UNDERGROUND PIPE REMOVAL
WORK PLAN

Buffalo Terminal
Location No. 31-010
Buffalo, New York

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Prepared for:

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1.0 INTRODUCTION

Roux Associates, Inc. (Roux Associates) has prepared this Work Plan on behalf of ExxonMobil Oil Corporation (ExxonMobil) for underground pipe removal in several areas of the Buffalo Terminal (Site) located at 625 Elk Street, Buffalo, New York (Figure 1). The Site has been divided into nine geographic areas, which have been defined for the purpose of assessing environmental conditions and reporting the results of area-specific activities (Figure 2). These areas were designated according to the primary operations that occurred in that portion of the Site and are the following:

- Eastern Tank Yard Area (Former Disposal Area [ETYA]);
- Northeast Process and Storage Area (NPSA);
- Northern Tank Yard Area (NTYA);
- Former Refinery Area (FRA);
- Central Rail and Process Area (CRPA);
- Southern Tank Yard Area (STYA);
- Babcock Street Properties Area (BSPA);
- Administrative Offices and Operations Area (AOOA); and
- Elk Street Properties Area (ESPA).

The areas addressed in this work plan include the NPSA, NTYA, portions of the BSPA, portions of the FRA, portions of the CRPA, and AOOA.

The objectives of the work described in the Work Plan are to identify and remove abandoned underground process piping related to former refinery operations at the Site in areas north of Prenatt Street and west of the Erie-Lackawanna Railroad. Petroleum products (product) remaining in the non-active pipelines represent a potential source of impact to surrounding soil and ground water. Removal of the lines and any product contained within them are part of the source removal activities at the Site. The work entails:

- Identification and location of abandoned underground process piping using historical maps and aerial photographs, as well as a geophysical survey;
- Remove abandoned underground process piping; and

- Document all pipe removal activities.

Storm water and sanitary sewer piping may be located during the performance of the work described in the Work Plan; however, removal of sewers is not part of the scope of work. The remainder of the Work Plan is organized as follows:

- Section 2.0 provides a summary of the history of the selected areas of the Site, including ownership, past and present operations (i.e., buildings, tanks, etc) and spills or releases;
- Section 3.0 presents a summary of environmental conditions;
- Section 4.0 presents the scope of work for pipe identification and removal activities;
- Section 5.0 discusses report preparation and project schedule; and
- Section 6.0 presents references.

Included with the Work Plan is the following appendix:

- Appendix A: Daily Pipe Removal Inspection Form

2.0 DESCRIPTION AND HISTORY OF SELECTED AREAS OF THE SITE

The historical information presented in this Section was obtained from the document entitled "History of Operations at Buffalo Terminal" (Roux Associates, 2000). Historically, the major Site refinery and terminal operations occurred south of Elk Street in an area of approximately 89 acres. The petroleum refining operations at the Site began during 1880. During the early period of refining, several petroleum companies occupied portions of the Site including Buffalo Pipeline Company, Solar Oil Company, Tidewater Pipe Line Company, Buffalo Lubricating Oil Company, and Atlas Refining Company. The majority of the Site was purchased by Standard Oil Company of New York (SOCONY), ExxonMobil's predecessor, in 1892. In May 1981, the Site terminated all refinery operations. The Site continued as a distribution terminal, receiving product via a pipeline and barge. Throughout the Site's history, the areal extent of property owned by ExxonMobil changed as portions of property were acquired or sold for various reasons. The area within the current ExxonMobil property boundary is 78.3 acres.

Formerly, the Buffalo River transected the southern portion of the Site. Between 1914 and 1917, the river was rerouted to the south to form a relatively straight channel. The rerouting of the Buffalo River was intended to facilitate the navigation of ships and in turn, benefit industries along the river. The rerouted river line became the Site's southern boundary. To the east of the D.L.&W.R.R tracks, the Buffalo River was filled in, relocated farther to the east, and rerouted to run generally in an west-southwesterly direction to the railroad bridge where the straightened navigable channel began. The parcel between the east side of the D.L. & W.R.R rail tracks and the new river channel is included in the ETYA.

Originally, until around 1917, the Site was utilized for the refining of crude petroleum for illuminating oil. The heavy residuum obtained from the distillation process was converted into paraffin oil and wax, which was refined on site. In the paraffin and wax refinery area, located within the NPSA, the oil was extracted from the wax and refined into lubricating oil. The wax was utilized on site for the manufacture of products such as candles. Additionally, the Site had extensive railcar shops where Union Tank Line railcars were manufactured and repaired. The car shops were capable of manufacturing six rail tank cars each day. The Site also had a cooper shop that manufactured approximately 1,600 storage barrels each day. The Site contained an

acid treatment department in which sulfuric acid used in the refinery processes was treated and recycled. Additional departments included naphtha works and a compounding plant.

Between 1917 and 1924, the Site underwent a transformation in operations and structural layout. During this period, the emergence of motor vehicles began, thus leading to additional uses for refined petroleum. The Site terminated its tank car construction, repair operations and barrel manufacturing. The majority of the Site was cleared and reconstructed with new storage tanks and refining structures. The original structures remaining after the transformation were the paraffin and wax refining department and a few warehouses and boiler rooms.

Between 1939 and 1951, the Site continued to evolve through the addition of modernized refining units including the Houdry Unit, Thermofor Catalytic Cracking Unit (TCC Unit), and the Deflorez Cracking Unit. Between 1951 and 1955, the Site continued to be modernized and underwent another transformation including the addition of an Alkylation Unit, a Sovaformer Unit, a Treating, Blending, and Shipping Area, and Asphalt Refining and Distribution Units. These processes and structures remained at the Site until the refinery structures were demolished between 1988 and 1991, as discussed below. The primary products manufactured at the Site included gasoline, kerosene, home heating fuels, industrial fuels, diesel fuel, and asphalt.

In 1951, the ETYA, the parcel of land between the Erie Lackawanna Railroad and the Buffalo River, was purchased from the City of Buffalo, who had utilized the property from 1921 through 1951 for the disposal of municipal waste. This parcel originated from the filling of the original Buffalo River during the rerouting of the river, as discussed above. In 1953, the ETYA was developed with two 70,000-barrel storage tanks, four propane tanks, and a propane loading rack.

In September 1959, the paraffin and wax refining operations were terminated. Associated structures and 50 storage tanks with capacities ranging from 2,000 and 10,000 barrels were removed. In 1963, the terminal began receiving shipments of crude oil through a Canadian pipeline in addition to the crude oil delivered through the Buckeye Pipeline from Texas and occasionally by barge via the Buffalo River.

In May 1981, the Site terminated all refinery operations. The Site continued only as a distribution terminal, receiving product via a pipeline and barge. The terminal distributed No. 1 Fuel Oil, No. 2 Fuel Oil (diesel), leaded gasoline, two types of unleaded gasoline, and Jet A commercial fuel. Leaded gasoline storage was discontinued in 1989.

Demolition of the refinery occurred from 1988 through 1991. The demolition included the removal of buildings, structures, above ground tanks and piping. Upon completion of the demolition activities, the thirteen storage tanks remaining in the STYA and Tanks 175 and 176 in the ETYA were realigned. Subsequently, Tanks 96 and 198 were removed. In 1991, the current tank truck loading rack located in the CRPA was constructed to replace the former tank truck loading rack in the BSPA.

Currently, the Site operates as a distribution terminal within the limits of the property boundary shown on Plate 1. The northwestern portion of the FRA had been leased to Custom Topsoil through June 2001 for the storage and distribution of construction materials. The former Main Office on the northern Site boundary located in the NPSA has been leased to the City of Buffalo Police Department since 1991.

The Buffalo River is maintained as a federal navigation channel along the length of the Site's bulkhead to a location approximately 300 feet west of the former Erie Lackawanna Railroad Bridge. This federally maintained channel begins approximately 30 feet south of ExxonMobil's bulkhead and extends to within approximately 30 feet of the bulkhead on the southern bank of the river. ExxonMobil maintains the 30-foot portion of the Buffalo River between the bulkhead and the federal navigation channel for barge access. The federal navigation channel has been dredged by the United States Army Corps of Engineers (USACOE) every 2 to 5 years to remove sediment and maintain an adequate water depth for navigation. During the 1992 and 1997 dredging events, ExxonMobil participated by dredging the 30-foot wide portion of the river along the length of their bulkhead to maintain barge access to the Site.

Historical information related to the NPSA, NTYA, BSPA, FRA, CRPA, and AOOA, including existing and former structures and tanks is provided below.

2.1 Northeast Process and Storage Area

The NPSA encompasses approximately 10.7 acres in the northeast section of the Site. The northwest portion of the NPSA, along the northern border of the Site, was purchased by Atlas Refining Company, from Peter Schermerhorn on December 22, 1882. Atlas Refining Company purchased the eastern portion of the NPSA from National Transit Company on July 31, 1890. Two years later on June 16, 1892, SOCONY purchased both of these parcels from the Atlas Refining Company. The northeast portion of the NPSA, also along the northern border of the Site, was purchased by SOCONY from Mr. Edward Tanner in 1910.

2.1.1 Former and Current Structures

Plate 1 shows former structures that have existed on the NPSA, as well as structures that currently exist. The NPSA originally consisted primarily of structures and storage tanks associated with paraffin and wax refining/treatment and railcar construction and repair shops. The construction and repair of railcars terminated between 1917 and 1924. Through 1939, additional paraffin and wax refining structures and tanks replaced the railcar construction and repair shops. By 1951, roads were developed in the NPSA to provide access to the various portions of the area. A macadam roadway was constructed parallel to Elk Street, along the southern boundary of the NPSA. This roadway enabled better access to the paraffin and wax refining buildings in the northwest portion of the NPSA. A concrete roadway was constructed between the Wax Refinery and the Iroquois Gas Company Buildings. This roadway ran in a north to south direction and intersected with the macadam roadway. In 1959, many of the paraffin and wax refining structures and tanks were removed and replaced with larger storage tanks and the former Main Office building, currently leased to Police Community Services. From the 1960s through the 1980s, the northeast portion of the NPSA was used for the storage of debris. In 1989, this area was cleared of all debris piles and the Biotreatment Cell was constructed. In 1990, a gated entrance was installed on the above-mentioned concrete road, adjacent to the Main Office, providing additional security to the Site. Currently, the Police Community Services building (Former Main Office), the Biotreatment Cell liner/berm, and the gated entrance exist in the NPSA. All soil was removed from the Biotreatment Cell in February and March 2001 and disposed off-site.

