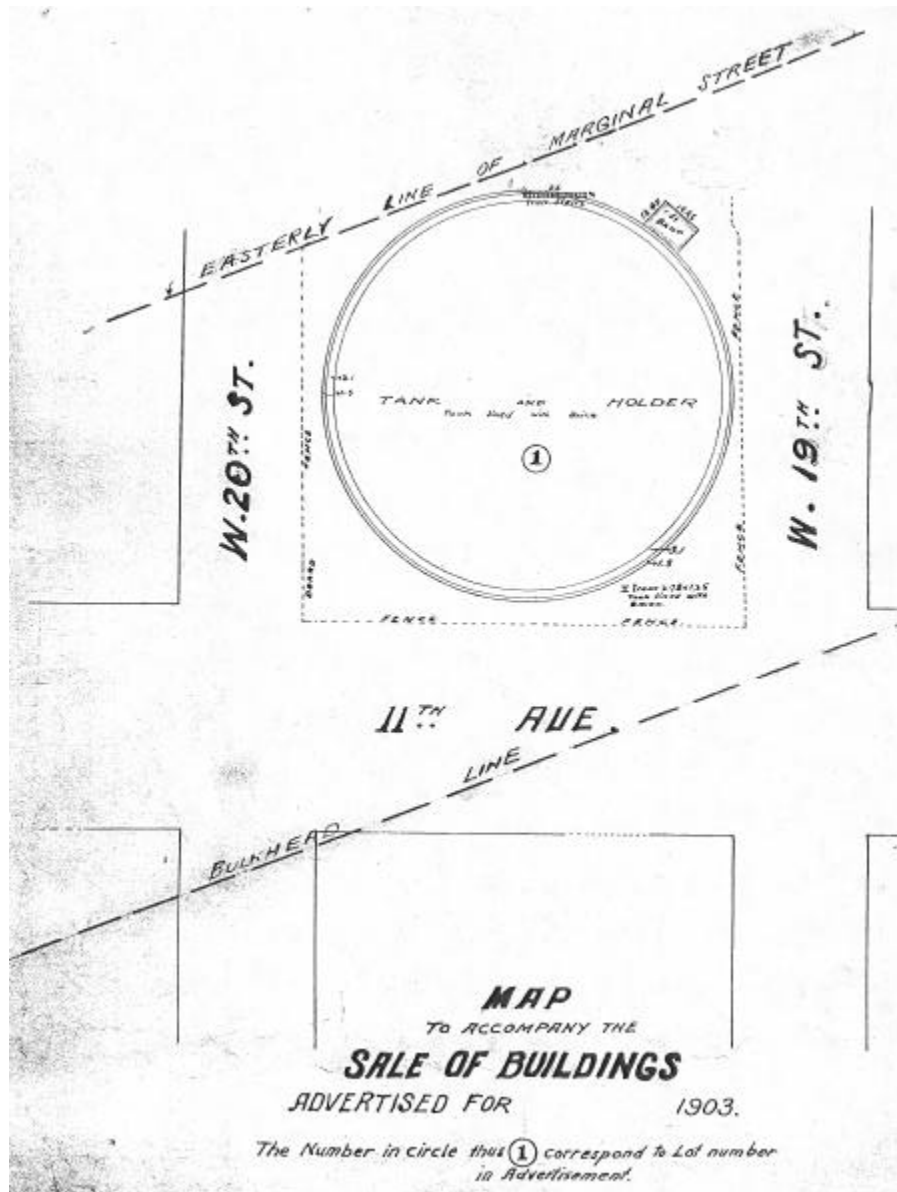


Figure 16: 1904 Docks and Ferries Map (Block 689)

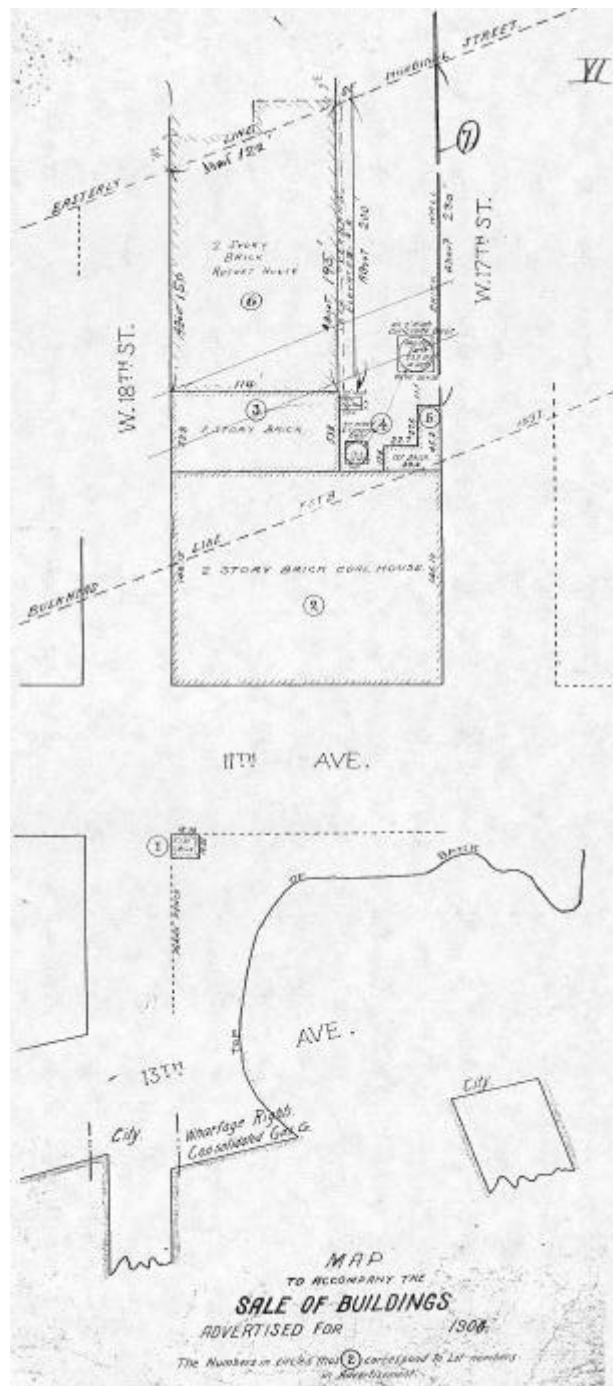


Figure 17: 1904 Docks and Ferries Map (Block 688)

