REMEDIAL INVESTIGATION REPORT
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
BCP INDEX #W3-1079-05-09
SITE #3-60-031

Prepared For

SUSA Mt. Vernon, LLC

July 2010

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Table

TABLE OF CONTENTS

TABLE OF CONTENTS
(continued)

TABLE OF CONTENTS
(continued)

Page

TABLE OF CONTENTS
(continued)

APPENDICES

LIST OF FIGURES
(at end of report)

LIST OF FIGURES
(at end of report)
(continued)

Figure

LIST OF FIGURES
(at end of report)
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Figure

LIST OF APPENDICES
(included on CD)

Appendix

LIST OF APPENDICES
(included on CD)
(continued)

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BCP INDEX #W3-1079-05-09
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EXECUTIVE SUMMARY

The Remedial Investigation Report (RIR) for the Former Red Devil Paint Facility site (the Site) located at 30 North West Street, the City of Mount Vernon, New York was prepared by Leggette, Brashears & Graham, Inc. (LBG) on behalf of SUSA Mt. Vernon, LLC. The Site is currently included in the BCP as Index #W3-1079-05-09, Site #C360031. All environmental activities at the Site subsequent to its acceptance into the program were performed as required under the Brownfield Cleanup Agreement (BCA) between the owner and the NYSDEC.

The Site has a long history of industrial manufacturing activities related to the manufacture and distribution of paints and lacquers.[1] As a result of several factors including but not limited to: the nature of the materials used in conjunction with these activities; the means of onsite storage for chemicals used in the manufacturing processes; improper historical waste disposal and housekeeping practices; and, failure of the onsite chemical storage systems. The result of these combined factors was contamination of the subsurface beneath the Site and off-site.

The Remedial Investigation consisted of subsurface characterization activities performed throughout the Site to delineate the extent and concentration of soil, groundwater and soil vapor/indoor air contamination. In addition to site characterization activities, Interim Remedial Measures implemented at the Site and several remedial alternative pilot studies were performed to evaluate potential remedial technologies.

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[1] From 1959 to 1971, Red Devil Paints & Chemicals, Inc. operated a paint facility, which blended and manufactured paints and varnishes. From 1971 to 1989, Red Devil was operated as a division of Insilco Corporation. In 1990 the paint facility ended its operations at the Site.

As a result of the subsurface investigation and IRM activities performed at the Site, the Site has been comprehensively characterized. The characterization has defined the extent of soil vapor/indoor air, soil and groundwater contamination in the subsurface beneath the Site.

The results of the onsite soil vapor intrusion sampling rounds (performed prior to onsite IRM activities) indicated that soil vapor VOC concentrations beneath the Site are minimal. Additionally, none of the indoor air samples collected contained concentrations of PCE, TCE and/or methylene chloride (the only compounds with established indoor air guidance values) above the established NYSDOH air guidance values. Based on the NYSDOH Soil Vapor/Indoor Air Matrices (which correlate soil vapor concentrations and indoor air), the most conservative recommended courses of action for the Site (for the two sampling rounds) were: Monitor/Mitigate in Area A; Monitor/Mitigate in Area B; Monitor in Area C; and, take reasonable and practical actions to identify source(s) and reduce exposures in Area D. Following the soil vapor intrusion sampling rounds, mitigation activities were performed in Areas A, B, C and D. In Area A, this activity consisted of removal of an asphalt cap, UST closure activities and excavation/removal of contaminated soil within the parking lot and installation of a new asphalt cap. In Areas B, C and D, these mitigation activities consisted of: removal of the slab on grade; UST closure activities; excavation/removal of contaminated soil and free-phase product; backfill with a highly permeable gravel (the first floor of Area B and the majority of the basement of Area C and all of Area D); the installation of several sub-slab depressurization pipes within the gravel layer; and installation of new reinforced concrete slab. These sub-slab depressurization pipes are currently used as a passive venting to the atmosphere via a roof-mounted wind turbine (producing minimal vacuum).

The installation of the sub-slab depressurization system would provide a means to address soil vapor beneath the Site in the future, if necessary. This system can be converted to an active system by connecting these pipes to vacuum blowers, thereby controlling soil vapor issues. Additionally, an active sub-slab depressurization would provide active remediation of contamination within unsaturated soils.

The results of the onsite soil sampling activities (consisting of hollow-stem auger split-spoon sampling, GeoProbe macro-core sampling and excavation endpoint sampling indicate that residual soil contamination exists in the subsurface throughout the Site. Based on the subsurface investigation, the areas at the Site where the highest concentration and distribution of VOC impacted soil is present include: the location of the former drywell in the parking lot of Area A; the western perimeter of Area C and the northeastern corner of the former UST-W excavation in Area C; and, the highest concentration of VOC contamination was detected in the south/southwestern portion of Area D. This is the area of the Site where the majority of the soil excavation/disposal activities were focused. The elevated metals concentrations in the subsurface soils (where detected) are most likely attributed to a combination of factors including the historic use of coal ash and urban fill as backfill material as well as regional site background concentrations. However; considering the depth of several soil samples containing metals at concentrations exceeding TAGM RSCO, the exceedance of metals throughout the Site can also be attributable to regional background concentrations resulting from the surrounding area history.

Although residual soil contamination remains beneath the Site, based on the fact that the entire Site is capped with asphalt/concrete the potential for exposure due to dermal contact or ingestion is insignificant. The risk of exposure via inhalation of vapors is low due to the fact that the basement and excavated areas of the first floor have been fitted with a passive sub-slab depressurization capable to be converted to an active mitigation system.

The results of the onsite groundwater sampling activities (GeoProbe sampling and groundwater monitoring well and product delineation well sampling), groundwater contamination exists in the subsurface throughout the Site. Based on the subsurface investigation, the areas at the Site where the highest concentration and distribution of VOC impacted groundwater is present include: the location of the former drywell in the parking lot of Area A (R-3A); the western perimeter of Area C; and, in the southwestern portion of Area D (DW-23D). There are the areas of the Site where the majority of the soil excavation/disposal activities were focused, thereby eliminating a significant volume of source material as well as free-phase product (NAPL). The results of the laboratory analysis indicated that SVOC concentrations in groundwater samples collected from the Site are below the NYSDEC TOGS guidance values, with the exception of naphthalene in several locations. The results of the laboratory analysis indicated that the majority of the metals concentrations in groundwater samples collected from the Site are below the NYSDEC TOGS guidance values. Exceptions include arsenic, barium, chromium, mercury and selenium in Area A, and chromium in two locations in Area C and three locations in Area D.

Although residual groundwater contamination remains beneath the Site, groundwater in the vicinity of the Site is not utilized as a source of potable drinking water. In addition to the fact that the entire Site is capped with asphalt/concrete and the groundwater is a minimum of approximately 12 feet below ground surface, the potential for exposure via dermal contact or ingestion of contaminated groundwater is marginal. Additional engineering controls including multi phase extraction (groundwater, soil vapor and free-phase product) can be utilized at the Site to remediate the residual groundwater contamination as well as free-phase product (NAPL).

The pilot tests and pumping tests in conjunction with the IRMs performed at the Site were effective in removing a significant volume of contaminated material from the subsurface as well as determining the feasibility of potential future remedial alternatives at the Site based on the site specific subsurface conditions. As a result of the onsite UST/AST closure activities and excavation activities: sixteen (16) bulk storage tanks and their residual contents were removed from the Site; more than 2,550 tons of non-hazardous soil was removed from the Site (disposed of offsite at approved/licensed facilities); more than 11 tons of hazardous wood was removed from the Site (disposed of offsite at an approved/licensed facility); and, more than 224 tons of hazardous contaminated soil was removed from the Site (disposed of offsite at approved/licensed facilities). The results of the vertical groundwater pumping test showed that do to the low transmissivity of the subsurface sediments, vertical groundwater wells are not a feasible remedial alternative for removing contaminated groundwater or free-phase product (NAPL) at the Site. The results of the vertical soil vapor extraction well pilot test indicated that due to the tight formation present in the subsurface, neither high or low vacuum from a vertical soil vapor extraction well yields significant radius of influence to effectively remediate residual soil contamination at the Site. Based on the grout injection pilot test, a ground barrier (via multiple injection points along the downgradient perimeter of the Site) was ruled out as a method for installing a barrier to prevent the offsite migration of free-phase product (NAPL).

Although several future potential remedial alternatives were deemed to be not feasible for use at the Site, several alternatives were determined to be viable at the Site. Firstly, the results of the horizontal wells HEW-1 and HEW-2 pumping tests demonstrated that due to the geology at the Site (low transmissivity soil), a low volume pumping rate combined with the increased saturated thickness of a horizontal well has the potential to remove groundwater with dissolved phase VOCs and free-phase product from the subsurface as well as control the onsite hydraulic gradient. The pumping test data showed that the drawdown was continuing to increase in a linear fashion (excluding the influence from storm events) during both pumping tests. The data also showed that continuous pumping would induce a cone of depression sufficient to control further migration of both free-phase product (NAPL) and groundwater with dissolved VOCs and remove free-phase product from the subsurface. Based on horizontal wells pumping test it was determined that the groundwater and free-phase product remediation at the Site can be accomplished by the pump and treat technology utilizing horizontal groundwater/product extraction wells in conjunction with periodic product removal from vertical monitoring/delineation/extraction wells.

The horizontal soil vapor extraction well HSVE-1 pilot test demonstrated a substantial vacuum influence throughout the subsurface resulting from the increase in screened area provided by the horizontal well. As a result of this pilot test, it was determined that horizontal soil vapor extraction well(s) is effective in removing vapor phase from the subsurface of the Site. Additionally, operation of a horizontal soil vapor extraction well will act as an additional preventative measure reducing any potential for indoor air soil vapor intrusion.