Table 1 provides information on the storage tanks located within this area including their construction dates, capacities, demolition dates, and types of product stored.

2.2 Northern Tank Yard Area

The Atlas Refining Company had purchased the NTYA from Peter Schermerhorn on December 22, 1882. The NTYA was acquired by the SOCONY from the Atlas Refining Company on June 16, 1892. The NTYA encompasses approximately 9.2 acres in the northern section of the Site. The following sections discuss the former and current structures, and WHAs located in the NYTA, and spills or product releases that have occurred in this area.

2.2.1 Former and Current Structures

According to a 1917 map, the structures within this area were either associated with the paraffin and wax refinery operations in the NPSA or with the refining processes in the Former Refinery Area. From 1917 to 1995, this area was primarily maintained as a tank yard, consisting of various sizes of storage tanks. Table 1 provides information on the storage tanks located within this area including their construction dates, capacities, demolition dates, and types of product stored.

2.3 Babcock Street Properties Area

In total, the BSPA encompasses approximately 11.1 acres. The northern portion of the BSPA is bounded by Elk Street to the north, Babcock Street to the east, Prenatt Street to the south, and Orlando Street to the west. The southern portion of the BSPA is bounded by Prenatt Street to the north, the adjacent property currently owned by PVS Chemicals Corporation (PVS Chemicals) to the west, the Former Refinery Area (FRA) to the east, and the Buffalo River to the south. The entire BSPA and associated structures were sold to One Babcock Street in 1994. Prior to the sale, a portion of the property including the former Barrel House was leased to One Babcock Street.

The original route of the Buffalo River formerly bisected the southern portion of the BSPA. Between 1914 and 1917, the river was filled and rerouted to the south to form a relatively straight channel (Plate 1). The rerouting of the Buffalo River was intended to facilitate the navigation of ships and in turn, benefit industries along the river. The rerouted river line became

the Site's southern boundary. The parcel of land located on the east side of Babcock Street and between Prenatt Street and the original Buffalo River, was purchased by Atlas Refining Company from Chas Norton, Receiver for Buffalo Lubricating Oil Company on July 6, 1888. On June 16, 1892, the Standard Oil Company purchased the property from Atlas Refining Company.

The portion of the BSPA located on the west side of Babcock Street and between Prenatt Street and the Buffalo River was leased by ExxonMobil from Allied Chemical from 1956 through 1974, at which time ExxonMobil purchased the property. This portion of the BSPA was primarily used for employee parking. Following the purchase of this property, ExxonMobil installed several catch basins and below grade piping for drainage of the parking area. These parking lot drains discharged to the Buffalo River through a single pipe located just west of the BSPA sewer line.

2.3.1 Former and Current Structures

Following the purchase of various sections of the BSPA by SOCONY, the northern portion remained primarily vacant. The residential structures were removed, two storage tanks, Tanks Nos. 83 and 84, and two pipe tunnels to the Former Refinery Area (FRA) were constructed between 1939 and 1951. The pipe tunnels were closed in 2001 as discussed in detail in Section 3.0. The south portion of the BSPA, on the east side of Babcock Street, was utilized to house refinery associated structures and storage tanks. Later, these areas were occupied by the Lakes Division, the marketing division of SOCONY, and used specifically for the distribution of petroleum products.

Table 1 provides information regarding the storage tanks that were formerly located in the BSPA. Locations of tanks and structures are shown on Plate 1. Additional tanks and structures that were present on the BSPA in 1917 are not shown on Plate 1 in order to maintain the clarity of the drawing. The 1917 structures and tanks that are not included in this report are presented in the “History of Operations at Buffalo Terminal.”

2.4 Former Refinery Area

The FRA was owned by various entities in the late 1800's. The northern portion of the FRA was sold to Atlas Refining Company in 1888 by Buffalo Lubricating Oil Company, Ltd. The parcel of land to the east was sold to Atlas Refinery Company from Solar Oil Company in 1885. These parcels were purchased on June 16, 1892 by SOCONY from the Atlas Refining Company. The southern portion of the FRA, south of Prenatt Street, was purchased by SOCONY from Buffalo Hardwood Lumber Company, the City of Buffalo, and other unnamed entities on July 23, 1915. Prior to 1915, the Buffalo River transected the southern portion of the FRA. At that time, the Buffalo River was rerouted to the south to form a relatively straight channel, which then became the Site's southern property boundary. The FRA currently encompasses 15.3 acres.

2.4.1 Former and Current Structures

Information regarding the storage tanks located within this area is provided on Table 1. Within the FRA was a brick roadway that ran in a north to south direction and bridged Elk Street and Prenatt Street. Additionally, three major railroad tracks originating from Prenatt Street branched towards the north. These tracks were utilized to deliver supplies to the structures within the FRA for refinery operations. Based on the available information, prior to 1917 and through 1981, the FRA had been the primary location for the petroleum refining processes at the Site. Between 1917 and 1924, many of the refinery associated structures on the east side of the brick roadway were removed and replaced with an electrical substation and storage tanks. The operations at the remaining portions of the FRA generally remained the same with some additions and modifications as refinery processes changed and evolved through the years. The refinery structures north of Prenatt Street were demolished between 1988 and 1991.

2.5 Central Rail and Process Area

The CRPA is located in the central portion of the Site and is transected by two roadways, Prenatt Street and an unpaved roadway, both running in a west to east direction. The CRPA encompasses approximately 8 acres.

The western portion of the CRPA was purchased by the Atlas Refining Company from Peter Schermerhorn on December 22, 1882. Atlas Refining Company purchased the eastern portion of the CRPA from the National Transit Company on July 31, 1890. These two parcels were

purchased by SOCONY on June 16, 1915 from Buffalo Hardwood Lumber Company, the City of Buffalo and other unnamed entities.

2.5.1 Former and Current Structures

In 1917, the CRPA consisted primarily of railroad tracks on Prenatt Street and structures associated with the construction of barrels. Between 1924 and 1990, this area was generally used for housing refinery process related structures. Table 1 provides information regarding storage tanks that were previously located in this area.

2.6 Administrative Offices and Operations Area

The AOOA is centered between the NPSA, the NTYA, the CRPA, and the STYA. This area encompasses approximately 3.7 acres.

Similar to the NPSA, the western portion of the AOOA was purchased by Atlas Refining Company from Peter Schermerhorn on December 22, 1882. Atlas Refining Company purchased the eastern portion of the AOOA from the National Transit Company on July 31, 1890. Subsequently, SOCONY purchased these two parcels from Atlas Refining Company on June 16, 1892.

2.6.1 Former and Current Structures

Historically, the AOOA has housed structures related to railcar construction and repair, mechanical shops, and a laboratory. Prior to 1917, the structures located in the AOOA consisted primarily of railcar construction and repair shops and storage houses. After 1951, these structures were converted for usage as mechanical shops, storage houses, and boiler rooms. These structures were replaced with a mechanical shop, a storage house and a laboratory between 1951 and 1955. These structures currently exist at the Site. Additionally, roadways were paved through the area. Table 1 provides information regarding storage tanks that were located within the AOOA.

3.0 SUMMARY OF ENVIRONMENTAL CONDITIONS

Data regarding environmental conditions in the northern portion of the Site (north of Prenatt Street), and particularly the northern portion of the BSPA, NPSA, NTYA, northern portion of the FRA, northern portion of the CRPA, and AOOA, were obtained from a review of the results of previous investigations and the ongoing monitoring program at the Site. The following sections include:

- a listing and brief description of previous investigations completed in the various areas of interest; and
- a summary of the environmental quality in the various areas of interest based on previous investigations, including soil quality, groundwater quality and separate-phase product occurrence (where applicable).

The summary of soil and groundwater quality includes comparisons of the previous data collected to the NYSDEC soil and groundwater criteria, described below.

Soil Quality Criteria

Soil quality data from previous investigations has been compared to NYSDEC soil quality criteria. This type of comparison enables identification of areas that may pose a potential risk under a residential land use scenario, as well as those areas that may have potential to impact groundwater at concentrations exceeding drinking water standards. The soil quality data generated during previous investigations have been evaluated against the criteria presented in the following NYSDEC documents:

- NYSDEC Recommended Soil Cleanup Objectives (RSCOs) presented in the "Division of Hazardous Waste Remediation. Division Technical and Administrative Guidance Memorandum (TAGM) 4046: Determination of Soil Cleanup Objectives and Cleanup Levels" (NYSDEC 1994); and
- NYSDEC revised soil cleanup criteria tables for TAGM 4046 for gasoline and fuel oil contaminated soil dated August 22, 2001 (NYSDEC 2001).

As a note, the RSCO for lead presented in TAGM 4046 is site background. TAGM 4046 provides a range of average site background levels for lead in metropolitan or suburban areas or areas near highways between 200 mg/kg and 500 mg/kg. For comparison purposes in the following discussion, 500 mg/kg was used for lead.

Groundwater Criteria

In the discussions of previous investigations that follow, the groundwater data collected during these investigations is compared to the NYSDEC Ambient Water Quality Standards and Guidance (AWQSG) values for Class GA groundwater presented in the Division of Water Technical and Operational Guidance Series (1.1.1) "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations" (NYSDEC, 1998) as amended in April 2000.