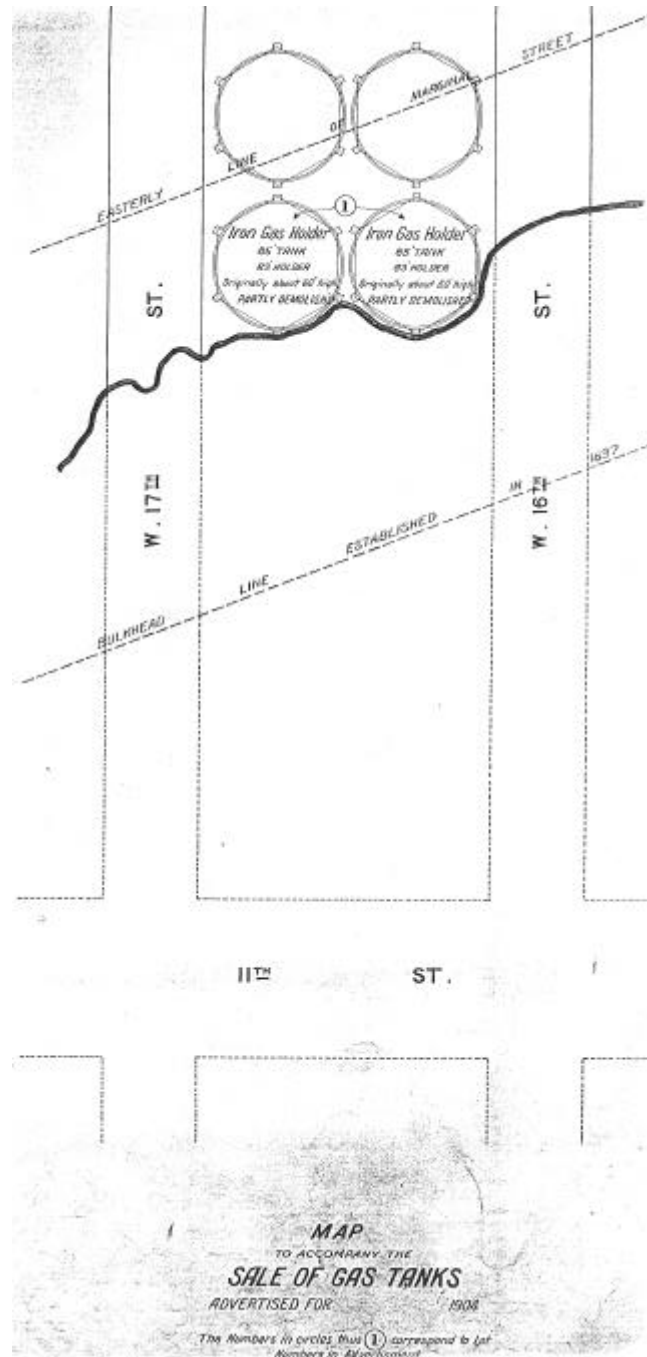
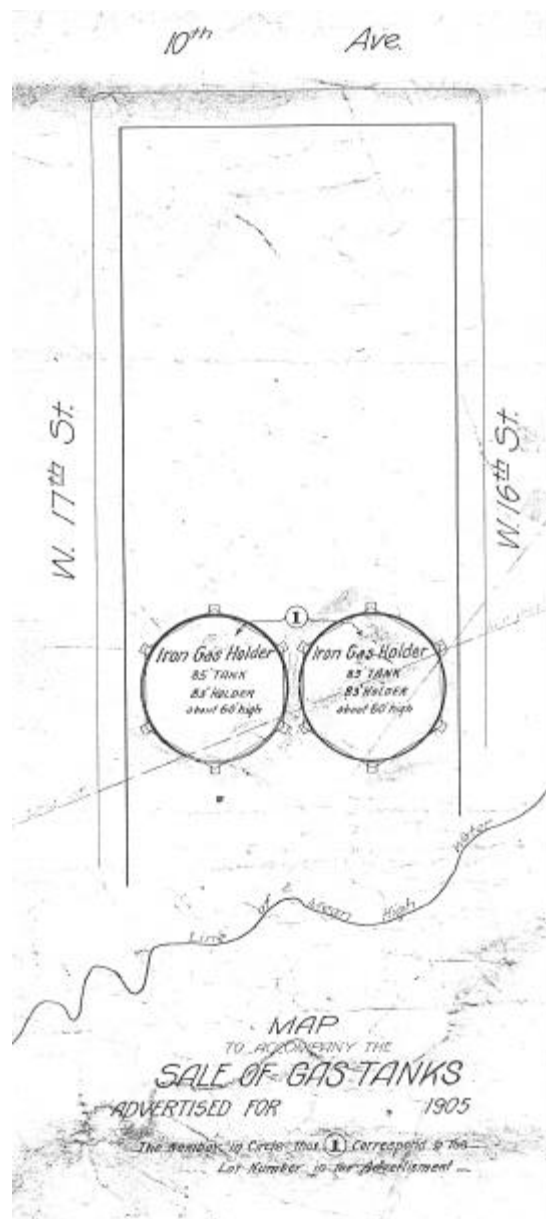


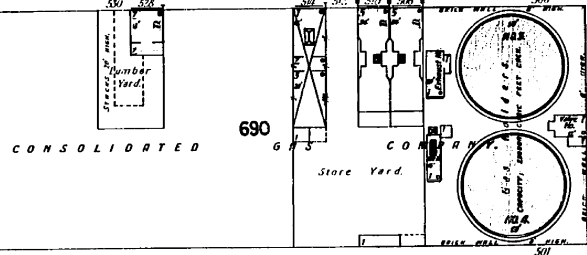
Figure 18: 1905 Docks and Ferries Map (Block 688)



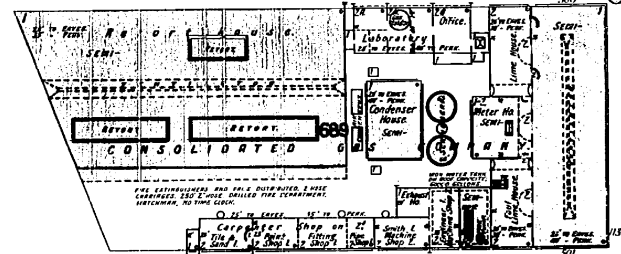
43

WEST NINETEENTH STREET

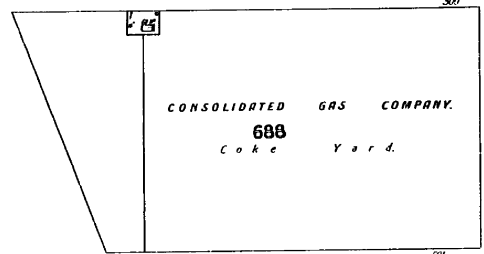
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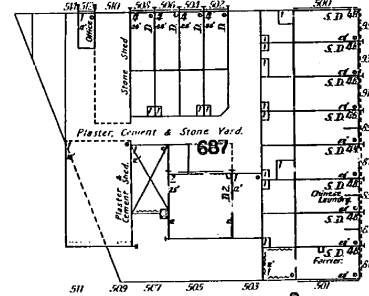
WEST EIGHTEENTH ST.



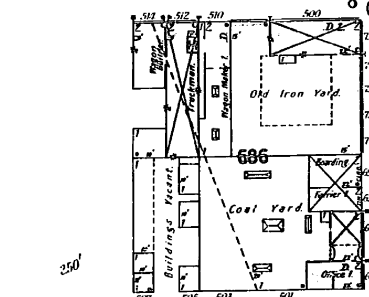
W. SEVENTEENTH ST.