In conclusion, subsurface contamination remains beneath the Site, primarily in dissolved phase. As a result of the contaminant concentrations remaining at the Site, additional remedial action(s) are required at the Site to actively remediate the onsite groundwater as well as to control offsite contaminant migration. As such, a Remedial Action Work Plan will be prepared and submitted to the NYSDEC.

1.0 INTRODUCTION

The Remedial Investigation Report (RIR) for the Former Red Devil Paint Facility site (the 'Site') located at 30 North West Street, the City of Mount Vernon, New York was prepared by Leggette, Brashears & Graham, Inc. (LBG) on behalf of SUSA Mt. Vernon, LLC (figure 1 shows the Site location).

The purpose of this RIR was to delineate the vertical and horizontal extent of contaminants beneath the Site and adjacent areas. Additionally, the RIR includes Interim Remedial Measures (IRMs) performed at the Site to address contamination encountered during the remedial investigation as well as activities performed to prepare the Site for the implementation of future remedial actions. The results of the Remedial Investigation (RI) will be used to determine the most appropriate, effective and feasible technologies to be implemented at the Site for remediation.

The remedial investigation at the Site was performed in accordance with the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) approved Remedial Investigation Work Plan (RIWP) submitted in July 2006. Additional work plans utilized for work performed during the remedial investigation include an Closure of Tanks Permanently Out Of Service Work Plan (submitted to the NYSDEC on September 28, 2006), a Procedural Plan, Excavation, Removal and Disposal of Contaminated Waste (submitted to the NYSDEC on November 13, 2006), an Addendum to IRM (tank closure) letter outlining the sub-slab venting system and the product recovery well in the southern portion of Area D (submitted to the NYSDEC on November 6, 2007), and a Tank Grave Excavation Chemical Oxidation Application Work Plan (submitted to the NYSDEC on July 24, 2008). A copy of the NYSDEC RIWP approval letter as well as the above listed work plans are included in Appendix I (on the attached DVD). The remedial investigation objectives for the project were:

1. identify and characterize the source(s) of contamination;
2. describe the characteristics of the onsite contamination (concentration; phase e.g., gas, solid, liquid; environmental fate and transport [as necessary] and other significant characteristics);

3. evaluate hydrogeological factors including grain size analysis, soil permeability, nature of bedrock (if applicable), depth to saturated zone, hydraulic gradients, proximity to a drinking water aquifer, surface water, floodplains, and wetlands;
4. identify routes of exposure and human population(s) at risk, including sensitive receptors;
5. identify actual or potential adverse impacts to fish and wildlife resources and to other environmental resources;
6. identify surface-water classifications and existing use designations; and,
7. collect data to facilitate selection and design of remedial actions.

The selection of remediation technology will be based on the following:

- compliance with standards, criteria and guidance;
- overall protectiveness of public health and the environment;
- short-term and long-term effectiveness;
- reduction of toxicity, mobility and volume of contaminants;
- cost effectiveness; and,
- community acceptance.

Several work plans were implemented during the performance of the remedial investigation activities. A Site specific Health and Safety Plan (HASP), which includes the Community Air Monitoring Plan (CAMP) was prepared and approved along with RIWP by the NYSDEC. The HASP is included as Appendix II on the attached DVD. A Quality Assurance/Quality Control (QA/QC) Plan was also prepared and is included as Appendix III on the attached DVD. The Citizen Participation Plan (CPP) and Fact Sheet released to the public prior to the initiation of the Remedial Investigation are included as Appendix IV on the attached DVD.

The previous investigations performed prior to this Remedial Investigation at the Site include but are not limited to: underground storage tanks (USTs) and above-grade storage tanks (ASTs) closures; investigation activities performed by Environmental Resources Management (ERM) and reported to NYSDEC; IRMs instituted by ERM; a feasibility study performed by ERM; remediation of soil and groundwater performed by ERM; file searches performed at NYSDEC offices by LBG; and, preliminary evaluation of present environmental conditions performed by LBG. These activities are a part of the requirements for site characterization outlined in the Brownfield Cleanup Program (BCP) guidance for identifying potential areas of concern based on record review, site inspection, and sampling. The previous investigations at this Site indicate that soil and groundwater beneath the Site have been impacted from industrial operations during the past century. Free-phase product detected historically in monitor wells continues to be present beneath the northeastern portion of the Site. Several of the impacted areas at the Site have undergone initial remediation efforts through the operation of a product recovery system operated by ERM.

Based on prior studies, the RI was focused on confirming and delineating areas that may represent potential sources of soil and groundwater contamination. As part of the remedial investigation; soil, soil vapor and groundwater sampling was performed at a representative number of potential areas of concern (previously characterized by ERM) to confirm the previous data. The RI was designed to supplement the previous investigations, complete the overall Site characterization, and support development of a Remedial Action Work Plan (RAWP). Additionally, several IRMs were implemented at the Site to mitigate onsite and offsite impact of subsurface contamination. These IRMs consisted of: onsite UST and AST removal and closure activities; excavation and disposal of contaminated soil and installation of engineering controls consisting of a network of product recovery pumps and a total fluids recovery (product and groundwater) system.

The IRM activities performed at the Site (both past and present), reduced the subsurface contamination of soil and groundwater beneath the Site. The data indicate that an active remedial action is necessary to complete remediation of the Site and to make it protective of human health and the environment.

2.0 SITE DESCRIPTION AND HISTORY

The Site, presently an Extra Space Storage self-storage facility, is located at 30 North West Street in the City of Mount Vernon, Westchester County, New York. The location of the Site, as shown on figure 1, is at 40°54’54” north latitude and 73°51’35” west longitude. The property is approximately 50,000 sq. ft. (square feet) in area, 73 percent (37,035 sq. ft.) of which is developed. The developed portion of the Site is improved with several buildings constructed at various times and homologated into one composite unit (the ‘Building”). The components of the Building will be referenced as Area A, Area B, Area C and Area D in the RIR. These areas are shown on figure 2, Site Plan.

The areas under investigation are the basement and first floor of the Building, which currently are used for self-storage rental. The Site is located in an industrial area that dates back at least 75 years. A chronology of Site owners and/or operators is as follows:

• SUSA Mt. Vernon, LLC	1991-present
• Insilco	1989-1991
• Red Devil Paint Division of Insilco	1971-1989
• Red Devil Paints & Chemicals, Inc.	1959-1971
• Technical Color and Chemical Works, Inc.	1955-1963
• Continental Bakery Corporation	1926-1940
• Bakery Services Corporation	1927-1930
• Shults Bread Company	1911-1915
• Egler and Sons Baking Company	1908

In 1991 the property and the Building was sold by Insilco to SUSA Mt. Vernon, LLC. The available records indicate that most of the construction on the Site was completed by the Red Devil Paints and Chemicals, Inc. The core of the facility which consisted of the production area, the packing and the garage areas (Areas C and D) was probably built in 1915. A paint remover building was built in 1956 (historically in the parking lot adjacent to Area A) however it has since been razed. The storage/machine shop (Area B) was constructed in 1963. In 1966 the packing and mixing room was completed as an addition to Area C (currently the western portion of Area C). The final office structure (the building on the southern portion of Area A) was completed in 1987.

2.1 Local Land Usage

The surrounding area within a one mile radius of the Site is urban with mixed residential and industrial/commercial development. The Site is bordered on the northwest by Metro North Railroad tracks, on the northeast by Oak Street, on the southeast by North West Street and to the southwest by a small furniture outlet store, a grocery market and a taxi dispatching service. The Bronx River is located approximately 115 feet northwest of the Site.

The property is described by the City of Mount Vernon tax assessor as Section 164.68, Block 1056, Lots 11 and 12. A copy of the tax map is attached as figure 3.

3.0 SUMMARY OF GEOLOGY AND HYDROGEOLOGY

3.1 Geology

The Site is located in the City of Mount Vernon, in the southern part of Westchester County, New York State. This location falls within the Lower Hudson River Valley of the New England physiographic province. The topography in the area consists of northeast trending ridges, separated by rivers that flow southward in narrow valleys. The Site itself is located approximately 115 feet southeast of the Bronx River. The average topographic elevation at the Site is approximately 95 feet above MSL (mean sea level).

Regional geology in this part of southern Westchester County consists of the Manhattan Schist and Hartland Formation (amphibolite, schist-gneiss-amphibolite, gneiss, schist and granulite), metamorphic bedrock materials, overlain by a generally thin layer of unstratified glacial deposits. The Manhattan Schist is a highly-folded, coarsely-crystalline, micaceous schist. Outcrops of the Manhattan Schist are found in road cuts and on ridges throughout the area, although there are no outcrops on the Site. The Manhattan Schist is relatively impermeable, and does not serve as an important source of water. What little water it does produce is from fractures that decrease in size and frequency with depth. Well records show an average yield of 40 gpm (gallons per minute) from wells which average 320 feet in depth in the schist. The overburden typically consists of an unsorted mixture of clay, boulders, and glacial deposits as ground moraine. This glacial material generally has a low permeability and is a poor source of water. In stream valleys, such as that of the Bronx River, the overburden can be much thicker, and consists of stratified glacial deposits, recent stream sediments and reworked glacial material. The water yielding capacity of the unconsolidated stream valley deposits is highly variable, but can be significant in places.

The Site geology was determined from subsurface borings and excavations performed throughout the Site for environmental characterization which were typically 15 to 35 feet in depth. Immediately below the Site is approximately 5 to 15 feet of fill material. The fill is predominantly sand, plus a mixture of coal dust, bricks, concrete rubble and boulders (construction and demolition debris). The natural sediments beneath the fill are a mixture of glacial material plus recent alluvial sediments. The unconsolidated glacial material is silty with lesser amounts of fine to medium sand and trace amounts of gravel; the glacial sediments are also poorly stratified. Apparent bedrock was encountered throughout the Site at approximately 20-25 ft bg (feet below grade) in the basement of Areas C and D (northern portion of the Site). The bedrock appears to follow the contour of the topography which elevates to the south-southwest.