3.1 Previous Investigations

Previous investigations conducted in the areas of interest for pipe removal north of Prenatt Street include:

- Installation of five monitoring wells (B-1MW, B-2MW and B-4MW through B-6MW) in various areas of the Site and performance of water-level and product thickness measurements in these new wells, by Empire Soils Investigations, Inc. in July 1989 (ESI, 1989);
- Installation of 17 monitoring wells (MW-1 through MW-17) in various areas of the Site and performance of water-level and product thickness measurements in these new wells, by Empire Soils Investigations, Inc. in October and November 1989 (ESI, 1990a);
- Abandonment and replacement of well B-5MW with B-5MWR in the CRPA by Empire Soils Investigations, Inc. in May 1990 (ESI, 1990b);
- Abandonment and replacement of well B-5MWR with B-5MWRR in the CRPA by Empire Soils Investigations, Inc. in July 1990 (ESI, 1990c);
- Site Facility Investigation (SFI), conducted by Groundwater & Environmental Services, Inc. (GES) from June through August 1998 (Roux Associates, 1998);
- SFI Completion, conducted by GES and Roux Associates from July through October 1999 (Roux Associates, 1999);
- Babcock Street Properties Area Investigation Completion, conducted by GES and Roux Associates from June 2000 through October 2000 and April 2001 through May 2001 (Roux Associates 2001); and
- Site Investigation Completion, conducted by GES from August 2001 and February 2002 (Roux Associates, 2002b).

3.2 Environmental Quality

In general, the soil and groundwater quality in many areas of the Site have been impacted by former refinery, lube plant and terminal activities. In addition, separate-phase product is present in portions of the Site, mostly south of Prenatt Street in the southern portions of the BSPA, FRA and STYA and east of the Erie Lackawanna Railroad in the ETYA.

3.2.1 Soil Quality

Volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) and metals are present in the soil at shallow and deep intervals, some exceeding NYSDEC RSCOs to varying degrees, across the Site. The rationale for selecting soil sample locations during previous investigations was to evaluate potential impacts from previous and/or current Site operations. In some cases, elevated concentrations of petroleum-related compounds were observed at the sample locations selected based on historical and current locations of structures, tanks, waste handling areas (WHAs) and Site operations, indicating impacts from these operations. The distribution of elevated metals concentrations is more widespread and more uniform across the site than the distribution of elevated VOCs, SVOCs and total petroleum hydrocarbons (TPH).

In general, the highest petroleum-related impacts were observed in the vicinity of former and/or current tanks, former and active Loading/Filling Racks, some of the former WHAs and in the vicinity of the former Main In-Ground Oil/Water Separator in the southern portion of the FRA.

In the NPSA, where selected samples in the eastern portion of the area were analyzed for PCBs, levels did not exceed NYSDEC RSCOs.

Tetraethyl lead was analyzed in a total of 28 locations in the BSPA, ESPA, ETYA, NPSA, NTYA and STYA during one or more of the investigations completed at the Site. Tetraethyl lead was not detected in any of these samples. Hexavalent chromium was analyzed in a total of 17 locations in the BSPA, ETYA, NPSA and NTYA during the SFI. Hexavalent chromium was not detected in any of these samples.

3.2.2 Groundwater Quality

The groundwater sampling results generally indicate lower concentrations of VOCs and SVOCs at the upgradient or northern edge of the Site and higher concentrations towards the center and southern areas.

In general, similar to patterns observed in the soil quality data, the areas of the site where the highest concentrations of VOCs and SVOCs were observed were in the vicinity of former and/or current tanks, former and active Loading/Filling Racks and some of the former WHAs. In the vicinity of the former Main In-Ground Oil/Water Separator, where relatively high concentrations of VOCs and SVOCs were observed in soil, groundwater was not collected due to the presence of separate-phase product.

3.2.3 Separate-Phase Product Occurrence

Separate-phase product has only been observed sporadically in one well (MW-38) in the northern portion of the Site. Product was observed in MW-38 in 2002 and 2003 at thicknesses ranging from 0.01 feet (July 2002, July, November and December 2003) to 0.18 feet (November 2002). Absorbent socks have been installed in the well since November 2002 to recover the product present.

3.3 Visual Inspection and Closure of Pipe Tunnels Beneath Babcock Street

Visual inspections and removal of product and water from the former pipe tunnels that existed beneath Babcock Street were completed during the BSPA Investigation Completion in 2000 (Roux Associates 2001). Pipe was removed and the tunnels were permanently closed in 2001 (Roux Associates 2002a). These activities are described below.

3.3.1 Northern Tunnel Inspection

The following inspection activities were performed on the northern pipe tunnel beneath Babcock Street.

<u>TP-10 West of Babcock Street</u>

TP-10 was completed on August 14, 2000 in the location shown on Plate 1, at the western end of the northern pipe tunnel, approximately 15 feet west of Babcock Street. The main portion of TP-10 (in which the piping that crosses under Babcock Street was encountered) measured

approximately seven feet from north to south, five feet from east to west and three feet deep. The excavation extended for several feet to the south (where an inactive gas line was encountered and exposed) and to the west, where a three-inch pipe was encountered.

TP-10 was impacted with separate-phase product at less than two feet below grade. Shallow water was encountered at less than two feet below grade. During excavation of the test pit, what appeared to be a 1.5 inch inactive gas line was encountered along the east side of the test pit. A concrete block was encountered at approximately three feet below grade. Four pipes, two 6 inch and one 10 inch pipe (each ending in a 90 degree elbow) and one 3 inch pipe were encountered approximately 1-3 feet below grade. The western ends of the two 6 inch pipes and the 10-inch pipe were encountered within the test pit and were noted to be filled with concrete. The 6 inch pipes and the 10 inch pipe proceeded generally in a east/southeasterly direction under and across Babcock Street. The 3 inch pipe crossed from the north side of the test pit in a southwesterly direction to the west side of the test pit. The contents and start/end point of this pipe could not be determined.

All fluids generated during this excavation were discharged to the water treatment system. Product recovered was transferred to the 8,000 gallon waste oil storage tank associated with the water treatment system for later disposal offsite.

Northern Pipe Tunnel Entrance East of Babcock Street (TP-09)

The pipe tunnel entrance that is present on the east side of Babcock Street was inspected in lieu of excavating test pit TP-09. The tunnel entrance was a pit constructed of concrete and measured approximately 13 feet from north to south, six feet from east to west and eight feet deep. The tunnel entrance structure is referred to as NE Tunnel (TP-09) on Plate 1.Water and measurable separate-phase product (approximately 0.01 inches) were present in the tunnel entrance. The fluids were evacuated using a vacuum truck prior to the inspection. The following pipes were observed:

- one 12-14 inch pipe that entered the concrete structure from the west side (likely the continuation of one of the pipes present in TP-10) and passed through the east side of the structure toward the FRA;

- one 8-10 inch pipe that entered the concrete structure from the west side (likely the continuation of one of the pipes present in TP-10)) and passed through the east side of the structure toward the FRA;
- one 3-inch pipe that entered the concrete structure from the west side and ended just inside the structure;
- one 2-inch pipe that entered the concrete structure from the north and ended just inside the structure; and
- two 6-inch pipes entered the structure from the east side and ended just inside the structure.

3.3.2 Southern Tunnel Inspection

The following inspection activities were performed on the southern pipe tunnel beneath Babcock Street.

Southern Pipe Tunnel Entrance East of Babcock Street (TP-07)

The pipe tunnel entrance structure that is present on the east side of Babcock Street was inspected in lieu of excavating a test pit TP-07. The tunnel entrance was a pit constructed of concrete and measured approximately eight feet from north to south, 22 feet from east to west and almost seven feet deep. The tunnel entrance structure is referred to as SE Tunnel (TP-07) on Plate 1.

Water and separate-phase product sheen were observed in the tunnel entrance structure. Approximately 10,000 gallons (three vacuum truck loads) of total fluids were evacuated using a vacuum truck prior to the inspection. The first two vacuum truckloads were discharged to the lift station. During the evacuation of fluid, separate-phase product was observed to be coming from one of the 10-inch pipes present. This product was contained within the third vacuum truck load and was discharged to a frac tank to allow any product present to separate and be transferred to the product storage tank prior to the water being discharged to the treatment system. Product recovered (either directly from the frac tank or from the water treatment system oil/water separators), was transferred to the 8,000 gallon waste oil storage tank associated with the water treatment system for later disposal offsite.

Two six-inch pipes and one 10-inch pipe entered the structure from the west side and ended within the structure. These pipes apparently crossed Babcock Street and entered the tunnel entrance structure on the west side of Babcock Street (TP-08), described below.

Southern Pipe Tunnel Entrance West of Babcock Street (TP-08)

The pipe tunnel entrance structure that is present on the west side of Babcock Street was inspected in lieu of excavating a test pit TP-08. The tunnel entrance was a pit constructed of concrete and measured approximately six feet from north to south, 11 feet from east to west and seven feet deep. The tunnel entrance structure is referred to on Plate 1 as SW Tunnel (TP-08).

Water and separate-phase product sheen were observed in the tunnel entrance structure. Approximately 6,400 gallons (two vacuum truck loads) of total fluids were evacuated using a vacuum truck prior to the inspection. The contents of the vacuum trucks were discharged to the lift station.

Two six-inch pipes and one 10-inch pipe entered the structure from the east side. These pipes apparently crossed Babcock Street and entered the tunnel access entrance on the east side of Babcock Street (TP-07), described above. The two six-inch pipes ended within the tunnel entrance while the 10-inch pipe passed through the tunnel entrance and exited through a culvert located in the western wall. The three pipes were cold tapped by Safety Clean during the inspection. Product and water were removed from the 10-inch line and water was removed from the two six-inch pipes.