W. SIXTEENTH ST.



W. FIFTEENTH ST.



W. 14TH ST.

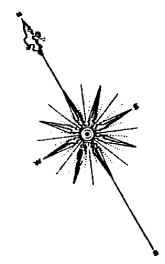
39

RIVER

52

HUDSON

MARGINAL



51

41

AVENUE

TENTH

40



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43

53

RIVER

52

HUDDSON



Scale of Feet.
0 50 100 150

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51

WEST NINETEENTH STREET

WAGON YARD

WAGON YARD

WEST EIGHTEENTH ST.

AVENUE

AVENUE

41

W. SEVENTEENTH ST.

W. SIXTEENTH ST.

ELEVENTH

TENTH

W. 15TH ST.

W. 14TH ST.

39

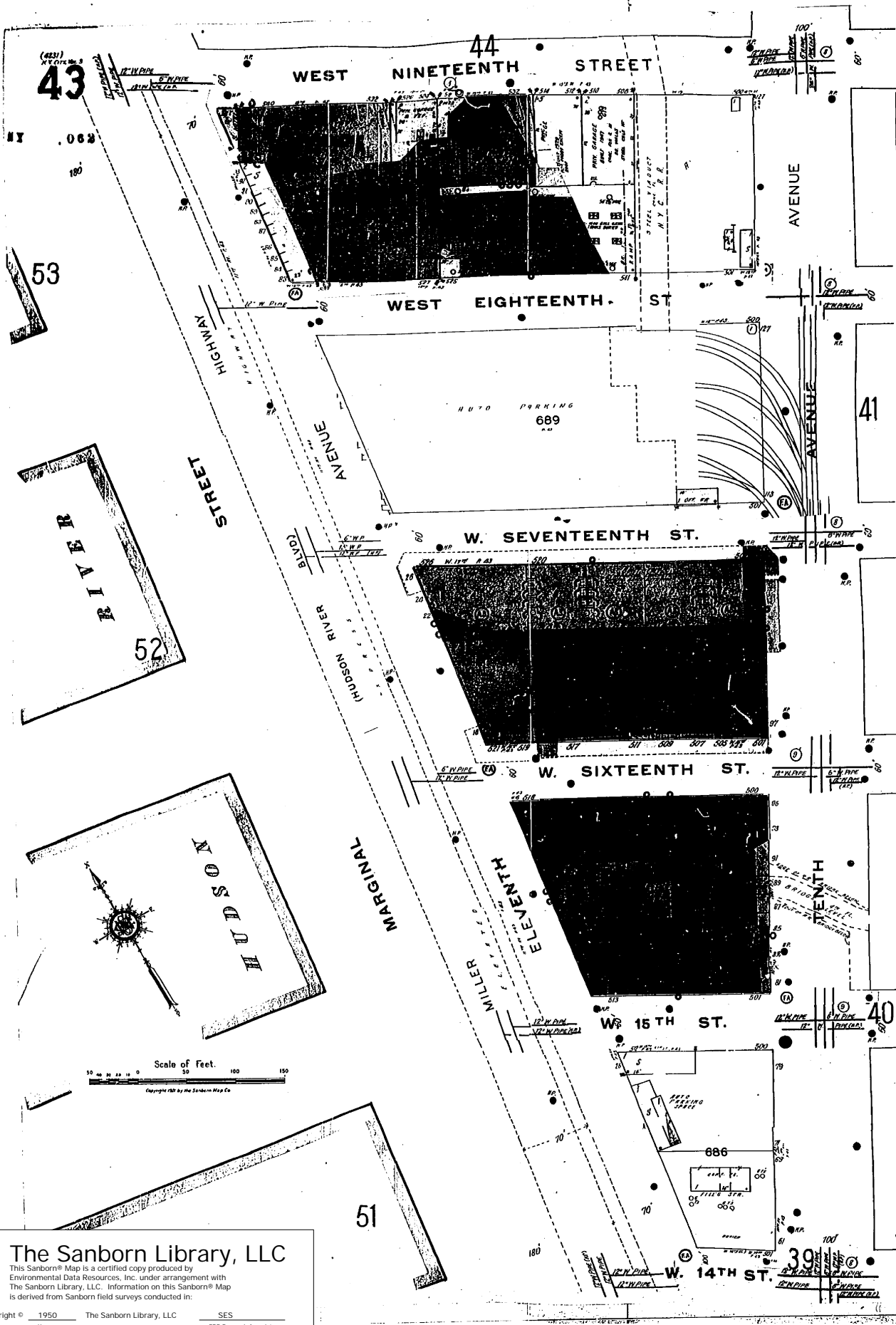
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43

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WEST NINETEENTH STREET

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WEST EIGHTEENTH ST

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W. SEVENTEENTH ST.

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W. SIXTEENTH ST.



Scale of Feet.
0 50 100 150
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MARGINAL

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W. 14TH ST.

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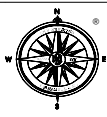
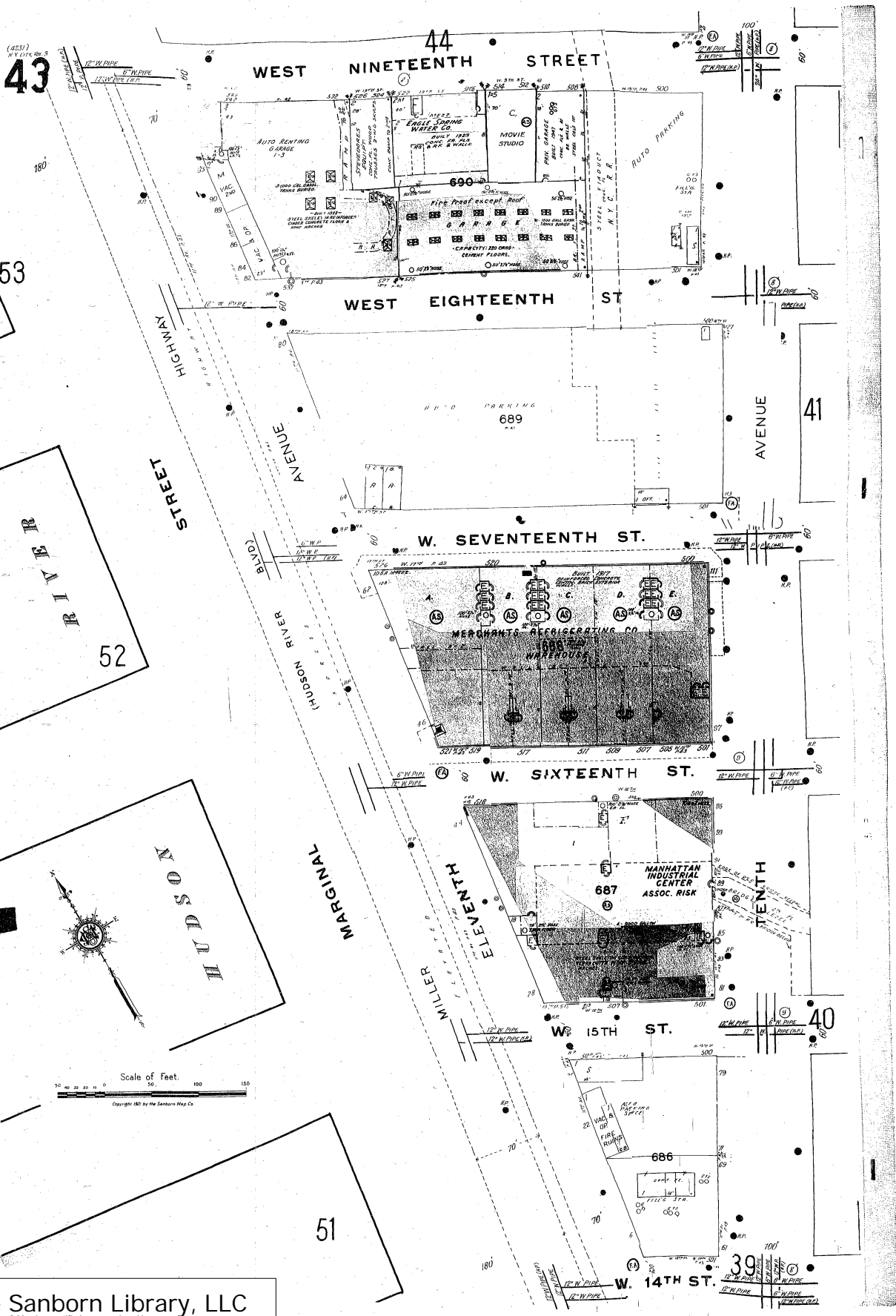