Utilizing the geologic logs recorded for soil samples collected during the installation of the product delineation wells and GeoProbe borings as well as evaluation of soils exposed during open excavation activities, the subsurface soils at the Site have been characterized. This information will be/was used to evaluate onsite subsurface geological characteristics at the Site as well for evaluating contaminant fate and transport at the Site.

Based on the geologic logs recorded during the remedial investigation, the subsurface soils for Area A, Area B, Area C and Area D are described below.

Area A soils (primarily characterized in the parking lot) and first floor Area B soils consisted of approximately 10 feet of fill with high percentages of coal ash. This fill layer is approximately 2-5 feet thick in the basement of Area B soils as well as all areas of Area C and Area D. The underlying soils beneath the fill material consist primarily of very fine to fine sand and silt with trace silt and gravel. The amounts of silt and clay are higher in the northern portion of the Site (Area D and Area C) and decrease to the south.

3.2 Surface Water

The Site is located within approximately 115 feet of the southeastern banks of the Bronx River (figure 2). There are no surface-water bodies on the Site itself. Surface-water run-off throughout the Site drains: to an onsite drywell located in the parking lot of Area A; to a drywell located in the alleyway to the west-northwest of Areas C and D; and, through percolation through the topsoil of the exposed soil present to the south and west of Area A as well as to the west of Area B, Area C and Area D. The majority of storm-water runoff (surface-water runoff and roof drain discharge) flows along the surrounding roads (North West Street, Oak Street and Mount Vernon Avenue), into storm-water catch-basins, and through the storm-water sewer (along the surface topography to the northwest) ultimately discharging to the Bronx River. The Bronx River flows southward, and discharges into Long Island Sound, near the head of the East River.

3.3 Hydrogeology

The main source of groundwater in Westchester County is precipitation which averages 48 inches per year. Runoff averages 22 inches per year.

There are no major aquifers in southern Westchester County. Both the Manhattan Schist and the glacial sediments are capable of yielding small quantities of water to wells, but these aquifers are no longer used. Wells tapping these aquifers have been abandoned due to urbanization. All potable water in the area is supplied by a public water system which is derived principally from surface-water sources.

The depth to groundwater varied across the Site from 25 feet below ground surface to 13 feet below ground surface. Although the presence of product in a number of monitoring wells may have affected the water-level measurements, groundwater appears to be flowing westward towards the Bronx River.

4.0 SUMMARY OF HISTORICAL ENVIRONMENTAL ACTIVITIES

4.1 Environmental Regulatory Status

From 1959 to 1971, Red Devil Paints & Chemicals, Inc. operated a paint facility, which blended and manufactured paints and varnishes. From 1971 to 1989, Red Devil was operated as a division of Insilco Corporation. In 1990 the paint facility ended its operations at the Site. A decommissioning program that encompassed the identification of environmental management requirements for facility deactivation was implemented by ERM. The objective of the facility deactivation process was to identify items requiring decontamination, removal, and/or special handling in order to prepare equipment and facilities for plant closure as well as to assess areas of the Site which had negatively impacted the environment through historical onsite facility activities. During the period of facility operations (1959 to 1990) materials were released from leaking USTs and ASTs and associated piping systems.

On June 29, 1992, the NYSDEC placed Red Devil Paint on the New York State Inactive Hazardous Waste Registry as a Class 2 Site. This classification indicates that the Site poses a significant threat to the public health or environment.

In April 1993 an Order of Consent requiring a Remedial Investigation/Feasibility Study (RI/FS) and an IRM program was executed by Insilco Corporation and NYSDEC.

A Record of Decision (ROD) for Red Devil Paint in Mount Vernon, Site Number 3-60-031 was issued by NYSDEC in March 1996. According to the ROD, the selected remedy for the Site was based on the RI/FS completed by ERM. Two operable units, OU-1 and OU-2, were determined for the Site. OU-1 addresses the presence of non-aqueous phase liquid (NAPL) and paint material both onsite and offsite. OU-2 will follow the completion of OU-1 and will consider residual groundwater and soil contamination, after NAPL has been removed.

Several remedial alternatives are described in the ROD. The selected remedial alternative consisted of the following:

- recovery of NAPL from onsite groundwater;
- recovery of offsite paint materials from the Bronx River; and,
- investigation and design implementation of offsite NAPL recovery.

The Site is currently included in the BCP as Index #W3-1079-05-09, Site #C360031. All environmental activities performed at the Site subsequent to its acceptance into the program will be performed as required under the Brownfield Cleanup Agreement (BCA) between the owner and the NYSDEC.

4.2 Historical Environmental Activities Performed by ERM

After manufacturing operations ceased in 1990, Insilco initiated a program at the Site in order to mitigate any potential environmental damages associated with the property. Initially the program started in 1990 and consisted of the permanent closure of USTs and vaulted ASTs.

4.2.1 Preliminary Site Assessment

During tank closure activities, a spill was reported to the NYSDEC (NY Spill #91-01562) and the initial activities were expanded to a Preliminary Site Assessment (PSA) which was conducted in May 1991.

The PSA indicated that soil and groundwater have been impacted by leaking tanks. Soil sampling indicated the presence of solvents such as toluene, xylene, methanol and methylene chloride had contaminated Site area soils.

As part of the PSA investigation, the facility was divided in four areas, A, B, C and D (figure 2). The following is a summary of environmental activities in each area:

Area A

Area A consisted of the office, loading bay and a courtyard. Based on the ERM report there were originally eleven USTs within this area: five of these USTs were removed prior to ERM's work, and six USTs were removed by ERM. The six tanks removed by ERM were all 1,500 gallons in size and were designated as UST-1A, UST-2A, UST-3A, UST-4A, UST-5A and UST-6A (figure 4). Soil samples from the area of these USTs contained toluene, ethylbenzene and xylenes at depths between 16 and 25 feet. Approximately 150 cubic yards of contaminated soil were excavated and disposed offsite.

Area B

The ERM report identified four USTs and nine vaulted ASTs present in Area B (figure 5). Eight of the nine ASTs were removed (AST-1 through AST-8) from the Site and AST-9 was left in place because it contained fuel oil for the boiler room. The four USTs (UST-E, UST-F, UST-G and UST-H) were cleaned out, inspected and abandoned in place after the tanks were filled with an inert foam. Soil samples collected from the vicinity of USTs contained a trace of methylene chloride and several polyaromatic hydrocarbons (PAHs).

Area C

Four vaulted ASTs (AST-13, AST-15, AST-16 and AST-19) and one UST (UST-D) were identified by ERM in Area C (figure 6). The four ASTs were cleaned and removed from the Site. One UST (UST-D) was abandoned in place since it was in the vicinity of a foundation wall. Soil samples collected from the UST-D area showed trace concentrations of solvents and PAHs. No soil was required to be removed from this area.

Area D

According to the ERM report there were originally four known USTs within this area: UST-34, UST-35, UST-36 and UST-C in the commercial space; and, UST-A, UST-B and UST-10 in the alley. These former UST locations are shown on figure 7.

Upon inspection, UST-34, UST-35, UST-36 and UST-C were found to contain fluids and sludge. UST-35 and UST-36 had both been used to store mineral spirits, UST-34 had been used to store polyurethane varnish and UST-C had been used to store waste oil. UST-35 and UST-36 were both observed to have holes up to 0.25 inch in diameter. After the fluids and sludge were removed the tanks were cut open and disposed offsite. Soil samples collected in the vicinity of these tanks contained toluene, ethylbenzene and xylene. Approximately 30 cubic yards of contaminated soils were removed from this area.

UST-A and UST-B, located in the alley of Area D, were listed as being used for storm water control during heavy rain events. These tanks appear to have been left in place. Another UST, (UST-10), located in the alley area was used for storage of waste solvents. This tank was cleaned, filled with an inert foam and abandoned in place.

During the PSA, seventeen (17) product delineation wells were installed onsite. These wells, showed the presence of NAPL on top of groundwater. In addition, three other monitor wells were installed to analyze the groundwater. The location of these wells is shown on figure 8.

4.2.2 ERM Remedial Investigation

Following the PSA, it was determined that additional work was needed to delineate the impacted soil at the Site. As such, a RI was conducted by Insilco's consultant, ERM, between November 1992 and December 1994. A RI report completed by ERM and dated May 26, 1994 was submitted to the NYSDEC. The ERM RI activities consisted of soil sampling, NAPL delineation and characterization, groundwater monitor wells installation and groundwater sampling, Bronx River sampling, air sampling and implementation of an IRM program. A summary of these activities are presented in the following sections.

4.2.2.1 Soil Investigation (ERM)

Area A

In the courtyard, soils from 21-22 ft bg and 16-18 ft bg were reported to have levels of toluene from 15 ppm (parts per million) to above 2,000 ppm, respectively. The Recommended Soil Cleanup Objective (RSCO) for toluene is 1.5 ppm.

Area B

Soil boring data contained in the ERM RI indicates this area was not impacted by operations performed in the basement/storage area. This may be related to the good condition of the USTs that were taken out of service in Area B.

Area C

The ERM RI soil boring data showed soils contaminated above cleanup levels. Toluene was detected at concentrations of 110 ppm (12-14 feet) and xylene at 120 ppm at 12-14 feet. Tentatively Identifiable Compounds (TICs) exceeded 800 ppm. The water table is at 15-16 feet in this area. The RSCO for xylene is 1.2 ppm.

Area D

PSA and ERM RI soil boring data identified volatile organic compounds (VOCs) including toluene, ethylbenzene and xylene ranging from 1.6 ppm to 1,400 ppm. Soils in this area are contaminated down to 14 feet. Additional VOCs found in low concentrations (from 0.007 ppm to 0.11 ppm) included chlorinated compounds such as tetrachloroethylene (PCE), 1,1,1-trichloroethane (TCA), 1,1-dichloroethane (DCA) and 1,1-dichloroethene (DCE).