Any product recovered (from the water treatment system), was transferred to the 8,000 gallon waste oil storage tank associated with the water treatment system for later disposal offsite.

3.3.3 Tunnel Closure Activities

Removal of piping and permanent closure of the two pipe tunnels that ran beneath Babcock Street between the FRA and the BSPA were conducted in from November 9 through November 21, 2001. The work was conducted by Safety Kleen. The pipe removal and tunnel closure activities were documented in the report entitled Fourth Quarter Site Monitoring Report,

October 1, 2001 through December 31, 2001 and dated February 7, 2002 (Roux Associates 2002a).

At the north tunnel, fluids (product, water and semi-solids) were removed throughout the closure activities. The pipes were cut and removed. The ends of the pipes that contained thick black asphalt-like material were sealed with plastic. Once the piping was removed, the tunnel was pressure washed and filled with flowable concrete fill. Location and removal of the 8-10 inch and 12-14 inch pipes that extended to the east of portion of pipes removed were not attempted during the 2000 tunnel closure activities. Similarly, location and removal of the 3 inch pipe that crossed from the north side of test pit TP-10 in a southwesterly direction to the west side of the test pit TP-10 were not attempted during the 2000 tunnel closure activities. Location and removal of these pipes is addressed in this work plan.

At the south tunnel, fluids (product, water and semi-solids) were removed throughout the closure activities. The pipes were cut, pressure washed and removed. Once the piping was removed, the tunnel was pressure washed and filled with flowable concrete fill. Location and removal of the 10-inch pipe that extended to the west of the portion of pipe removed was not attempted during the 2000 tunnel closure activities. Location and removal of this pipe is addressed in this work plan.

All fluids generated during the closure activities were discharged to the storm-water lift station for treatment through the Water Treatment System.

Material generated during the pipe tunnel closure activities were disposed of offsite in accordance with applicable regulations.

4.0 SCOPE OF WORK

The scope of work for abandoned pipe removal activities are described below.

4.1 Health and Safety

All pipe removal activities will be performed in a manner consistent with 29CFR 1910 and 1926 and ExxonMobil requirements. Clean Harbors Environmental Services (CHES) of Albany, New York has prepared a Site-specific Health and Safety Plan (HASP) for activities performed to date. This HASP will be updated to reflect specific requirements related to the pipe removal activities described below. During all phases of Site work, the CHES shall monitor safety and health conditions, including for VOCs and particulates, and fully enforce his own Site-specific HASP. During the course of work, the CHES shall take abatement measures, if required, to minimize the levels of particulates and VOCs at the limits of work. Finally, the Contractor shall also be responsible for monitoring general Site conditions and for safety hazards.

4.2 Abandoned Underground Pipe Identification and Location

Existing abandoned underground process piping will be identified and located through review of existing Site drawings and through performance of an electromagnetic survey, as described below.

4.2.1 Review of Existing Site Drawings and Visual Observations

Limited historical plans showing locations of above and below ground product and other process pipelines are available at the Site. Prior to initiating pipe removal in each area of the Site, a detailed review of the historical drawings relative to that area will be completed to determine where pipe may be located. The locations determined based on available historical drawings will be added to the Site map as accurately as possible. In addition, prior to initiating pipe removal in a particular area, that area will be visually inspected for evidence of buried piping. Any piping visually located will be added to a Site map.

Based upon the pipe removal and tunnel closure work that was completed in 2001 (described above), there are several pipes that extend to the west of the sections of pipes that were removed into the former tank area that had existed in the BSPA. Similarly, there were several pipes that extended to the east of the sections of pipes that were removed into the FRA. Attempts to locate

and remove these pipes, and others that may be present in these areas, will be made as part of this work, as described further below.

4.2.2 Geophysical Survey

A geophysical survey of the northern portion of the site (north of Prenatt Street) will be conducted to identify and locate buried metallic pipes and tanks (if any). The geophysical survey will include an electromagnetic survey using Geonics Limited EM-61 metal detector (alternative equipment, including a Geonics EM-31 may be employed if site conditions require) to identify buried metal piping and underground tanks (UTs). The EM-31 and EM-61 explore to a depth of approximately 10-15 feet below ground surface. The EM61 can be operated within about 5 feet of aboveground structures (e.g., tanks, fences, vehicles, buildings) without interference. The EM-61 data will be collected at one second intervals along parallel profiles spaced roughly five feet apart across the site (note, if the EM-31 is used, the profile spacing will be roughly 20 feet apart). Location control will be provided by differential global positioning satellite (DGPS) systems and referenced to the Site basemap. Measurement locations will be recorded using a mobile GPS receiver, with differential corrections to be applied to a fixed base station GPS receiver.

A report will be provided by the contractor that will briefly describe the technical approach and detail the geophysical findings with respect to the location of buried piping and UTs. The report will include a fully annotated contour map based upon the EM-61 (and/or alternative equipment) results.

4.3 Pipe Removal Procedures

The pipe removal procedures to be followed may vary slightly between locations based upon the type of pipe, subsurface conditions encountered, location of pipe, etc., but in general will proceeded as follows:

- Expose pipe. Pipes will be completely exposed by excavating the soil above the pipe in order to determine the material of construction, size of pipe and depth of pipe.
- Locate valves and connections. An attempt will be made to locate valves and connections (i.e., tees), changes in direction, end points, etc. An attempt will also be made to determine the highest elevation along the run that has been uncovered, in order to determine the most appropriate location to tap the pipe.

- Examine the pipe. The exposed pipe will be examined to determine its condition (i.e., is the pipe intact, or is there evidence of damage including holes, etc.).

- Examine the soil. The soil surrounding the exposed pipe will be visually inspected for evidence of separate-phase product (i.e., separate-phase product sheen, odors, staining, etc.) and screened for organic vapors with a photoionization detector (PID).

- Tap pipe. Pipes will be tapped using a pneumatic drill to avoid ignition of explosive gases that may have existed within the pipe. Gases within pipes will be evaluated as to their explosive nature and will be evacuated from the pipe if they demonstrate potential for ignition.

- Drill pipe, examine, sample and remove product, if present. A two-inch hole will be drilled in pipe in order to examine the pipe contents for product and/or water, to make an attempt to sample the contents, if possible, to determine its characteristics. . Product, if present, will be removed with a vacuum truck. Contents removed from the piping will be disposed of in accordance with applicable regulations.

- Cut, clean and seal pipe. The pipe will be cold cut to a manageable length. If conditions require, a device (i.e., pig) will be pushed through to clean the inside of the pipe, if possible. Pipe that appears to continue into other areas of the site, or offsite, will be documented and evaluated for further removal.

- Pipe disposal. Piping will be sorted based upon degree of visual impact and material of construction. Pipe determined to be relatively clean will be disposed of offsite as scrap. Impacted pipe will be disposed of offsite in accordance with applicable regulations.

- Soil Sampling. Numerous soil boring locations have been sampled during past remedial investigations at the Site. Previous soil boring locations are shown on Plate 1. Sampling of soil during pipe removal activities will not be conducted in locations where existing soil boring data exists. However, if soil conditions are different than conditions identified during previous investigations, soil will be sampled. Where applicable, soil will be sampled for the following parameters:

  – VOCs and SVOCs according to USEPA methods SW846 8021 and 8270 for NYSDEC STARS list compounds, respectively;

  – TPH for gasoline and diesel range organics (broken down into two ranges, C10 to C18 and above C18) by methods SW-846 8015B;

  – reduced target analyte list (TAL) metals by method SW846 6010 (includes cadmium, chromium, lead, nickel, selenium, thallium and vanadium) and method SW-846 7470/7471 for mercury;

4.4 Documentation

Documentation for all pipe removal activities will include the following information:

- Daily Pipe Removal Inspection Forms to document daily field activities. (see Appendix A for a sample form). Documentation will include the location of the work, weather conditions, personnel present, equipment and material used, length of pipe, type of pipe, condition of pipe, soil conditions, PID readings, description of photographs taken, description of samples taken and sketches showing the location of the work and the configuration of the piping

- Working figures showing the location of all piping identified, left in place or removed with measurements from known structures;

- Waste disposal documentation (i.e., weight tickets and bills of lading);

- Laboratory analytical data (where applicable); and

- Field photographs.

5.0 REPORT PREPARATION AND PROJECT SCHEDULE

Following completion of all fieldwork, a final report will be prepared documenting the pipe removal activities. The report will include a detailed description of the pipe removal activities performed in each area and all the documentation discussed above for the pipe removal activities completed.

The fieldwork is tentatively scheduled to begin during the week of April 12, 2004 with the implementation of the geophysical survey. Based upon the results of the survey and the weather conditions, fieldwork for pipe removal activities will begin in May 2004. Report preparation will follow. This schedule may require revisions if the field tasks are delayed by inclement weather or by the identification of additional abandoned piping.

Respectfully submitted,

ROUX ASSOCIATES, INC.