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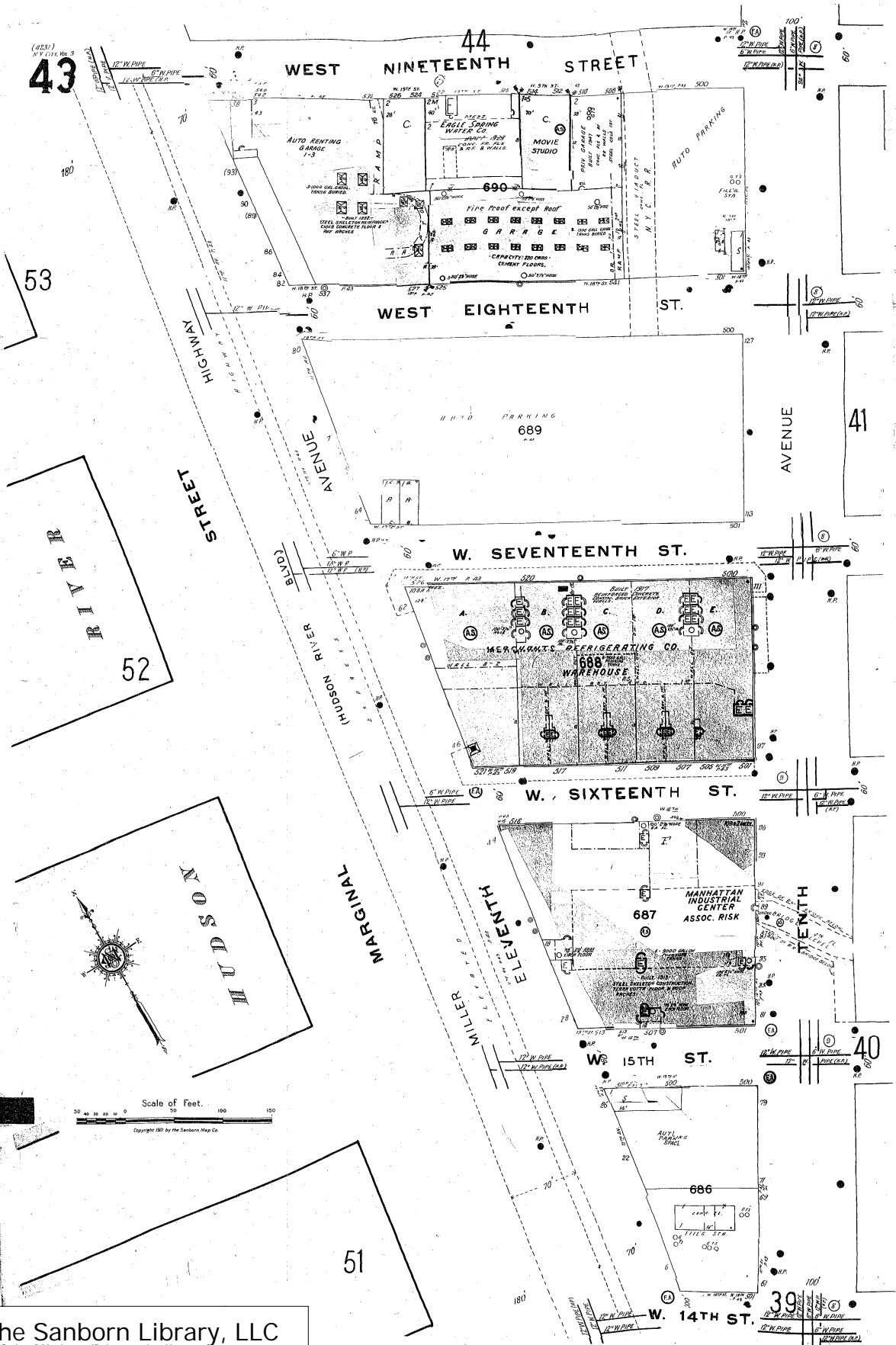