Semivolatile data showed several compounds in low levels, with naphthalene being found at most sample locations. Inorganics (metals) were also detected during the ERM RI. The metals chromium, cobalt, lead, manganese, nickel and vanadium ranged from 4.8 ppm to 6,980 ppm in soils from 11-13 feet below the basement floor. The RSCOs for chromium, iron, nickel and zinc (10.0, 2,000, 13.0 and 20.0 ppm, respectively) were exceeded. Additionally, magnesium exceeded the eastern USA background concentration range of 200-500 ppm.

4.2.2.2 Groundwater Investigation (ERM)

During the ERM RI, nine (9) additional product delineation wells and four (4) monitor wells were installed to better define the extent of NAPL in all areas (A, B, C and D). The locations of all wells installed at the Site are shown on figure 8. The thickness of the NAPL prior to commencement of the remedial effort ranged from 0.02 foot in Area A, to more than 3.0 feet in Area D. There was no assessment of possible NAPL below the railroad embankment. Analysis of NAPL samples showed the presence of aromatics, chlorinated compounds and volatiles. Some NAPL appears to be free product polyurethane varnish that solidifies when exposed to air. The distribution of NAPL as recorded by ERM in 1992 and 1993 is presented on figures 9 and 10. Table 1 shows the thickness of NAPL in 1992, 1993 and 2001.

A total of seven groundwater monitoring wells were installed during the PSA and the ERM RI. The locations of these wells are shown on figure 8. These wells were constructed to prevent NAPL from entering the well (screened off below product) and to provide additional data on groundwater quality below the NAPL. Two rounds of groundwater samples were collected from all seven groundwater monitor wells during the months of June and September 1993. Results show aromatic, chlorinated and semivolatile compounds in the groundwater. Aromatic compounds were VOCs, with an increase of toluene in the second round of sampling (from 150 ppb [parts per billion] to 96,000 ppb). Concentrations of VOC were detected in groundwater samples collected from upgradient monitoring Well MW-1A (benzene, toluene, ethylbenzene and xylenes [BTEX] of 96,000 ug/l [micrograms per liter]) as well as offsite upgradient monitoring Well MW-7A (BTEX of 16,013 ug/l).

4.2.2.3 Bronx River Investigation (ERM)

The Bronx River runs parallel to the Site and is located at approximately 115 feet to the west of the Site. The Bronx River is located between the Metro North railroad (to the east) and the Bronx River Parkway (to the west). The portion of the river that runs parallel to the Site is classified as a Class C stream, which is fresh surface water suitable for fish propagation and survival. The water quality shall be suitable for primary and secondary contact recreation (e.g., swimming and boating), although other factors may limit the use for these purposes.

In early 1993, seepage was discovered entering the river from the southern banks at a location which is approximately 250 from the Site. The seep material was tested and compounds similar to those found in mineral spirits used by the Red Devil Paint facility were detected. Since 1993 an absorbent inner boom and skirted outer boom have been deployed to contain the seep material for collection as one of the ongoing IRMs for the Site.

Five surface-water samples were collected from areas upstream, mid-stream and downstream of the river's location to the Site. No semivolatiles were detected and only low levels of VOCs were found in the upstream boom area. Inorganics were detected at concentrations near or within background levels.

Nine sediment samples were collected and analyzed for VOCs and five of the nine samples were analyzed for inorganics. VOCs ranging from 0.004 ppm to 0.015 ppm were detected in a few samples and the others showed no detections. Semivolatiles were present (from 0.053 ppm to 1.814 ppm) in samples taken immediately downstream from the seep and further downstream.

The potential impacts to the river may come from a variety of sources including the Site, an active downstream discharge pipe, runoff from the Mt. Vernon Avenue Bridge and unidentified upstream sources or naturally occurring compounds.

4.2.2.4 Air Quality Investigation (ERM)

Two rounds of air quality samples (1993 and 1995) were collected during the ERM RI. The samples were collected during various field tasks with the product recovery system in operation. Air quality results were below Occupational Safety and Health Administration (OSHA) time weighted average Permissible Exposure Levels (PELs). PELs represent the allowable levels of these contaminants that an adult worker may be exposed to averaged over an eight-hour day, forty-hour week.

4.2.2.5 Interim Remedial Measures (ERM)

IRMs for NAPL recovery were conducted at the Site during the ERM remedial investigation. Prior to startup of onsite NAPL recovery system it was estimated that approximately 11,760 gallons of NAPL were present beneath the site.

Two IRMs started in 1993 during the ERM RI. The first IRM included NAPL recovery from Areas C and D. By September 1995 over 5,400 gallons of NAPL were recovered as a result of the remedial effort. Wells were used to pump the NAPL through a series of lines that discharged into two large storage tanks located onsite. When the tanks were full, the product was pumped out by a vac truck and transported to a facility (Cycle Chem., Inc. of Elizabeth, New Jersey) for recycling as a fuel. Until April 2003, approximately 8,500 gallons of product from Area C and 358 gallons of product from Area D had been recovered. Area D's lower recovery was due to the NAPL's change in viscosity, which caused pumping problems.

The second IRM addressed the material seeping into the Bronx River. Four-inch diameter wells were used to pump product in a recovery tank from an area located along the Bronx River eastern bank. A two-system boom was employed in order to contain the NAPL for future collection and to prevent it from impacting downstream locations. The inner absorbent boom intercepted the product for biweekly collection and disposal, while the outer skirted nonabsorbent boom prevents the material from leaving the seep location. The boom system extended from an upstream location to 300 feet downstream at its collection point. The solidified (due to contact with the air) seep material (non-hazardous) was transported to Cycle Chem. by Freehold Cartage and landfilled. An estimated average of 0.50 cubic yards of solidified seep material was removed biweekly. Until April 2003, 474 gallons of product have been recovered with the offsite recovery system located on Bronx River bank in the vicinity of the railroad embankment. Additionally, approximately 3,110 gallons of product have been recovered from the Bronx River Boom System.

No remedial measures were continued by Insilco from 2003 after Insilco declared bankruptcy and ERM was instructed to stop the work at the Site.

4.3 LBG Preliminary Site Evaluation Activities

LBG was retained by SUSA Mt. Vernon, LLC to conduct an investigation in 2005 at the former Red Devil Insilco facility and to determine the present status of the contamination at the Site.

The evaluation of the 2005 environmental conditions of the Site conducted by LBG was based on review of available files at NYSDEC Region III office, several Site visits by LBG personnel, the performance of an environmental site survey and collection and analysis of groundwater samples.

On July 5, 6, 7 and 8, 2005, LBG personnel completed an evaluation of the environmental conditions of the Site.

The purpose of the LBG investigation was the following:

- determine the status of remedial measures;

- evaluate the extent of contamination by conducting an inventory of monitor wells, product delineation wells and extraction wells;
- obtain data concerning current product thickness and location;
- obtain the most recent groundwater quality data; and,
- conduct an inventory of storage tanks and piping.

The following is a description of each task completed by LBG.

4.3.1 Status of Remediation System

During the Site visits, the existing remediation system was inspected by LBG personnel. Three wells were identified in a vault during the field visit, two outside of the building in the alley on the northwest corner (entrance from Oak Street) and one inside of the building.

Each vault has a 2-inch diameter PVC well and a hose which were removed from the well. Abandoned pumping equipment, 55-gallon drums, hoses and controls were observed in the existing storage building. In addition, a containment boom was observed along the Bronx River.

Based on the field observations, LBG concluded that there was no active remediation systems in operation at the Site. The IRMs and/or remediation equipment installed by ERM were abandoned and no other remedial activities were visible at the Site.

4.3.2 Groundwater Monitor Wells, Product Delineation Wells and Extraction Wells Inventory

LBG completed an inventory of existing onsite and offsite wells between July 5, 2005 and July 8, 2005. According to ERM, seven (7) monitor wells and twenty-six product delineation wells were installed at the Site. Additionally, one monitor well and four product delineation wells were installed along the Bronx River Bank.

During the LBG inventory, four monitor wells and sixteen product delineation wells were located onsite. The remainder of the onsite wells were inaccessible due to the presence of occupied self-storage units and/or the presence of stored materials (i.e., wood pallets, refuse...). Because of access problems along the Bronx River, the wells along the river could not be inventoried during July 2005.

Depth to groundwater and product and total depth of all wells identified in the field were measured. The locations of the wells are shown on figure 8. Six of the nineteen wells located contained product ranging in thickness between 0.04 foot and 0.70 foot. One well exhibited a product film and a miscible mixture of solvent and water was observed in two other wells. Product and groundwater level measurements and product thickness on July 5-7, 2005 are listed on table 2. A comparison between the product thickness accumulation between 1992, 1993 and 2005 is shown on table 3.

4.3.3 Groundwater Sampling and Analysis

Groundwater samples were collected from three monitor wells and eight product delineation wells on July 6 and July 7, 2005. Prior to sampling, the three volumes of groundwater were evacuated from each well using dedicated disposable bailers. The groundwater samples were analyzed for VOCs by York Analytical Laboratory (a NYSDOH certified laboratory) by EPA Method 8260. Evaluation of groundwater quality data from 2005 groundwater sampling is presented in Section 10.3.5.1.

4.3.4 Storage Tanks Inventory

In August 2005, LBG performed an inspection to locate existing tanks, fill ports, vent pipes and/or product piping within the facility which would have been associated with former USTs and/or ASTs.

One AST (AST-9) was identified in the basement of Area B and was most recently used for storage of fuel oil for the boiler. Historically, AST-9 was used in association with the paint manufacturing/production activities. This tank appeared to be in good condition with no stains observed beneath it. There were also two ASTs present in Area C which were previously utilized by ERM for temporary storage of recovered product and contaminated water.