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Table 1. Tank Inventory for Areas of the Buffalo Terminal, ExxonMobil Oil Corporation, Buffalo, New York

Tank No	Size				Capacity (BBL)		Year Built	Removed	Duplicate Tank Designation Notes	Location	Product Stored	Roof Type	Shell
	Length	Width	Diameter (Feet)	Height (Feet)	Gross	Available							
Administrative Offices and Operations Area													
9			35	24	4,113		1924 map			AOOA			
222			75				1948	1955 map		AOOA			
348							1939 map	1951 map		AOOA			
349							1924 map	1977 map		AOOA			
351							1924 map	1977 map		AOOA			
352			10	20	280		1924 map	1977 map		AOOA			
353			10	20	280		1924 map	1977 map		AOOA			
412			12.67	10	224		1924 map	1939 map		AOOA (Inside Boiler House)			
413			12.67	10	224		1924 map	1939 map		AOOA (Inside Boiler House)			
414			10.5	8	123		1924 map	1939 map		AOOA (Inside Boiler House)			
415			10.5	8	123		1924 map	1939 map		AOOA (Inside Boiler House)			
416						180,600	1924 map	1939 map		AOOA (Inside Boiler House)			
417						35,700	1924 map	1939 map		AOOA (Inside Boiler House)			
Central Rail and Process Area													
50							1939 map	1951 map		CRPA			
265			20	111.92	6,262		1924 map	1939 map		CRPA			
354			25	17	1,486		1924 map	1939 map		CRPA			
355			25	17	1,486		1924 map	1939 map		CRPA			
356			25	17	1,486		1924 map	1939 map		CRPA			
357			25	17	1,486		1924 map	1939 map		CRPA			

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Tank No	Size				Capacity (BBL)		Year Built	Removed	Duplicate Tank Designation Notes	Location	Product Stored	Roof Type	Shell
	Length	Width	Diameter (Feet)	Height (Feet)	Gross	Available							
Former Refinery Area													
4							1917	1939	Also called 29 and Duplicate tank name in NTYA	FRA			
29			54	30.167	12,305		1924 map	1990 photo	Same as Tank 4	FRA			
36			15	20	629		1924 map	1977 map		FRA			
37			15	20	629		1924 map	1977 map		FRA			
45			30	20	2,518		1917 map	1939 map	Not labeled until 1924 map	FRA	Hot Water Tank		
45			16				1917 map	1924 map		FRA			
47			30	25	3,147		1924 map	1977 map		FRA			
48			24				1939 map	1977 map		FRA			
51			15				1939 map			FRA			
81			48	40	1,210	11,941	1939	1989		FRA	Unblended No. 2/TCC Charge	Cone	Welded
82			48	40	12,100	10,826	1940	1988		FRA	Mobil Diesel #2 Fuel Oil (1986)	Cone	Riveted
85			10	10	140		1924 map	1939 map	Duplicate name in BSPA	FRA			
117			25	20	1,749		1924 map	1977 map		FRA	Diesel		
120			30	16.33	2,056		1924 map	1939 map		FRA			
157			23	14.33	1,060		1924 map	1977 map		FRA			
161	36	12					1951 map	1977 map		FRA			
165	36	12					1951 map	1977 map		FRA			
169			70	30	19,757	16,934	1924 map		Replaced	FRA			
169			70	30	19,757	16,934	1940	1988		FRA	Kerosene/Jet A #1 Fuel Oil	Cone	Riveted
173			30	12	1,511		1917 map	1939 map		FRA			
174			30	12	1,511		1917 map	1939 map		FRA			
175			30	12	1,511		1917 map	1939 map		FRA			
176			30	12	1,511		1917 map	1939 map		FRA			
177			30	12	1,511		1917 map	1939 map		FRA	Lube Oil		
178			30	12	1,511		1917 map	1951 map		FRA			
179			40	12	2,686		1917 map	1939 map		FRA			
180			40	12	2,686		1924 map	1977 map		FRA			
181			40	12	2,686		1917 map	1977 map		FRA			
185			30	40	4,645	4,277	1939	1995 map		FRA	No. 6 Fuel Oil	Cone	Welded
186			12	10	201		1924 map	1939 map		FRA			
186			30				1939 map	1995 map		FRA			
191			40	12	2,686		1924 map	1977 map		FRA			
192			40	12	2,686		1924 map	1977 map		FRA			
194			40	12	2,686		1924 map	1977 map		FRA			
195			40	12	2,686		1924 map	1977 map		FRA			
219			24				1951 map	1977 map		FRA			
220			36				1951 map	1977 map		FRA			
291			18	14	635		1924 map	1951 map		FRA			
292			18	14	635		1924 map	1951 map		FRA			
301			15	10	315		1924 map	1977 map		FRA			

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	Length	Width	Diameter (Feet)	Height (Feet)	Gross	Available							
364			45	16	4,532	17,810	1917 map	1977 map		FRA	Gas Holder		
390	36	12					1951 map	1977 map		FRA			
392	36	12					1951 map	1977 map		FRA			
490			30	40	4,886	4,825	1942	1995 map		FRA	Asphalt	Cone	Welded
496							1939 map	1995 map		FRA			
497							1939 map	1995 map		FRA			
498			25	35	2,966	2,924	1942	1995 map		FRA	Asphalt	Cone	Welded
499			25	35	2,966	2,924	1942	1995 map		FRA	Asphalt Cutter (Kerosene Distillate)/Asphalt	Cone	Welded
525	36	12					1951 map	1977 map		FRA			
531			15				1951 map	1977 map		FRA			
534			30				1951 map	1977 map		FRA			
Northeast Process and Storage Area													
3			40	12	2,686		1924 map	1977 map		NPSA			
6			10	16	224		1924 map	1977 map		NPSA			
7			10	16	224		1924 map	1977 map		NPSA			
11			10	16	224		1924 map	1977 map		NPSA			
15			30	12	1,511		1924 map	1977 map		NPSA	Lube Oil		
17			10	16	224		1924 map	1977 map		NPSA			
30			40	11.875	2,658		1924 map	1977 map		NPSA	Lube Oil #2 Fuel Oil (1986)		
32			70	30	19,878	19,538	1923	1980		NPSA	Unleaded Gasoline	Cone	Riveted
34			30	10	1,259		1924 map	1977 map		NPSA			
38	48	18		NA			1939 map	1955 map		NPSA			
39			30	24	3,022		1924 map	1977 map		NPSA			
41			30	24	3,022		1924 map	1977 map		NPSA			
61			21.92	11.33	762		1924 map	1951 map		NPSA			
62			12	5.5	111		1924 map	1939 map		NPSA			
63			14	15	411		1924 map	1951 map		NPSA			
63			14				1951 map	1977 map	Different Location	NPSA			
64			14	15	411		1924 map	1951 map		NPSA			
64			14				1951 map	1977 map	Different Location	NPSA			
71			21				1939 map	1977 map		NPSA			
72			21				1939 map	1977 map		NPSA			
73			40	11.77	2,634		1924 map	1977 map		NPSA	Lube Oil		
74			24				1939 map	1977 map		NPSA			
108			16	18	645		1924 map	1977 map		NPSA			
114			20	15	839		1924 map	1977 map		NPSA			
124			2.92	12.25	15		1924 map	1939 map		NPSA (Pump House)			
135			18	20	906		1924 map	1977 map		NPSA			
135½			14	18.167	498		1924 map	1977 map		NPSA			
136			18	20	906		1924 map	1977 map		NPSA			
136½			14	18.167	498		1924 map	1977 map		NPSA			
141			14				1939 map	1977 map		NPSA			
142			14				1939 map	1977 map		NPSA			
143			14				1939 map	1977 map		NPSA			
144			14				1939 map	1977 map		NPSA			
155			35	6	1,028		1924 map	1977 map		NPSA			

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Tank No	Size				Capacity (BBL)		Year Built	Removed	Duplicate Tank Designation Notes	Location	Product Stored	Roof Type	Shell
	Length	Width	Diameter (Feet)	Height (Feet)	Gross	Available							
156			35	6	1,028		1924 map	1977 map		NPSA	Lube Oil		
177			21				1939 map	1977 map		NPSA			
178			18				1939 map	1977 map		NPSA			
183			30	12	1,511		1924 map	1977 map		NPSA	Lube Oil		
201	18	8		4	103		1924 map	1939 map		NPSA	Water box		
215	40	21		9	1,346		1924 map	1977 map		NPSA			
216			12.75	5.33	121		1924 map	1977 map		NPSA			
218			70	30	19,878	19,500	1923	1990		NPSA	TCC Charge/ No. 6 Fuel Oil and Cutter	Cone	Riveted
223			15	18	567		1924 map	1951 map		NPSA			
223			18				1951 map	1977 map	Different Tank and Location	NPSA			
224	26	16		8	593		1917 map	1977 map		NPSA			
227			15	14.83	467		1924 map	1951 map		NPSA			
228					21		1939 map	1977 map		NPSA			
229					24		1939 map	1977 map		NPSA			
241	18.5	5.083		4.5	75		1924 map	1939 map		NPSA	Paraffin/Wax		
241½	18.5	5.167		4.417	75		1924 map	1939 map		NPSA	Paraffin/Wax		
242	18.458	4.67		4.333	67		1924 map	1939 map		NPSA	Paraffin/Wax		
242½	18.33	5.33		4.333	75		1924 map	1939 map		NPSA	Paraffin/Wax		
243	19.08	12		4.167	170		1924 map	1939 map		NPSA	Paraffin/Wax		
244	19.25	11.167		4.833	185		1924 map	1939 map		NPSA	Paraffin/Wax		
245			14	11.5	315		1924 map	1977 map		NPSA			
246			14	11.5	315		1924 map	1977 map		NPSA			
247			14	11.5	315		1924 map	1977 map		NPSA			
248			14	11.5	315		1924 map	1977 map		NPSA			
250			30	25.167	3,168		1924 map	1977 map		NPSA	Lube Oil		
251			50	30	9,828	9,650	1923	1990		NPSA	TCC Charge/ No. 6 Fuel Oil and Cutter	Cone	Riveted
252			50	30	9,791	9,616	1923	1990		NPSA	Unblended No. 2/TCC Charge	Cone	Riveted
254			25	18.833	1,647		1924 map	1977 map		NPSA			
255	21	14.75		5.667	313		1924 map	1939 map		NPSA	Paraffin/Wax		
256	21	14		5.417	284		1924 map	1939 map		NPSA	Paraffin/Wax		
257	21	14		5.417	284		1924 map	1939 map		NPSA	Paraffin/Wax		
258	21	14		5.333	279		1924 map	1939 map		NPSA	Paraffin/Wax		
259	12.083	6.167		5.83	77		1924 map	1977 map		NPSA			
260	12.083	6.167		5.83	77		1924 map	1977 map		NPSA			
264			12	5	101		1924 map	1951 map		NPSA			
266			20	24	1,343		1924 map	1977 map		NPSA			
267			20	24	1,343		1924 map	1977 map		NPSA			
274	18	12		5.5	212		1924 map	1939 map		NPSA (Pump House)			
279			27				1939 map	1977 map		NPSA			
280			27				1939 map	1977 map		NPSA			
281			24	25	2,014		1924 map	1977 map		NPSA	Lube Oil		
282	27	12					1939 map	1977 map		NPSA			
283			16	16	573		1924 map	1977 map		NPSA			
325	20	10		3	107		1924 map			NPSA			