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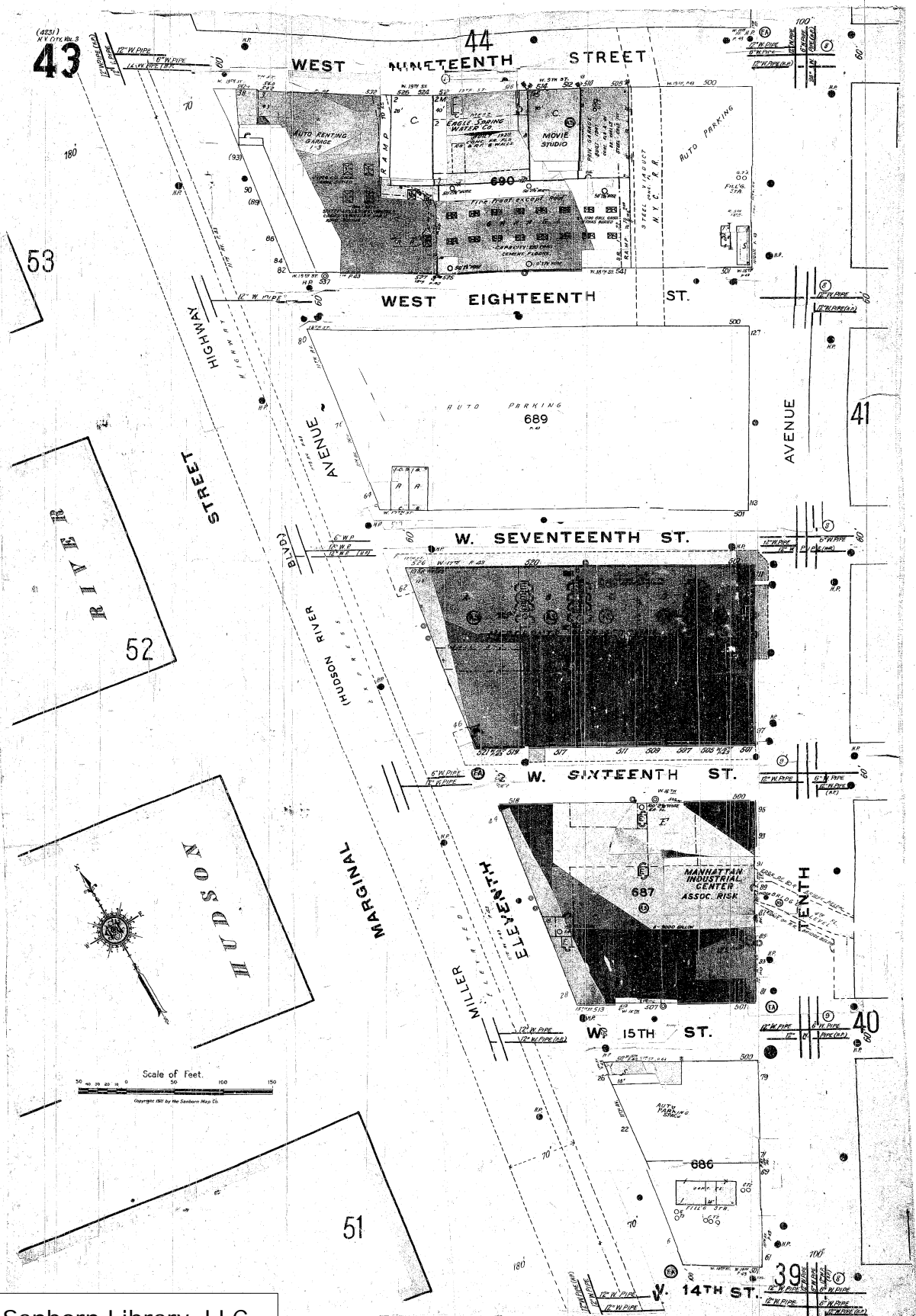


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43
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53

52

HUDSON
STREET

Scale of Feet.
0 50 100 150
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51

44
WEST NINETEENTH STREET

WEST EIGHTEENTH ST.

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W. SIXTEENTH ST.

W. 15TH ST.

W. 14TH ST.

AVENUE

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AUTO RENTING GARAGE 1-3

ENGINE DRIVING WATER CO.

MOVIE STUDIO

TRUCK PARKING

PARKING

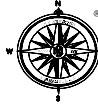
689

687

MANHATTAN INDUSTRIAL CENTER ASSOC. BLDG.

686

FILL'G STA.



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WEST NINETEENTH STREET

WEST EIGHTEENTH ST.

W. SEVENTEENTH ST.

W. SIXTEENTH ST.

W. 15TH ST.

W. 14TH ST.

AVENUE

AVENUE

RIVER

STREET

HUDSON

MARGINAL

ELEVENTH

THIRTEENTH

AUTO RENTING GARAGE

MOVIE STUDIO

WATER CO.

STEEL STRUCTURE

STEEL STRUCTURE

STEEL STRUCTURE

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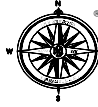
STEEL STRUCTURE

STEEL STRUCTURE

STEEL STRUCTURE

Scale of Feet.

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43
(0231)
N.Y.C. No. 3
(P. 43)

53

52

51

WEST NINETEENTH STREET

WEST EIGHTEENTH ST.

W. SEVENTEENTH ST.

W. SIXTEENTH ST.

W. 15TH ST.

W. 14TH ST.

41

40

39

STREET

AVENUE

AVENUE

ELEVENTH

TENTH



Scale of Feet
0 20 40 60 80 100 120 140 160

AUTO REPAIRING GARAGE

EARLE SODING WATER CO.

MOVIE STUDIO

GARAGE

MERCHANTS REFRIGERATING CO.