No other tanks were openly identified throughout the Site. Four 2-inch diameter pipes were identified adjacent to the boiler room on the southern portion of Area C. These pipes were capped. Upon removing the caps for inspection, two of four identified pipes contained heavy oil. Based on field observations, these pipes appeared to run into the boiler room. In the eastern portion of Area C, a pipe was observed to be protruding through the concrete slab. This pipe was believed to be associated with an UST in this area, however there was no record of an UST in the area. No other storage tank indicators were identified throughout the Site during the Storage Tank Inventory inspection.

4.3.5 Bronx River Monitor Well Inventory

On September 16, 2005, LBG completed an inventory of the groundwater monitoring product delineation/extraction wells located along the Bronx River.

During the LBG inventory, four monitor wells were located along the river. These wells, all constructed of 4-inch diameter PVC, were identified as DW-16, DW-17, DW-18 and DW-19. Each well was located in vaults with hinged covers and padlocked closed.

Depth to groundwater and product of all wells identified in the field were measured and total depth was measured in the wells that contained no product. Product was detected in DW-17 and DW-19 at thicknesses of 0.31 foot and 0.15 foot, respectively. No product was detected in Wells DW-16 or DW-18. The measurements are listed on table 4 and the location of these wells is shown on figure 8.

5.0 DESCRIPTION OF REMEDIAL INVESTIGATION WORK COMPLETED

Detailed descriptions of the remedial investigation activities performed at the Site are presented below. Additionally, photographs documenting the onsite field activities are included in Appendix V on the attached DVD.

5.1 Additional Site Background Research

Prior to the implementation of the onsite remedial investigation activities, background research was performed in order to identify areas where additional site characterization data was needed. These activities consisted of obtaining and reviewing site documentation on file with the NYSDEC, the City of Mount Vernon as well as other miscellaneous file sources. The primary resources utilized in defining the scope of work for the remedial investigation was the historical reports completed by ERM.

5.2 Site Preparation Activities

In order to facilitate the access for performing subsurface investigations, several areas were prepared by removing old electrical, heating equipment and onsite storage units.

5.2.1 Boiler Room Dismantling

An abandoned boiler room was located in the basement of Area B. The location of this room is shown on figure 2. As part of the Site preparation activities, all equipment from the boiler room Area B basement was dismantled. This equipment consisted of three cast iron boiler units and all associated piping. During the equipment dismantling activities, asbestos containing materials (ACMs) (gasket material and flange material) was identified within the cast iron boilers. Asbestos removal activities were completed by Tradewinds Environmental Restoration, Inc. (Tradewinds) of Bay Shore, New York personnel licensed with the New York State Department of Labor for performing asbestos abatement activities. The ACM was placed in seventeen (17) plastic bags, sealed and subsequently disposed of at Southern Alleghenies of Davidsville, Pennsylvania. Disposal manifests for the ACM removed from the boiler room are included in Appendix VI on the attached DVD. Following the completion of the asbestos abatement activities, the remainder of the piping and boiler components were removed and disposed offsite.

5.2.2 Storage Unit Removal

In order to access the locations of the existing monitoring and product delineation wells and to complete subsurface investigation in several areas, numerous storage units were removed. Initially, selected units were disassembled to provide access to select areas throughout the Site. The occupants of the units were notified of the impending need for access and were given a set period of time to empty out their units. In an effort to expedite access for the environmental investigation activities, SUSA/Extra Space Storage relocated numerous tenants from the Site to a higher quality Extra Space Storage facility located a block away. Due to the move-out activity, some subsurface investigations were postponed until the storage units removal was completed (Area D commercial space and the first floor of Area B where UST-E, UST-F, UST-G and UST-H were located).

Following consultation with the NYSDEC and to facilitate work throughout the Site, Extra Space Storage relocated all tenants from the basement of the building (Area B, Area C and Area D) and in the first floor portion of Area B. After all of the tenants were relocated, all of the remaining storage units in Area C and Area D were disassembled, all the refuse generated during these activities were removed from the Site.

5.2.3 Subsurface Pipe Tracing and Ground Penetrating Radar Survey

The presence of underground structures creates significant risks during demolition, reconstruction, new construction, retrofits, and remediation projects. These risks include property damage, environmental releases, project delays, and personal injury. Due to the uncertain and unseen risk that subsurface structures (e.g., utilities, old foundations, storage tanks) present, and the benefit that the additional information generated from the investigations would provide with regard to steering the investigation, subsurface mapping activities were performed. Primarily this was done to evaluate areas where USTs were suspected to be present (based on indicators), to evaluate where subsurface drainage piping runs were located as well as to evaluate the subsurface where no UST indicators were observed. Two techniques were used for the mapping of subsurface structures and utilities.

The technologies utilized consisted of conductive tracing and ground penetrating radar (GPR). Each of these methods has advantages and disadvantages, which are presented below.

Conductive tracing is used for tracing an individual pipe or cable (conductor), and is used when other conductors or metal objects are nearby. The conductive method requires a direct connection to the pipe to be traced. This method may also be used to trace nonmetallic pipe by placing a wire, plumber's snake, or electrical fish tape within the nonmetallic pipe. The active line locator utilizes a frequency transmitter signal, which travels on the conductor (pipe). A receiver is then used to identify the location of the conductor. This method is used for determining a particular object or several points along a buried pipeline or cable. It is the preferred method for identifying unknown or lost conductors. This method was used for tracing the path of the floor drains throughout the basement as well as to trace suspect UST pipes.

On July 3, 2007 conductive pipe tracing was performed at the Site. This activity was performed to locate and trace identified pipes and floor drains throughout the Site. The traced utilities were recorded on a Site map and are presented on figure 11. The results of the conductive pipe tracing showed that there was a suspect UST identified in the eastern portion of Area C. As is presented in the USTs removal section, UST-W was located in this area which was adjacent to 3 additional and previously undiscovered USTs, UST-X, UST-Y and UST-Z. The location of these USTs can be found on figure 6.

GPR is a mapping system, which can detect and map subsurface structures made of most materials. The GPR survey is performed by using a small transmitter/receiver antenna over the ground surface while the reflected radar pulses are presented and recorded on an attached console. Readings with characteristic parabolic reflections may indicate the location of cylindrical features such as pipes or USTs. Utility trenches will show up as patterns of soil disturbance and as indicative of non-native backfill materials. The two biggest limits of the GPR technology are: limited depth penetration in conductive soils such as clays; and, inaccurate interpretation of pipe depth and diameter. In order to obtain accurate data, the pipe or other feature must be at least one inch in diameter for every foot in depth to be detected by the

GPR equipment. Based on this rule, a pipe must be at least 4 inches in diameter to be observed at 4 feet in depth. As such, this method was used to determine if previously unidentified USTs were present in the subsurface.

On September 13, 2007, a GPR survey was performed at the Site by Enviroprobe Services, Inc. of Westmont, New Jersey. The focus area of the survey was: the basement of the Site in Area B, Area C and Area D; the Area A/B parking lot; and, portion of North West Street (east of the parking lot where historical Sanborns showed an UST). Numerous bisects were performed and evaluated in real-time for detected anomalies. The GPR bisects performed at the Site as well as any anomalies detected are shown on figure 12. The results of the GPR survey were the following: no additional USTs or subsurface anomalies were detected in the basement of the building; a slight anomaly was observed in Area A/B parking lot (in the area of the former paint remover building); and, no data was obtained regarding the historical UST upgradient across North West Street.

5.2.4 Removal of Abandoned Overhead Piping

As part of the Site preparation, unused and abandoned piping material was removed from the basement of the building. The abandoned and unused piping was a part of the historical manufacturing activities at the Site and consisted of an extensive piping network located in the ceiling of the basement. This unnecessary piping material was dismantled, cut into pieces and taken offsite for recycling. The piping was inspected as it was being dismantled and cut and none of the piping contained residual product. This piping removal activity continued throughout the duration of the project as additional sections of piping were encountered as the remedial investigation activities progressed throughout the Site.

5.3 Soil Vapor Intrusion Investigation

The purpose of the soil vapor intrusion investigation was to assess the following: extent and magnitude of impacted soil vapor beneath the Site; concentration of VOCs in the indoor air throughout the Site; and, the risk to public health, safety and the environment. The soil vapor intrusion investigation was conducted over two sampling events October 2006 and March 2007.

The soil vapor intrusion investigation included the following:

- installation of interior sub-slab soil vapor monitoring points and exterior soil vapor monitoring points;
- monitoring of Site conditions as stipulated in the Site Specific HASP and the CAMP during soil vapor monitoring point installation activities;
- collection of sub-slab soil vapor samples, soil vapor samples, indoor air samples and outdoor ambient air samples from the Site and points surrounding the Site; and,
- laboratory analysis of the vapor samples for volatile organic compounds (VOCs) by EPA Method TO-15.

The purpose of the soil vapor intrusion investigation was to determine the following:

- potential for current human exposure;
- potential for future human exposure; and,
- measures to be implemented for removal of vapors from the subsurface.

The soil vapor intrusion investigations consisted of collecting soil vapor samples from 18 sub-slab soil vapor points, four (4) indoor air samples (one each for Areas A, B, C and D), two (2) exterior soil vapor points, and exterior ambient air samples (one upwind and one downwind) at the Site. All sampling locations for the soil vapor intrusion investigations first round (October 2006) and second round (March 2007) are shown on figure 13.

5.3.1 Sub-Slab Vapor Sampling Point Installation

Eighteen (18) sub-slab soil vapor points were installed as a part of the SVI sampling program. Additionally, two exterior soil vapor points were installed in the parking lot between Area A and Area B. The soil vapor points were installed in accordance with the NYSDOH Center for Environmental Health, Bureau of Environmental Exposure Investigation Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006.