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	Length	Width	Diameter (Feet)	Height (Feet)	Gross	Available							
326	5	10					1924 map			NPSA			
327	14	8		4	80		1924 map			NPSA			
330			12	4.5	97		1924 map			NPSA			
331			12.417	4.5	97		1924 map			NPSA			
335			40	26	5,819		1924 map			NPSA			
336			40	26	5,819		1924 map			NPSA			
337			40	26	5,819		1924 map			NPSA			
338			40	26	5,819		1924 map			NPSA			
339			40	26	5,819		1924 map			NPSA			
340			40	26	5,819		1924 map			NPSA			
341			40	26	5,819		1924 map			NPSA			
358			20	23.25	1,301		1924 map			NPSA			
359			20	23.08	1,291		1924 map	1939 map		NPSA			
360			20	23.08	1,291		1924 map	1939 map		NPSA			
361			20	23.375	1,308		1924 map	1939 map		NPSA			
373			45	30	8,498		1924 map	1939 map		NPSA			
379			45	30	8,498		1924 map	1939 map		NPSA			
249	8	6		5	43		1924 map	1939 map		NPSA (Pan House)			
249A	24	5		5	107		1924 map	1939 map		NPSA (Pan House)			
249B	24	5		5	107		1924 map	1939 map		NPSA (Pan House)			
295							1917 map	1977 map		NPSA			
296							1917 map	1977 map		NPSA			
298							1917 map	1977 map		NPSA			
319							1917 map	1977 map		NPSA			
328	4.67	12.083		5.0625	51		1924 map	1939 map		NPSA (Wax Refinery)			
329	4.583	12.083		5.083	50		1924 map	1939 map		NPSA (Wax Refinery)			
332			4	29.083	0		1924 map	1939 map		NPSA (Wax Refinery)			
418	42.25	12		3.5	316		1924 map	1939 map		NPSA (Former Car Shop)			
419	42.25	12		3.5	316		1924 map	1939 map		NPSA (Former Car Shop)			
225	29.5	8.5		5.417	242		1924 map	1939 map		NPSA (Sweater Structure)			
261	23.667	8.5		5.667	203		1924 map	1939 map		NPSA (Sweater Structure)			
268			4.5	6	17		1924 map	1939 map		NPSA (Sweater Structure)			
269			4.5	6	17		1924 map	1939 map		NPSA (Sweater Structure)			
270			4.5	6	17		1924 map	1939 map		NPSA (Sweater Structure)			

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Tank No	Size				Capacity (BBL)		Year Built	Removed	Duplicate Tank Designation Notes	Location	Product Stored	Roof Type	Shell
	Length	Width	Diameter (Feet)	Height (Feet)	Gross	Available							
Northern Tank Yard Area													
1			70	30	19,194	17,479	1924	1989		NTYA	Jet A/Kerosene	Cone	Riveted
2			40	12	2,686		1924 map	1990 photo		NTYA			
4			48	40	12,892		1971	1990 photo		NTYA	Sour Water		
4			40	12	2,686		1924 map	1990 photo		NTYA			
10			40	12	2,686		1924 map	1990 photo		NTYA			
19			93	35	39,946	36,314	1927	1990 photo		NTYA	No.6 Fuel and Cutter Stock	Cone	Riveted
21			93	38	38,901	33,679	1940	1990 photo		NTYA	PTR Charge/Regular	Floater	Riveted
22			93	35	41,117	40,512	1931	1989		NTYA	TCC Charge/ No. 6 Fuel Oil Cutter	Cone	Riveted
24			45	30	8,498		1924 map	Existing		NTYA			
27			60	30		14,661	1920	1989		NTYA	PTR Special Pretreated Naphtha for Startup, Jet A (1986)	Cone	Riveted
28			35	20	3,263	3,202	1919	1995 map		NTYA	PTR Special Pretreated Naphtha for Startup	Cone	Riveted
31			70	30	19,573	17,513	1915	1990 photo		NTYA	No. 6 Fuel Oil	Cone	Riveted
33			60	30.08	15,148		1924 map	1990 photo		NTYA			
52	21						1939 map	1977 map		NTYA			
54	93						1939 map	1990 photo		NTYA			
55	93						1939 map	1990 photo		NTYA			
60			117	42	78,433	76,573	1945	1989		NTYA	TCC Charge, #2 Fuel Oil (1986)	Cone	Riveted
80			70	30	20,563		1924 map		Replaced	NTYA			
80			70	30	22,000	19,944	1934	1990 photo		NTYA	Out of Service/No. 6 Fuel Oil	Cone	Riveted
89			93	35	41,715	38,089	1920	1990 photo		NTYA	No. 6 Fuel Oil and Cutter Stock	Cone	Riveted
93			40	35	7,638	7,526	1944	1990 photo			Kerosene Distillate	Cone	Riveted
94			40	30	6,714		1924 map	1990 photo		NTYA			
95			40	30	6,270	6,178	1924	1995 map		NTYA	Kerosene Distillate	Cone	Riveted
101			40	11.79	2,639		1924 map	1990 photo		NTYA			
102			70	30	19,573	17,775	1924	1989		NTYA	Unblended No. 2/TCC Charge/ Jet A	Cone	Welded
141			15	19	598		1924 map	1939 map		NTYA			
142			15	19	598		1924 map	1939 map		NTYA			
143			15	19	598		1924 map	1939 map		NTYA			
144			15	19	598		1924 map	1939 map		NTYA			
184			23	14	1,036		1924 map	1939 map		NTYA			
187			93	34	41,135		1924 map	1989		NTYA	No. 2 Fuel Oil		
187			93	38	43,204	38,550	1940	1990 photo		NTYA	PTR Charge	Floater	Welded
189			70	30	19,573	19,230	1915	1989		NTYA	Jet A Unblended No. 2/TCC Charge	Cone	Welded
230							1939 map	1939 map		NTYA			
279			24	25	2,014		1924 map	1939 map		NTYA			

Table 1. Tank Inventory for Areas of the Buffalo Terminal, ExxonMobil Oil Corporation, Buffalo, New York

Tank No	Size				Capacity (BBL)		Year Built	Removed	Duplicate Tank Designation Notes	Location	Product Stored	Roof Type	Shell
	Length	Width	Diameter (Feet)	Height (Feet)	Gross	Available							
280			24	25	2,014		1924 map	1939 map		NTYA			
293			25	32	2,798		1924 map	1990 photo		NTYA			
350			40	12	2,686		1924 map	1990 photo		NTYA			
351			40	12	2,686		1924 map	1990 photo		NTYA			
Babcock Street Properties Area													
76			15	16	504		1924 map			BSPA			
77			15	16	504		1924 map			BSPA			
83			67	40	23,865	22,609	1939			BSPA	No. 6 Fuel Oil	Cone	Welded
84			67	40	23,865	22,609	1939			BSPA	No. 6 Fuel Oil	Cone	Welded
151			15	16.167	509		1924 map			BSPA			
152			15	16.104	507		1924 map			BSPA			
153			15	16.25	511		1924 map			BSPA			
154			14	15.135	415		1924 map			BSPA			
159			15	16	504		1924 map			BSPA			
162			16	15	537		1924 map			BSPA			
162							1939 map			BSPA			
164							1939 map			BSPA			
166							1939 map			BSPA			
167			15	20.208	636		1924 map			BSPA			
170			15	15.125	476		1924 map			BSPA			
188			25	16	1,399		1924 map			BSPA			
190			15	16	504		1924 map			BSPA			
193			15	16.25	511		1924 map			BSPA			
214			24.25	17.5	1,440		1924 map			BSPA			
221			85	50	49,441	45,394	1944	1988		BSPA	No. 2 Fuel Oil	Cone	Riveted
333			36	28	5,076		1924 map			BSPA			
334			36	28	5,076		1924 map			BSPA			
342			25	16	1,399		1924 map			BSPA			
343			36	28	5,076		1924 map			BSPA			
383							1939 map			BSPA			
384							1939 map			BSPA			
385							1939 map			BSPA			
386							1939 map			BSPA			
387							1939 map			BSPA			
393							1939 map			BSPA			
394							1939 map			BSPA			
395							1939 map			BSPA			
396							1939 map			BSPA			
397							1939 map			BSPA			
398							1939 map			BSPA			
393			25	35	2,966	2,924	1941			BSPA	Asphalt	Cone	Welded
394			25	35	2,966	2,924	1941			BSPA	Asphalt	Cone	Welded
395			25	35	2,966	2,924	1941			BSPA	Asphalt	Cone	Welded
396			25	30	2,966	2,924	1941			BSPA	Asphalt	Cone	Welded
397			30	40	4,886	4,825	1941			BSPA	Asphalt	Cone	Welded
398			30	40	4,886	4,825	1941			BSPA	Asphalt	Cone	Welded

Table 1. Tank Inventory for Areas of the Buffalo Terminal, ExxonMobil Oil Corporation, Buffalo, New York