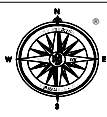
688

WAREHOUSE

MANHATTAN INDUSTRIAL CENTER ASSOC. RISK

687

686

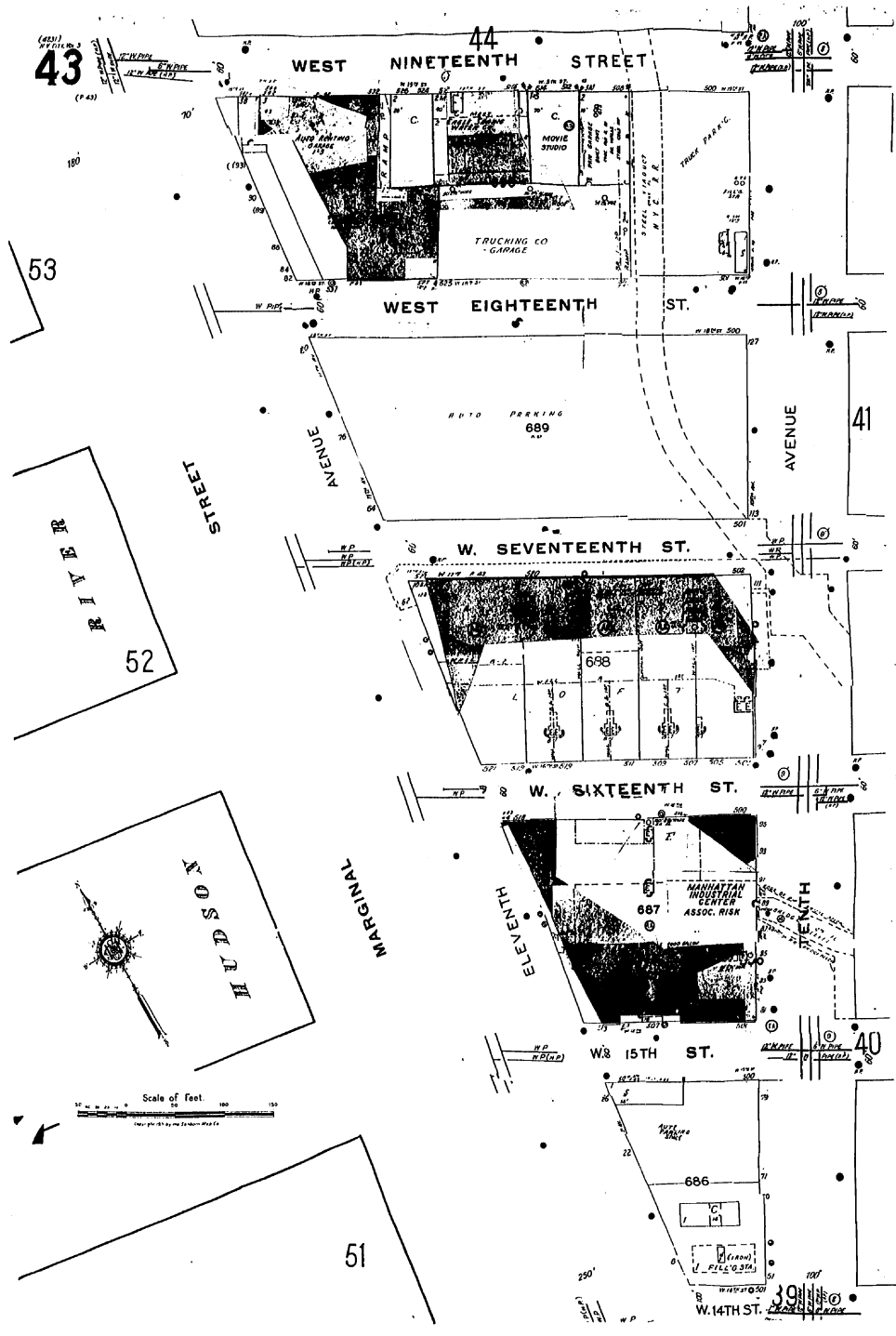


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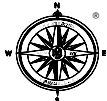
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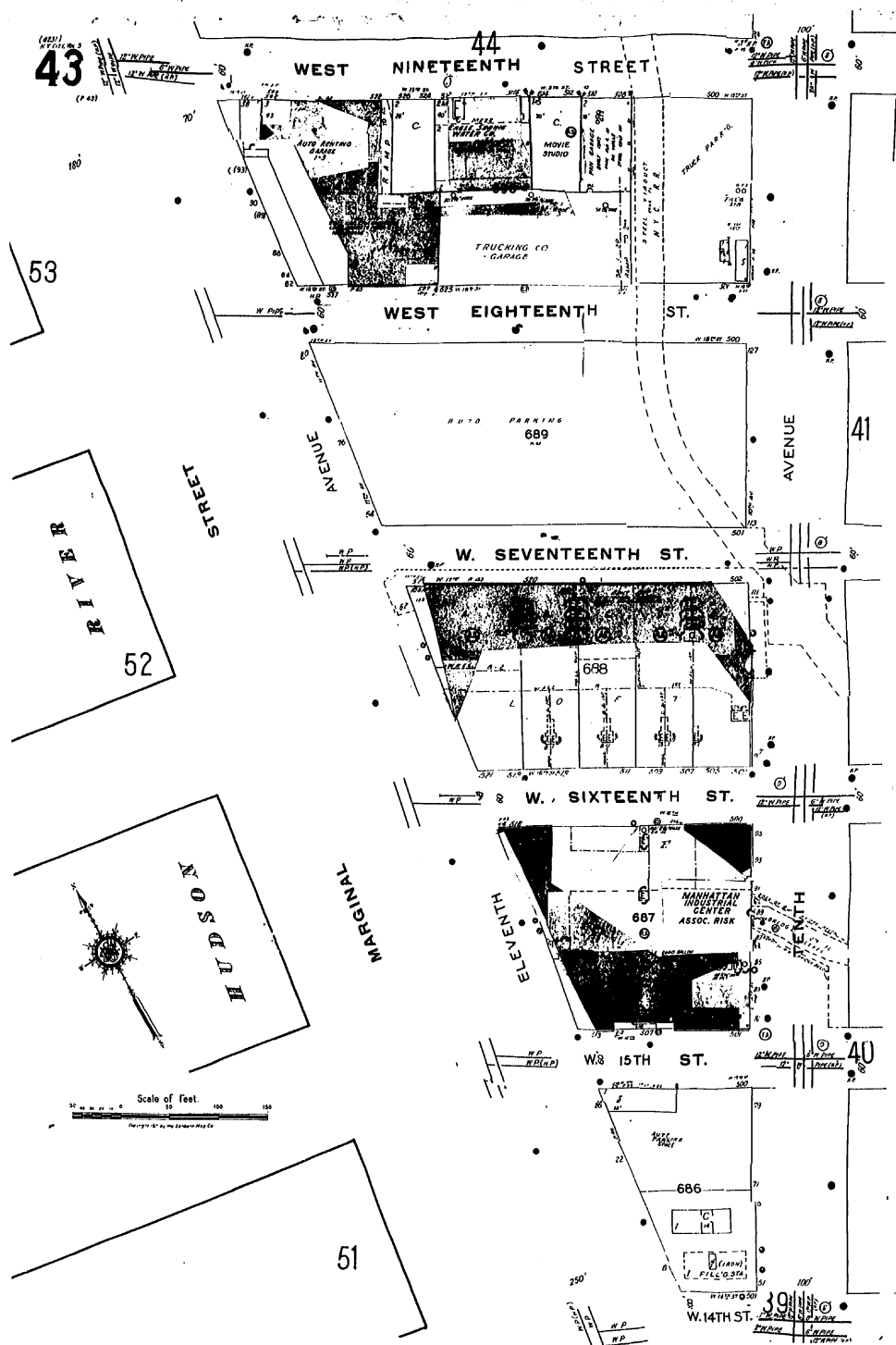