Sub-slab soil vapor point construction details are illustrated on figure 14. The following procedure was used for the installation of sub-slab soil vapor points:

- a 5-inch core was drilled into the concrete to a depth of approximately 4 inches into the top of the slab;
- after the initial core was completed, an additional 1 1/2-inch boring was drilled another 2 inches into the slab;
- a 1/2-inch boring was drilled the remainder of the thickness of the slab (the thicknesses of the concrete slab varied throughout the Site);
- following penetration of the slab, a 1/8-inch internal diameter stainless-steel tube was cut to a length equal to the thickness of the slab and was set at 2 inches beneath the bottom of the slab;
- after the tube was set, the annular space of the concrete boring was filled with grout;
- each point was plugged with a silicone plug; and,
- the sub-slab soil vapor points were completed with a flush-mount manhole set in concrete.

5.3.2 Soil Vapor Points Installation

The following procedure was used for the installation of the exterior soil vapor points:

- a soil boring was completed to approximately 6 ft bg using a GeoProbe drill rig and a macrocore sampler;
- after the soil boring was completed, a 6-foot soil vapor point was installed in each boring. The soil vapor points were constructed of 1/8-inch internal diameter stainless-steel tube that was cut to a length of 6 feet, sealed at the bottom (crimped) and screened from 6 ft bg to 5 ft bg.
- the annular space between the soil vapor point and the boring was backfilled with #2 filter sand to a depth of 4 ft bg;
- the remainder of the annular space between the soil vapor point and the boring was backfilled with a cement/bentonite grout to grade;

- each point was plugged with a silicone plug; and,
- the sub-slab soil vapor points were completed with a flush-mount manhole set in concrete.

5.3.3 Sub-Slab Soil Vapor and Soil Vapor Sample Collection

Two soil vapor intrusion sampling rounds were performed at the Site, one in October 2006 and a second one in March 2007 (the "heating season").

During each of the sampling rounds, soil vapor samples were collected from each of the sub-slab soil vapor sampling points and soil vapor sampling points after the internal volume of air, called the dead volume, was completely purged and the soil vapor sampling point was filled with soil vapor to ensure that a representative soil vapor sample is collected. At each point, three volumes of vapor (point and additional tubing) was withdrawn prior to sample collection to purge the probe and sampling tubing of all ambient air (3 purge volumes). The following procedure was used for the collection of the sub-slab soil vapor samples and soil vapor samples:

- dedicated polyethylene tubing was connected to the sub-slab soil vapor sampling points and soil vapor sampling points via airtight quick-connect fittings;
- approximately three volumes of air/soil vapor was purged from each sampling point and the sampling tubing using a peristaltic pump;
- flow rates for purging was maintained as less than 0.2 l/min (liter per minute);
- a soil vapor sample was collected from each point using a 6 liter capacity Summa canister fitted with a regulator set to allow a flow rate of 0.05 l/min;
- soil vapor samples were submitted to Lancaster Laboratories (a NYSDOH Environmental Laboratory Approval Program [ELAP] certified laboratory) located in Lancaster, Pennsylvania under chain-of-custody procedures for analysis of VOCs by EPA Method TO-15.

During the sampling, weather conditions and Site conditions were recorded on field sheets. No abnormal Site conditions were observed when the soil vapor intrusion investigation samples were being collected.

The sampling was conducted by experienced technicians and sampling log sheets summarizing the following were prepared and are included in Appendix VII on the attached DVD.

Each sampling log summarized the following:

- sample identification;
- date and time of sample collection;
- identity of samplers;
- sampling method and equipment;
- purge volumes;
- volume of soil vapor extracted; and,
- chain of custody.

Figure 13 shows the locations of the sub-slab soil vapor sampling points and soil vapor sampling points as well as the locations of the indoor air samples and outdoor ambient air samples for the October 2006 and March 2007 sampling rounds.

5.3.4 Quality Assurance/Quality Control (QA/QC)

During sample collection, extreme care was taken in order to ensure that high quality data were obtained. The sampling team avoided fueling vehicles, using permanent marking pens or any other materials containing VOCs which could cause sample interference in the field.

An additional QA/QC measure was the sampling of one sub-slab soil vapor point from each area of the building and one exterior soil vapor point with a tracer gas. The tracer gas (propane) was applied in accordance with the NYSDOH Center for Environmental Health, Bureau of Environmental Exposure Investigation Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006.

The QA/QC protocol for sample collection and laboratory analysis was followed. All sampling devices were clean and chain-of-custody forms were maintained. Sub-slab soil vapor samples and soil vapor samples were analyzed by EPA Method TO-15 Category B Deliverables. Sampling methods, sample preservation requirements and sampling handling times were conducted in accordance with NYSDEC and United States Environmental Protection Agency (USEPA) standard operating procedures and industry standards. The table below summarizes the sampling standards.

Sample Collection Area	Media	Analytical Method	Holding Time	Preservation
Soil vapor samples collected from the soil vapor points installed throughout and surrounding the Site	Air	EPA Method TO-15 Category B Deliverables (Select Samples for Propane Tracer)	NA	Avoid extreme heat or cold

As previously indicated, the samples were analyzed by an NYSDOH laboratory with a current ELAP certification.

5.4 Installation of Additional Groundwater Monitoring and Product Delineation Wells

As was proposed in the RIWP, additional groundwater monitoring and product delineation wells were installed to provide data regarding the lateral extent of free-phase product and dissolved phase contamination beneath the Site. Several of these wells replaced previously installed wells which were destroyed as a result of onsite excavation activities.

During all ground-invasive activities, the LBG Health and Safety Officer was onsite performing air monitoring. The air monitoring consisted of measuring real-time levels of VOCs and particulates upwind of the work zone, at the work zone and downwind of the work zone. The air monitoring logs are included in Appendix VIII on the attached DVD. The drilling activities were monitored according to the HASP and CAMP which were included with the LBG Work Plan. The HASP, which includes the CAMP, is included in Appendix II on the attached DVD.

A map illustrating the locations of previously installed groundwater monitoring and product delineation wells and wells installed by LBG in 2007 is included as figure 15.

On March 7, 2007 the drilling activities began onsite. An LBG hydrogeologist supervised the installation of the groundwater monitoring and product delineation wells. Each well location was cleared to a depth of 2-3 ft bg prior to drilling. Soil borings were drilled and monitor wells were installed using a hollow-stem auger drilling rig operated by Aquifer Drilling and Testing, Inc. (ADT) of New Hyde Park, New York. Individual borings were completed for the installation of each monitor well. The sampling protocol consisted of collecting continuous soil samples using a split-spoon soil sampler. An exception to the sampling protocol was for DW-16D and DW-17D. These boring locations were immediately adjacent to the GeoProbe soil borings advanced as part of the soil sampling plan completed for assessing the viability of a hydraulic barrier. For all borings with the exception of DW-16D and DW-17D, the soil samples collected were screened in the field for the presence of VOCs and the soil sample exhibiting the highest photoionization detector (PID) concentration was submitted to the laboratory for analysis. During drilling activities for the monitor wells, all drill cuttings generated were drummed and stored onsite pending disposal.

All of the installed monitor wells were constructed of stainless steel well screen and riser. Wells DW-18C, DW-19C, DW-20B, DW-21D and DW-22D were 2-inch diameter wells while DW-16D, DW-17D and DW-23D were 4-inch diameter wells.

After termination of the borings, the 2-inch diameter wells were installed at approximately 20 ft bg with a 10-foot section of 20-slot screen manufactured with a 2-foot sump at the bottom. The remainder of the well was constructed of solid riser to grade. The annular space surrounding the screen for each monitor well was filled with No. 2 grade filter sand to form a sand pack from the bottom of the sump to approximately three feet above the well screen. A 2-foot bentonite cap was installed above the sand pack and the remainder of the boring was backfilled with clean sand.

After termination of the borings, the 4-inch diameter wells were similarly installed at approximately 20-25 ft bg with 10-feet of 20-slot screen for both DW-16D and DW-17D; and with 20 feet of 20-slot screen for DW-23D. Also of note, DW-16D and DW-17D were constructed with the 2-foot sumps; however, DW-23D was not. The wells were completed to grade with solid riser pipe sections. The annular space surrounding the screen for each monitor well was filled with No. 2 grade filter sand to form a sand pack from the bottom of the sump to approximately three feet above the well screen. A 2-foot bentonite cap was installed above the sand pack and the remainder of the boring was backfilled with clean sand.

All of the wells were completed at grade with flush-mount manhole covers installed in concrete and the tops of the wells were equipped with locking caps.

The well construction specifications and geologic logs for each well are presented in Appendix IX on the attached DVD.

5.4.1 Development of Onsite Monitor Wells

On October 10, 2006, LBG developed the existing groundwater monitoring and product delineation wells at the Site. The location of all wells is shown on figure 8. The purpose of this development/re-development was to remove the fine sediments from the well screen area and to evaluate the hydraulic recharge of the wells. The wells were developed using a centrifugal pump equipped with a check valve and a reciprocating pump. The method surges the well screen and evacuates groundwater (and product if present) for efficient development. All the onsite wells were pumped dry during the development activities. A total of approximately 50 gallons of purge water was recovered and temporarily stored in a 55-gallon drum onsite pending disposal.

On April 9, 2007, LBG developed the newly installed groundwater monitoring and product delineation wells as well as the vertical groundwater extraction well (EW-1) and the vertical soil vapor extraction well (SVE-1). The purpose of the monitoring well development was to ensure removal of fine grained sediments (fines) from the vicinity of the well screen. This allows the water to flow freely from the formation into the well, and also reduces the turbidity of the water during sampling. A target of five standing volumes of water was set to be evacuated from each well using a centrifugal pump equipped with a check valve and a reciprocating pump. However, due to the hydrologic conditions at the Site (low yield from the formation), five standing volumes were not obtained from all onsite wells. The wells were surged throughout the screened intervals. A total of approximately 150 gallons of purge water was recovered and temporarily stored in 55-gallon drums onsite pending disposal. The groundwater was transferred from the drums into a 21,000-gallon fractionation tank and temporarily staged at the Site for later disposal.

On June 8, 2007, the purged water/product was transferred from the drums to an onsite 21,000-gallon fractionation tank (used in conjunction with a pumping test) for disposal of liquids generated at the Site.