Tank No	Size				Capacity (BBL)		Year Built	Removed	Duplicate Tank Designation Notes	Location	Product Stored	Roof Type	Shell
	Length	Width	Diameter (Feet)	Height (Feet)	Gross	Available							
420			25	33	2,885		1924 map			BSPA			
421			25	33	2,885		1924 map			BSPA			
422			25	33	2,885		1924 map			BSPA			
423			25	33	2,885		1924 map			BSPA			
424			25	33	2,885		1924 map			BSPA			
425			25	33	2,885		1924 map			BSPA			
491			30	40	4,886	4,825	1942			BSPA	Out of Service/Asphalt	Cone	Welded
492			30	40	4,886	4,825	1942			BSPA	Out of Service/Asphalt	Cone	Welded
493			25	35	2,966	2,924	1942			BSPA	Asphalt	Cone	Welded
494							1939 map			BSPA			
495			25	35	2,966	2,924	1942			BSPA	Asphalt	Cone	Welded
91			7	5	34.2718181		1924 map			BSPA (inside bldg 15)			
92			7	5	34.2718181		1924 map			BSPA (inside bldg 15)			
205			10	10	140		1924 map			BSPA (inside bldg 15)			
206			10	10	140		1924 map			BSPA (inside bldg 15)			
207			10	10	140		1924 map			BSPA (inside bldg 15)			
208			10	10	140		1924 map			BSPA (inside bldg 15)			
209			10	10	140		1924 map			BSPA (inside bldg 15)			
210			10	10	140		1924 map			BSPA (inside bldg 15)			
211			4	5	11		1924 map			BSPA (inside bldg 15)			
212			5	4	14		1924 map			BSPA (inside bldg 15)			
231			14.25	11	312		1924 map			BSPA (inside bldg 15)			
232			12.17	11	228		1924 map			BSPA (inside bldg 15)			
303			5	4.5	16		1924 map			BSPA (inside bldg 15)			
304			5	4.5	16		1924 map			BSPA (inside bldg 15)			
305			5	4.5	16		1924 map			BSPA (inside bldg 15)			
307			5.875	11.208	54		1924 map			BSPA (inside bldg 15)			
310			7	11	75		1924 map			BSPA (inside bldg 15)			
311			7	11	75		1924 map			BSPA (inside bldg 15)			
312			7	11	75		1924 map			BSPA (inside bldg 15)			
315			7	8	55		1924 map			BSPA (inside bldg 15)			
316			7	8	55		1924 map			BSPA (inside bldg 15)			
317			7	8	55		1924 map			BSPA (inside bldg 15)			
319			12.5	11	240		1924 map			BSPA (inside bldg 15)	Lube Oil		
320			12.5	11	240		1924 map			BSPA (inside bldg 15)			
321			12.5	12	262		1924 map			BSPA (inside bldg 15)			
322			12.5	12	262		1924 map			BSPA (inside bldg 15)			
323			12.5	12	262		1924 map			BSPA (inside bldg 15)			

Table 1. Tank Inventory for Areas of the Buffalo Terminal, ExxonMobil Oil Corporation, Buffalo, New York

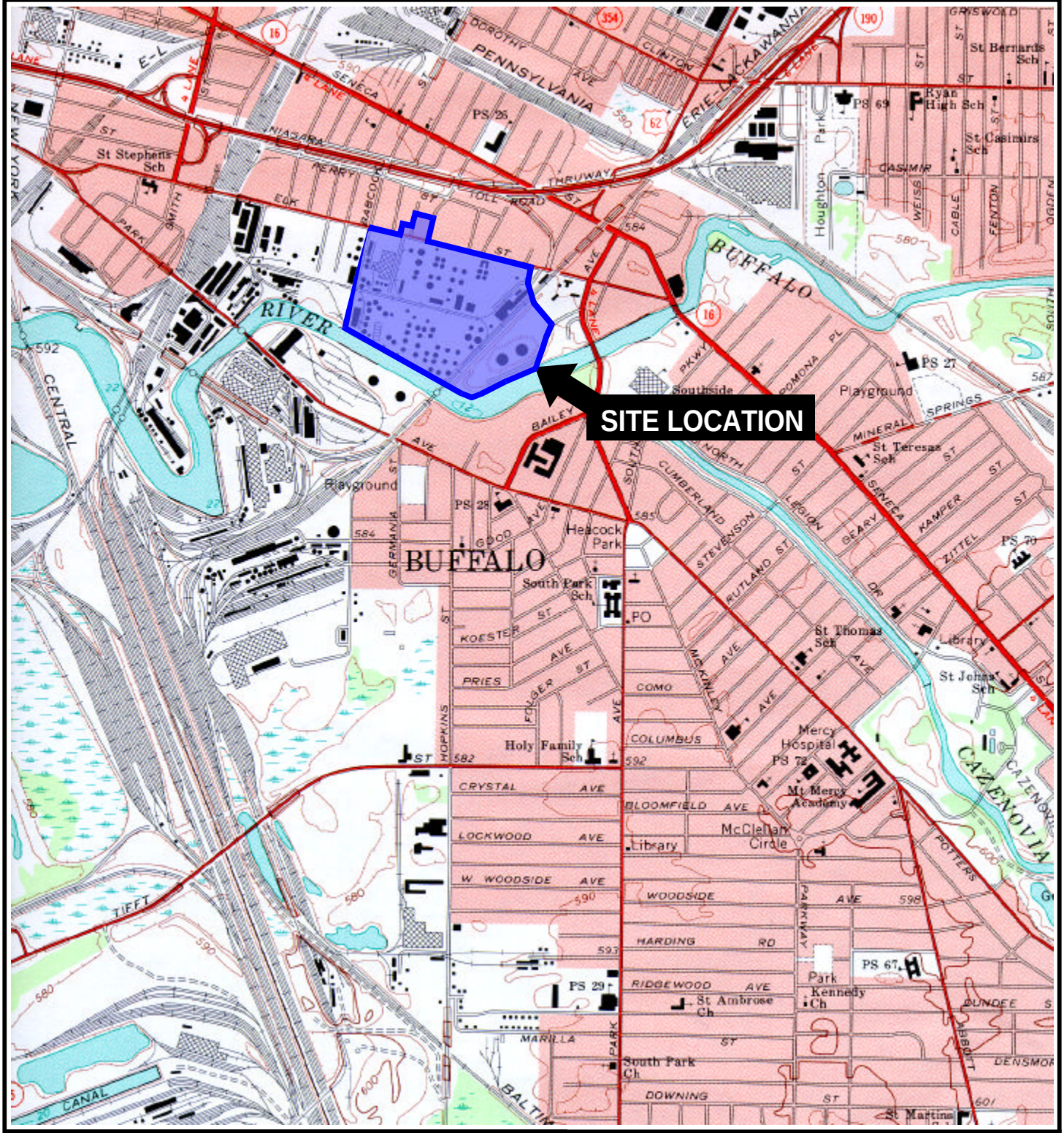
Tank No	Size				Capacity (BBL)		Year Built	Removed	Duplicate Tank Designation Notes	Location	Product Stored	Roof Type	Shell
	Length	Width	Diameter (Feet)	Height (Feet)	Gross	Available							
428			13	12	284		1924 map			BSPA (inside bldg 15)			
429			13	12	284		1924 map			BSPA (inside bldg 15)			
430			13	12	284		1924 map			BSPA (inside bldg 15)			
431			13	12	284		1924 map			BSPA (inside bldg 15)			
432			13	12	284		1924 map			BSPA (inside bldg 15)			
433			13	12	284		1924 map			BSPA (inside bldg 15)			
434			13	12	284		1924 map			BSPA (inside bldg 15)			
435			13	12	284		1924 map			BSPA (inside bldg 15)			
436			13	12	284		1924 map			BSPA (inside bldg 15)			
437			13	12	284		1924 map			BSPA (inside bldg 15)			
438			13	12	284		1924 map			BSPA (inside bldg 15)			
439			13	12	284		1924 map			BSPA (inside bldg 15)			
440			13	12	284		1924 map			BSPA (inside bldg 15)			
441			13	12	284		1924 map			BSPA (inside bldg 15)			
442			13	12	284		1924 map			BSPA (inside bldg 15)			
443			13	12	284		1924 map			BSPA (inside bldg 15)			
444			13	12	284		1924 map			BSPA (inside bldg 15)			
445			13	12	284		1924 map			BSPA (inside bldg 15)			
446			13	12	284		1924 map			BSPA (inside bldg 15)			
447			13	12	284		1924 map			BSPA (inside bldg 15)			
448			13	12	284		1924 map			BSPA (inside bldg 15)			
449			13	12	284		1924 map			BSPA (inside bldg 15)			
450			13	12	284		1924 map			BSPA (inside bldg 15)			
451			12.75	12	273		1924 map			BSPA (inside bldg 15)			
452			14	11	302		1924 map			BSPA (inside bldg 15)			
453			14	11	302		1924 map			BSPA (inside bldg 15)			
454			8	4	36		1924 map			BSPA (inside bldg 15)			
455			5	10.75	38		1924 map			BSPA (inside bldg 15)			
456			6	8	40		1924 map			BSPA (inside bldg 15)			
457			6	8	40		1924 map			BSPA (inside bldg 15)			
458			6	8	40		1924 map			BSPA (inside bldg 15)			
459			6	8	40		1924 map			BSPA (inside bldg 15)			
460			5	5	17		1924 map			BSPA (inside bldg 15)			
461			11	8.5	144		1924 map			BSPA (inside bldg 15)			
462			11	5.83	99		1924 map			BSPA (inside bldg 15)			

Table 1. Tank Inventory for Areas of the Buffalo Terminal, ExxonMobil Oil Corporation, Buffalo, New York