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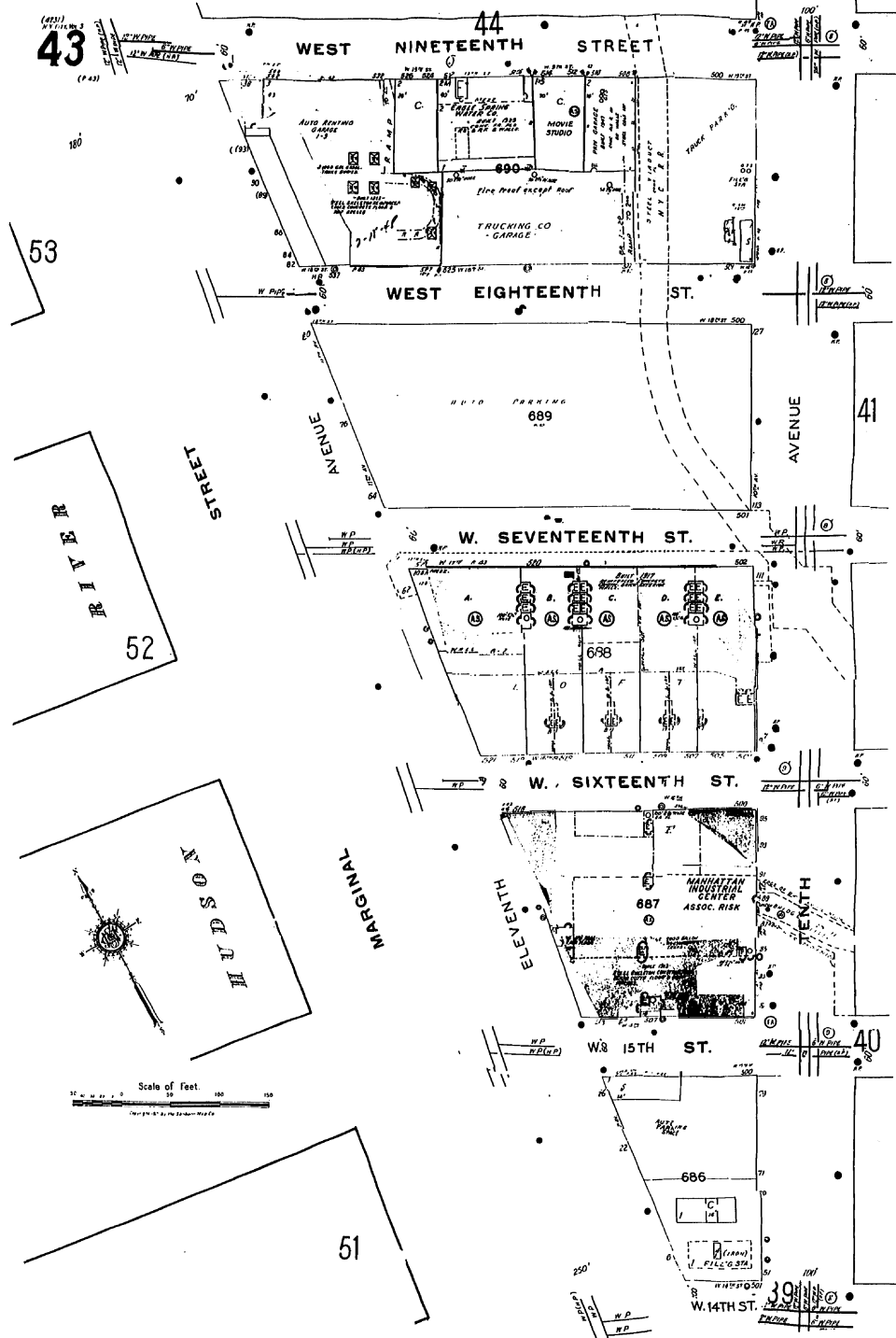


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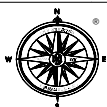
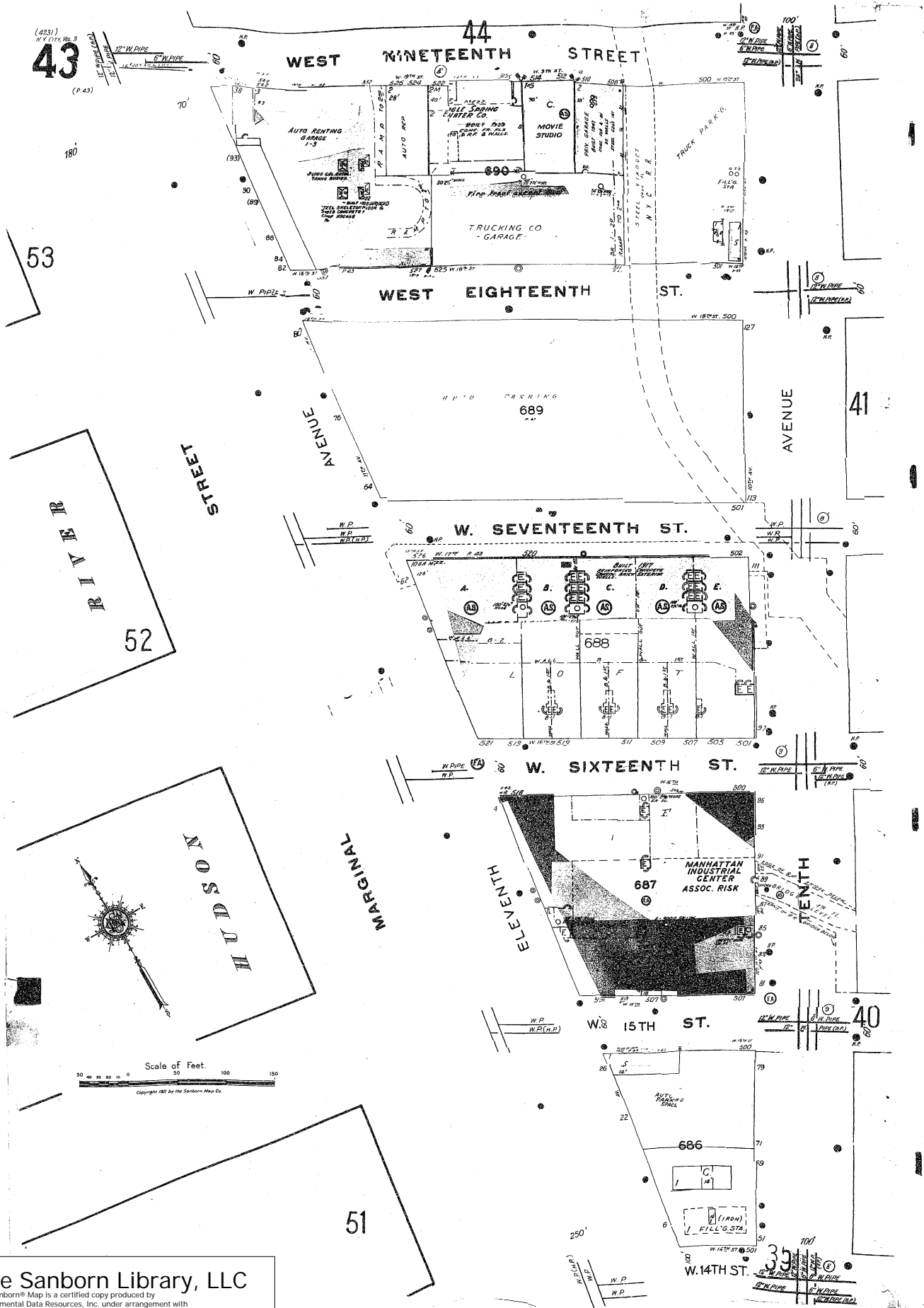