On June 8, 2007, LBG supervised the performance of a high vacuum development of wells installed in the basement wells of Area B, Area C and Area D. The primary focus of the high vacuum development was to remove free-phase product and groundwater with dissolved NAPL from onsite wells as well. After the wells containing product were purged and developed, the remaining wells were developed. The development activities consisted of inducing a vacuum within the well and removing the groundwater. Approximately 370 gallons of groundwater and product were removed as a result of the high vacuum well development activity.[2] The groundwater from well development was stored into the 21,000-gallon fractionation tank for future disposal.

5.4.2 Disposal of Drill Cuttings and Purge Water

A total of twenty-nine (29) 55-gallon drums of drill cuttings were generated during the clearing and installation activities associated with the eight (8) newly installed product delineation wells, one (1) newly installed vertical groundwater extraction well and one (1) vertical soil vapor extraction well. A composite soil sample from these drums was collected and submitted to AMRO Environmental Laboratories Corporation (AMRO) for waste characterization analysis. Following the laboratory analysis, these drill cuttings were removed from the Site by Innovative Recycling Technologies, Inc. (Innovative) of Lindenhurst, New York. The drill cuttings were transported and disposed of under the Site's USEPA ID Number NYD056301971. The drill cuttings were disposed of as hazardous soil based on the laboratory analysis. The soil was disposed of at Chemtron Corporation (Chemtron) located in Avon, Ohio. The USEPA ID Number for the Chemtron disposal facility is OHD066060609.

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[2] During this operation, the high vacuum equipment was also used to remove residual fuel oil observed in a "dead" pipe discovered adjacent to the boiler room.

Copies of the disposal manifests for the hazardous waste generated at the Site and disposed offsite are included in Appendix X on the attached DVD. A summary table presenting the hazardous waste generated at the Site during the Remedial Investigation activities and disposed offsite is included as table 5.

All water generated on the site during remedial investigation activities prior to June 21, 2007 was transferred to an onsite fractionation tank used in association with the groundwater pumping test. This water included the groundwater generated during: the onsite well development activities; the high vacuum enhanced well developments; the groundwater monitoring round; and water from the installation and development of an extraction well and a SVE well and from the extraction well pumping test. The installation of these wells and the pumping test are presented in following sections of the report. The water generated during the drilling of the horizontal extraction well and horizontal SVE well (approximately 1,200 gallons) and the water extracted during the pumping test (approximately 3,274 gallons) was transferred to the onsite fractionation tank. Additionally, a total of approximately 150 gallons of groundwater were evacuated from the ten (10) newly installed wells and the existing onsite wells as part of the well development activities. The water removed from the onsite wells during a high-vacuum extraction event performed on June 6, 2007 (approximately 370 gallons of groundwater and product) was transferred to the onsite fractionation tank. A sample of the water from the fractionation tank was submitted to AMRO for waste characterization analysis. The waste water was disposed of as non-hazardous petroleum contaminated water based on the laboratory analysis. Following receipt of the laboratory analysis, the water was removed from the Site by Innovative. A total of 5,225 gallons of waste water were taken offsite and disposed of at Clean Water of New York, Inc. (Clean Water) located at 3249 Richmond Terrace in Staten Island, New York. The waste water was transported offsite by Terrace Transportation (USEPA ID Number NYR000080549). Copies of the disposal manifests for the non-hazardous waste generated at the Site and disposed offsite are included in Appendix XI on the attached DVD. A summary table presenting the non-hazardous waste generated at the Site during the Remedial Investigation activities and disposed offsite is included as table 6.

5.5 Installation of Groundwater Extraction Wells

A total of three (3) groundwater extraction wells were installed on the Site between March 9, 2007 and July 3, 2007. These wells are: one (1) vertical groundwater extraction Well EW-1 (subsequently replaced with EW-1D); and, two (2) horizontal groundwater extraction wells HEW-1 and HEW-2. Wells EW-1 and HEW-1 were installed in locations where known contamination is concentrated and HEW-2 was installed along the downgradient northwestern property boundary. All three wells were installed in order to determine the feasibility of using this type of wells for groundwater remediation and product removal from beneath the Site. HEW-2 was installed with the primary intent to intercept the contamination at the site boundary by groundwater pumping and to prevent contamination from migrating offsite.

5.5.1 Vertical Groundwater Extraction Well Installation

On March 9, 2007, the vertical groundwater extraction well, EW-1, was installed at the Site under the supervision of an LBG hydrogeologist. Additionally, during all ground-invasive activities, LBG performed onsite air monitoring. The sample location map showing the location of EW-1D is shown on figure 15. The EW-1 soil boring was drilled and the well was installed using a hollow-stem auger drilling rig operated by ADT. While drilling, the sampling protocol consisted of collecting continuous soil samples at 2-foot intervals using a split-spoon soil sampler. All soil samples collected were screened in the field for the presence of VOCs. The soil sample exhibiting the highest PID concentration was submitted to the laboratory for analysis. During drilling activities for EW-1, all drill cuttings generated were drummed and stored onsite pending disposal.

The boring was drilled until refusal which was caused by encountered bedrock. After termination of the boring, a 6-inch diameter well was installed at approximately 21 ft bg with 20 feet of 20-slot screen and 1-foot of solid riser. The annular space surrounding the screen for the well was filled with No. 2 grade filter sand to form a sand pack from the terminus of the boring to 1 ft bg. A 0.5-foot bentonite cap was installed above the sand pack.

The well was then completed at grade with a flush-mount manhole cover installed in concrete and the top of the well was capped off with a wooden plug.

The well construction specifications for this well are presented on the geologic log attached in Appendix IX on the attached DVD.

Following the installation of EW-1, it was observed that the area surrounding this well contained the highest accumulation of free-phase product. In order to remove soil saturated with product, soil excavation was performed in this area under IRM. Following the excavation activities, the vertical extraction well was replaced by EW-1D. The location of this well is shown on figure 16. These excavation activities and installation of the replacement extraction well are summarized in the following sections of the report.

5.5.2 Installation of Horizontal Groundwater Extraction Well HEW-1 and HEW-2

From April 24 to May 7, 2007, the horizontal groundwater extraction Well HEW-1 was installed in Area D at the Site. Additionally, from June 29 to July 3, 2007, the horizontal groundwater extraction Well HEW-2 was installed along the northwest boundary of the Site (Area B, C and D). The HEW-2 entry point was located in the alleyway adjacent to Area D. An LBG hydrogeologist supervised the installation of both HEW-1 and HEW-2. During all ground-invasive activities, LBG performed onsite air monitoring. Figures 15 and 16 show the location of HEW-1 and HEW-2.

The horizontal wells were installed by Directional Technologies, Inc. (DTI) under the supervision of LBG personnel. The wells were installed with a horizontal drill rig (Ditch Witch JT2720 Mach 1). Photos of the drill rig and drilling activities are included in Appendix V. The drilling was performed utilizing mud-rotary techniques combined with the method of steering/directing the drill rod. The drilling mud acted as a medium that carried drill cuttings out of the boring creating the annulus, sealed the boring to prevent collapse, and lubricated the boring to allow the well screen and riser to pass through the boring. Attached to the lead rod was a drill head that was equipped with a transmitter and a drill bit. The drill bit provided the steering capabilities and is designed to penetrate the subsurface material. The transmitter carried a probe that sends a signal to a hand held receiver that was carried along the drill path. The receiver displays the depth, slope and clock orientation of the lead rod. From these readings the location, depth and slope were determined. The clock position provided the direction of the lead when steering. Based on the real-time readings, the path of the boring was adjusted to complete the drilling at the desired depth and distance for the subsequent groundwater extraction well installation.

The boring for HEW-1 was advanced at approximately 35 degrees until it reached 50 linear feet at which point the grade was lowered until the boring became horizontal. HEW-1 then continued along the bedrock surface until the terminus (100 linear feet).

The boring for HEW-2 was completed in a similar manner to HEW-1; however, the boring was advanced at approximately 25 degrees until it reached 60 linear feet at which point the grade was lowered until the boring became horizontal along the bedrock surface. HEW-2 then continued parallel to the bedrock surface until the terminus (260 linear feet). For both borings, drilling was completed using 10-foot rod increments to ensure that the proper drill path was maintained. After each of the borings was completed, the borings were enlarged using reamers which increased the diameter of the boring from 4 inches to 10 inches. Cross-sections showing the depth of the well screen and riser of both HEW-1 and HEW-2 are shown on figures 17 and 18, respectively.

After the boring was reamed, to ensure that the well screen and riser pipe could be set into the boring properly, the wells were installed. The well screen (50 feet for HEW-1 and 200 feet for HEW-2) and riser sections (50 feet for HEW-1 and 60 feet for HEW-2) were threaded together as they were inserted into the borings. All well material was comprised of 10-foot lengths of 4-inch diameter stainless steel. The screened sections for HEW-1 were 10-slot screen and the screened sections for HEW-2 were 20-slot screen.

Following installation, the wells were developed using a combination of water lifting and high-vacuum extraction. All mud and water generated during the well development was stored onsite in roll-off containers pending offsite disposal. After the initial development round, approximately 20 feet of grout was injected into the annular space between the riser pipe and the boring hole using a tremie pipe. The purpose of the grout is to eliminate the preferential pathway of groundwater or product movement in the annular space created by the reaming of the boring. A week after the injection of the grout seal, a final development was conducted at each well to evacuate remaining fines and/or drilling mud from the annular space surrounding the well screen.

All drill cuttings generated during the installation of horizontal wells HEW-1 and HSVE-1 were contained in a lined 20-yard roll-off storage container pending laboratory waste classification. The water which resulted from well development was stored in a fractionation tank for disposal offsite. On August 17, 2007, a total of 2,491 gallons of waste water generated during the installation of HEW-2 were taken offsite and disposed of as non-hazardous waste at Clean Water located at 3249 Richmond Terrace in Staten Island, New York. The waste water was transported offsite by Terrace Transportation under USEPA ID Number NYR000080549. Copies of the disposal manifests for the non-hazardous waste generated at the Site and disposed of offsite are included in Appendix XI on the attached DVD. All drill mud generated during the installation of the horizontal wells was transported to Republic Environmental in Hatfield, Pennsylvania for disposal as non-hazardous waste. Copies of the disposal manifests of the drilling mud are included in Appendix XI on the attached DVD.