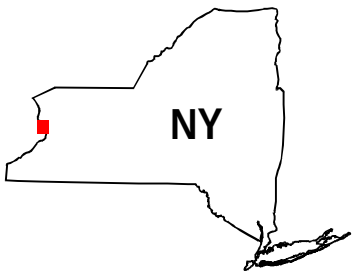
Tank No	Size				Capacity (BBL)		Year Built	Removed	Duplicate Tank Designation Notes	Location	Product Stored	Roof Type	Shell
	Length	Width	Diameter (Feet)	Height (Feet)	Gross	Available							
Underground Storage Tanks													
U-1			Unknown		2,000		1997			UST	Unleaded UST		FRP
U-2			Unknown		2,000		1986			UST	Fuel Oil		FRP
U-3			Unknown		4,000		1986			UST	Unleaded UST		FRP
U-4			Unknown		12,000		1992			CRPA	Stormwater Spills		FRP
					0	0							
A-1			Unknown		12,000		1992			CRPA	Gasoline Additive		
A-2			Unknown		8,000		88			CRPA	Unknown		

Notes:

1. **Where blanks entries exist, information from the existing documentation was not available.**
2. **For Construction dates, an entry referencing a map or aerial photo indicates the map/aerial photo that the tank first appeared.**
3. **For Removal Dates, an entry referencing a map or aerial photo indicates the first map/aerial photo that the tank does not appear on.**
4. **Not all 1917 tanks are listed.**



QUADRANGLE LOCATION



SOURCE:
USGS; 1965, Buffalo SE, New York
7.5 Minute Topographic Quadrangle

0 2000'

Title:

SITE LOCATION MAP

BUFFALO TERMINAL

Prepared for:

EXXONMOBIL OIL CORPORATION

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: N.C.		Date: 04MAR04	FIGURE
Prepared by: B.H.C.		Scale: AS SHOWN	1
Project Mgr.: N.C.		Office: NY	
File No.: MC5223401.CDR		Project No.: 17252Y06	

N:\PROJECTS\MC172Y\MC52Y1234\MC5223401.CDR

ELK STREET PROPERTIES AREA

BABCOCK STREET

PARCELS #1, #2 AND #3

GORHAM STREET

PARCEL #4

WINONA STREET

PARCEL #5

BRADFORD STREET

ELK STREET

BABCOCK STREET

NORTHEAST PROCESS AND STORAGE AREA

NORTHERN TANK YARD AREA

FORMER REFINERY AREA

ADMINISTRATIVE OFFICES AND OPERATIONS AREA

CENTRAL RAIL AND PROCESS AREA

BABCOCK STREET PROPERTIES AREA

75

25

26

90

99

38

97

171

87

104

105

SOUTHERN TANK YARD AREA

175

176

EASTERN TANK YARD AREA (FORMER DISPOSAL AREA)

BUFFALO RIVER

BUFFALO RIVER

N

LEGEND

- EXISTING TANK
- EXISTING STRUCTURE
- CURRENT PROPERTY LINE (BASED ON DENLUCK–O'NEILL ENGINEERING AND SURVEYING, DEC. 15, 1988; AND NUSSBAUMER & CLARKE, INC. FEBRUARY 6, 1995)
- LIMITS OF PROPERTY FORMERLY OWNED BY EXXONMOBIL OIL CORPORATION
- GEOGRAPHIC AREA BOUNDARY AND/OR FORMER PROPERTY LINES

250' 0 250'

Title:

GEOGRAPHIC AREAS OF THE BUFFALO TERMINAL

BUFFALO TERMINAL, BUFFALO, NEW YORK

Prepared For:

EXXONMOBIL OIL CORPORATION

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: N.C.	Date: 04MAR04	FIGURE
Prepared by: G.M.	Scale: AS SHOWN	2
Project Mgr: N.C.	Office: NY	
File No: MC5223402	Project: 17252Y05	

N:\PROJECTS\MC\17252Y\MC52Y\234\MC5223402.DWG

APPENDIX A

Daily Pipe Removal Inspection Form

ExxonMobil Oil Buffalo Terminal Pipe Removal Project
Daily Pipe Removal Inspection Log

Day/Date:		**CHES Site Mgr:**		**Signature:**	
Day/Shift:		**Weather:**			

Documentation(CIRCLE): XOM Permit LOTO Safety Briefing JSA Calibration Time Sheet

Pre start Site Inspection:

Safety Equip Inspection (Extinguishers, First Aid Kit, Respiratory, PPE, Spill):

Clean Harbors Personnel		
1	4	7
2	5	8
3	6	9
Subcontractors		
1	3	5
2	4	6
Equipment / Vehicles / Units		
1	6	11
2	7	12
3	8	13
4	9	14
5	10	15

Materials Used	**Quantity**		**Quantity**
1		7	
2		8	
3		9	
4		10	
5		11	
6		12	

Deliveries (material,equip,fuel)	**Quantity**	**Production (pipe, product, water)**	**Quantity**
1		1	
2		2	
3		3	
4		4	
5		5	
6		6	

Equipment Calibration

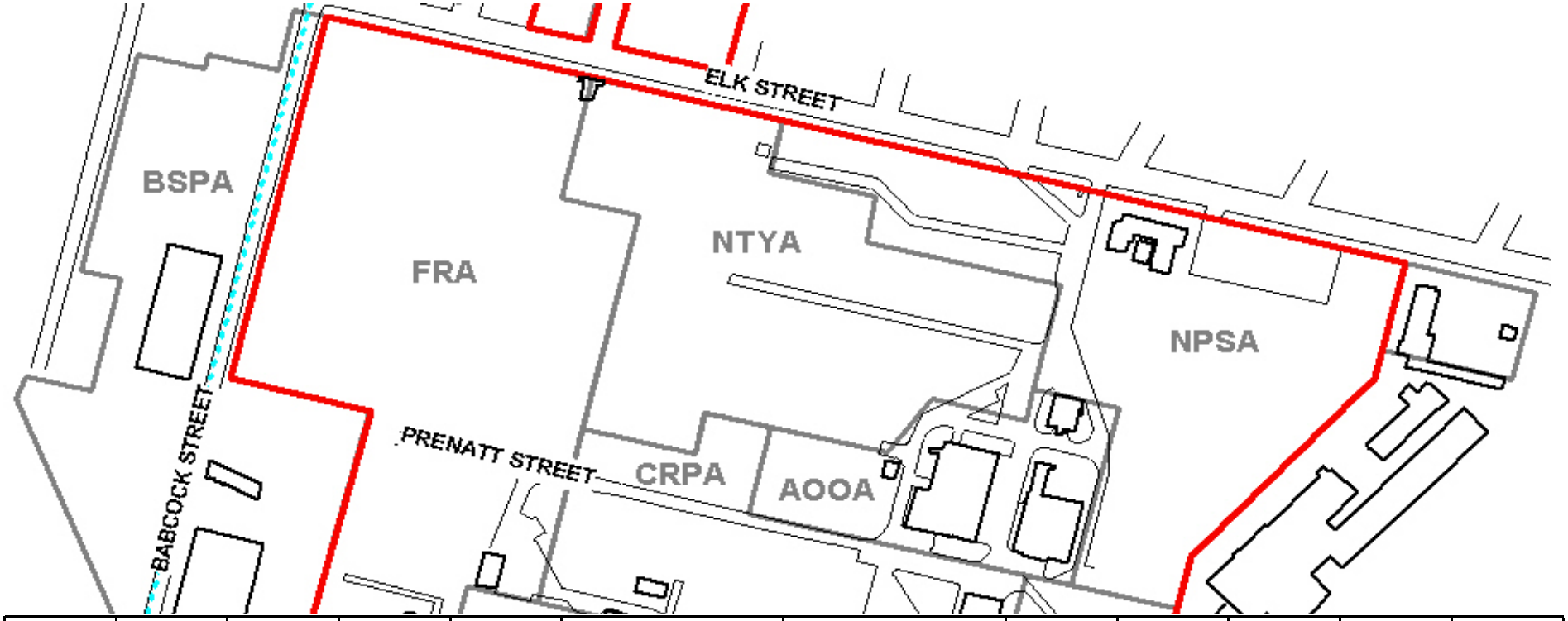
Device	Model	Date
1		
2		
3		
4		

Samples

Media	ID #	Comment
1		
2		
3		
4		

Notes / Comments

Buffalo Terminal Pipe Removal Inspection Log - Page 2	Date:



Pipe Segment #	Pipe Dia. (inches)	Pipe Length (ft)	Pipe Depth (ft bls)	Excavation Width (ft)	Pipe Condition (Visual Inspection)	Soil Conditions (stain, odor, product)	PID Reading	Sample Soil (ID)	Product Sample	Prod Recov (Gallons)	Photos (#, ID)

LEGEND

- EXISTING STORAGE TANK
- FORMER STORAGE TANK
- EXISTING STRUCTURE
- FORMER STRUCTURE
- EXISTING ASPHALT/CONCRETE ROAD
- EXISTING RECOVERY WELL
- EXISTING MONITORING WELL
- EXISTING SOIL BORING LOCATION
- EXISTING TEST PIT LOCATION
- CATCH BASIN AND STORM SEWER PIPE
- HISTORICAL WASTE HANDLING AREAS
- APPROXIMATE LOCATION OF FORMER RIVER CHANNEL
- FENCELINE
- APPROXIMATE EXXONMOBIL CORP. CURRENT PROPERTY LINE
- APPROXIMATE LIMITS OF FORMER EXXONMOBIL CORP. PROPERTY
- GEOGRAPHIC AREA BOUNDARY

100' 0 100'

N

Title:

SITE LOCATION MAP WITH SAMPLING LOCATIONS

Prepared For:

EXXONMOBIL OIL CORPORATION

ROUX ASSOCIATES INC
Environmental Consulting & Management

Compiled by: NC	Date: 03/04/04	PLATE
Prepared by: NC	Scale: AS SHOWN	1
Project Mgr: NC	Office: NY	
File No: MC15233401.WOR	Project: 17252Y06	