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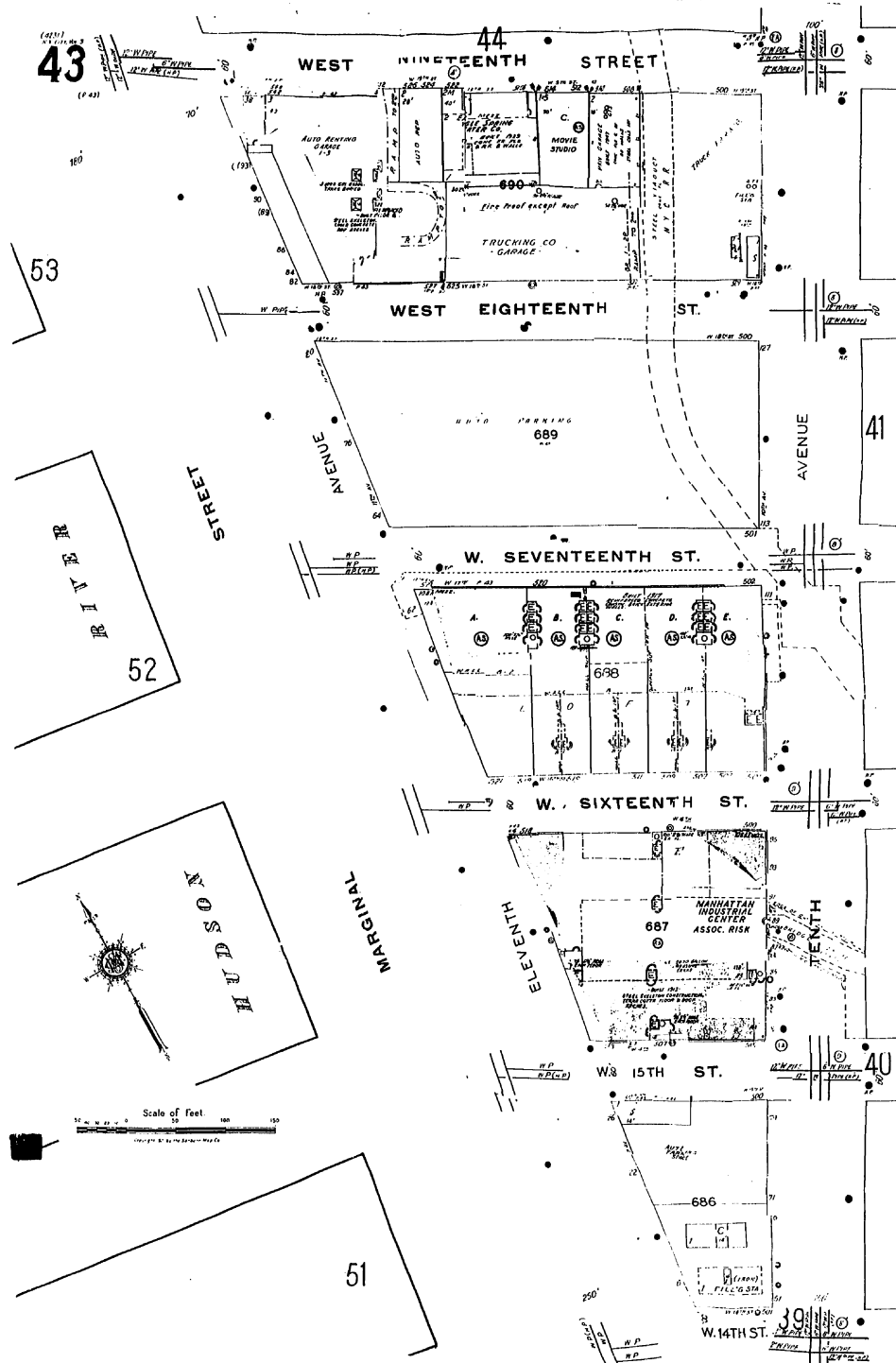


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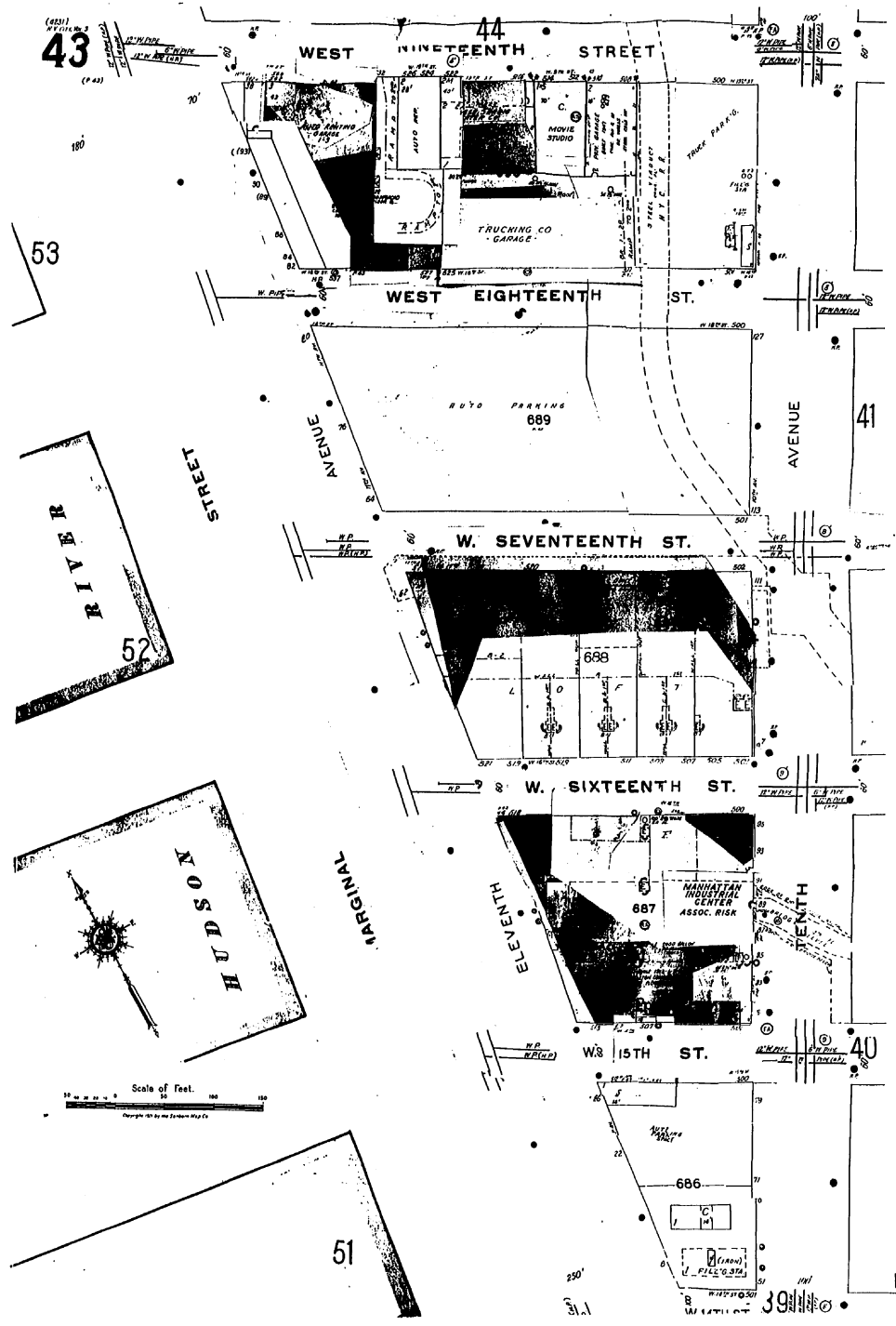


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APPENDIX A

SITE PHOTOGRAPHS

APPENDIX B

EDR REPORT

APPENDIX C

HISTORICAL PHOTOGRAPHS AND DATA

APPENDIX D

TITLE SEARCH REPORT