5.6 Vertical Extraction Well Pumping Tests

In order to evaluate the feasibility of groundwater remediation using a pump and treat system a pumping test was conducted at EW-1D. EW-1D was constructed with a 6-inch diameter stainless steel vertical well set inside of the basement on the eastern side of Area C. The purpose of the pumping test was to determine the feasibility of pump and treat remediation technologies using vertical wells.

5.6.1 Vertical Extraction Well EW-1D Pumping Test

The pumping test performed on the vertical groundwater extraction well (EW-1D) was conducted on April 9, 2007. Prior to starting the pumping test, groundwater levels and free-phase product levels were measured in the pumping Well EW-1 and surrounding Monitor Wells DW-3D, DW-4D, DW-5-D, DW-6D, DW-7D, DW-8D, DW-10D, DW-12D, DW-13D, DW-14D, DW-15D, DW-16D, DW-17D, DW-21D, DW-22D, DW-1C, DW-2C, DW-3C, DW-4C, DW-5C, DW-6C, DW-7C, DW-18C, DW-19C, DW-20C, DW-1B, MW-6C and SVE-1. All groundwater levels and free-phase product levels were measured from the top of casings. Groundwater elevations were then determined based on the values obtained from the top of casing elevation survey. A contour map showing the groundwater elevations and direction of groundwater flow prior to the vertical well pumping test on April 9, 2007 is shown on figure 19.

The pumping test started at 2 gpm using a submersible pump and after several minutes the well went dry. An attempt to redevelop the well was conducted by over-pumping with a centrifugal and a reciprocating pump. Approximately 45 gallons of water was purged from the extraction well during redevelopment over a period of approximately 4 hours. The field data collected during the attempted groundwater pumping test demonstrated that groundwater pumping from a vertical well was not a feasible method for groundwater remediation and was not capable to control further offsite migration of both free-phase product and groundwater with dissolved VOCs.

5.7 Installation Vertical and Horizontal Soil Vapor Extraction (SVE) Wells

Two (2) soil vapor extraction wells were installed on the Site between March 7, 2007 and July 3, 2007. These wells were: vertical soil vapor extraction Well SVE-1; and, horizontal soil vapor extraction Well HSVE-1. Both wells were installed in locations of known soil vapor concentration. Both wells were installed for future incorporation into a remedial system.

5.7.1 Vertical Soil Vapor Extraction Well SVE-1 Installation

On March 7, 2007, the vertical soil vapor extraction well SVE-1 was installed at the Site. An LBG hydrogeologist supervised the installation of SVE-1. Figure 15 shows the location of SVE-1. The SVE-1 soil boring was drilled and the well was installed using a hollow-stem auger drilling rig. During drilling, the continuous soil samples were collected at 2-foot intervals using a split-spoon soil sampler. All soil samples collected were screened in the field for the presence of VOCs. The soil sample exhibiting the highest PID concentration was submitted to the laboratory for analysis. During drilling activities for the SVE-1, all drill cuttings generated were drummed and stored onsite pending disposal.

The boring was drilled until bedrock refusal was encountered. After termination of the boring, a 6-inch diameter stainless steel well was installed with 15 feet of 20-slot screen and

2.5 feet of riser pipe. The annular space surrounding the well screen was filled with No. 2 grade filter sand to form a sand pack from the terminus of the boring 1.5 ft bg. A 1.5-foot bentonite cap was installed above the sand pack.

The well was then completed at grade with a flush-mount manhole cover installed in concrete and the top of the well was capped off with a wooden plug.

Construction specifications for SVE-1 are presented on the geologic log attached in Appendix IX on the attached DVD.

5.7.2 Horizontal Soil Vapor Extraction Well HSVE-1 Installation

From April 24 to May 7, 2007, the horizontal soil vapor extraction well HSVE-1 was installed at the Site. An LBG hydrogeologist supervised the installation of HSVE-1. During all ground-invasive activities, LBG performed onsite air monitoring. The sample location map showing the location of HSVE-1 is shown on figure 15.

The well was installed using a horizontal drill rig (Ditch Witch JT2720 Mach 1). HSVE-1 was installed using the same procedures as for HEW-1 and HEW-2. The boring began by entering the subsurface at an angle of approximately 10 degrees. This reduced angle was selected in order to reach the horizontal level of approximately 6-7 ft bg.

After the boring was completed, the boring was enlarged using reamers which increased the diameter of the boring from 4 inches to 6 inches. Cross-section showing the depth of the well screen and riser of HSVE-1 (as installed) is shown on figure 20.

After the boring was completed 50 feet of 10-slot well screen and 50 feet of riser were inserted into the borings.

Following the installation, the well was developed using a combination of air lifting and high-vacuum extraction. All mud and water generated during the well development was stored onsite in a roll-off container pending offsite disposal. After the development, the riser pipe was sealed with grout. This grout was injected into the boring using a tremie pipe and this was performed in two separate injection rounds to ensure the borehole was sealed along the riser pipe. After the development was completed grout was injected from surface to approximately 20 feet in the annular space between the boring and the riser pipe. A week after the injection of the grout seal, the well was redeveloped to evacuate remaining fines/mud from the annular space surrounding the well screen.

All drilling cuttings generated during the installation of horizontal Well HSVE-1 (and HEW-1) were contained in a lined 20-yard roll-off storage container pending laboratory waste classification. Following waste characterization, the waste water and mud were disposed of offsite. The water, combined with the water generated during the EW-1 pumping test was transported to Clean Water in Staten Island, New York for disposal. The drill mud was transported to Republic Environmental in Hatfield, Pennsylvania for disposal. Copies of the disposal manifests are included in Appendix XI on the attached DVD.

5.8 Perform Pilot Tests to Determine Subsurface Vacuum Influence Parameters

In order to evaluate the feasibility of a SVE system to remediate the subsurface vapor-phase contamination, two pilot tests were conducted at the Site. The SVE pilot tests were also necessary to determine the size of the blowers and determine the necessary air/vapor flow rates for a SVE system, if applicable. The first pilot test was performed on the vertical SVE well (SVE-1) on April 10, 2007 and the second one was performed on the horizontal SVE well (HSVE-1) on May 8, 2007.

5.8.1 Vertical Soil Vapor Extraction Well SVE-1 Pilot Test

On April 10, 2007, a soil vapor extraction pilot test was conducted on the vertical soil vapor extraction Well SVE-1. The SVE pilot test was performed using a ROOTS URAI 42 Skid consisting of the following components: Rotary Lobe head with a 7.5 HP indirect drive; a variable frequency generator; a 60-gallon cyclone; vacuum hoses, adaptors and gauges. Using the variable frequency generator, the system had an operating range between 10-150 SCFM and a maximum operating vacuum pressure of negative 15 inches of mercury (7.37 pounds per square inch). During the pilot test, the operating parameters for the extraction well (SVE-1) were first monitored, recorded and evaluated as a step test to determine the potential air flow volumes for various wellhead vacuum influences. These parameters were recorded for the wellhead vacuums of 10, 20, 30 and 40 inches of water. These recorded values are included on the field sheets included in Appendix XII on the attached DVD.

Following the initial step test performed on SVE-1, the blower was shut off and the subsurface pressures were allowed to equilibrate. After approximately 10 minutes, the long-term pilot test was initiated. The initial wellhead vacuum of ~25 inches of water was applied to SVE-1 and extraction well parameters were measured at 15-minute intervals. Additionally, vacuum influences were measured on a series of monitoring points consisting of onsite monitoring wells and soil vapor monitoring points. The points consisted of SS-D1, SS-D2, SS-C6, SS-C7, SS-C8, DW-4D, DW-5D, DW-10D, DW-15D, DW-16D, DW-17D, DW-21D and DW-22D. The locations of these monitoring points are presented on figure 13 and figure 16. Following two hours of running the test with ~25 inches of water (1.84 inches of mercury) of wellhead vacuum, the wellhead vacuum was increased to ~40 inches of water (2.95 inches of mercury). This vacuum was maintained for the remainder of the pilot test which lasted an additional 3 hours. The recorded values for both the extraction well (SVE-1) and the monitoring points are presented on the field sheets included in Appendix XII on the attached DVD.

The results of the SVE pilot test performed on the vertical SVE well, SVE-1, indicated that there is a minimal vacuum influence throughout the subsurface. The point where any significant vacuum was induced (SS-C8) is located approximately 20 feet laterally from SVE-1. Additionally, other monitoring points located within similar proximity showed either no influence or in some instances showed positive pressure influence (DW-4D and DW-16D). As a result of this pilot test, it was determined that vertical soil vapor extraction points is not an effective remediating technology for vapor phase contamination.

5.8.2 Horizontal Soil Vapor Extraction Well HSVE-1 Pilot Test

On May 8, 2007, a soil vapor extraction pilot test was conducted on the horizontal soil vapor extraction Well HSVE-1. The SVE pilot test was performed using a ROOTS URAI 59 Skid consisting of the following components: Rotary Lobe head with a 25 horsepower explosion-proof motor; a variable frequency generator; a cyclone; an air flow meter, vacuum hoses, adaptors and gauges. Using the variable frequency generator, the system had an operating range between 70-750 SCFM and a maximum operating vacuum pressure of negative 12 inches of mercury (5.89 pounds per square inch). During the pilot test, the operating parameters for the extraction well (HSVE-1) were first monitored, recorded and evaluated as a step test to determine the potential air flow volumes for various wellhead vacuum influences. These parameters were recorded for the wellhead vacuums of 1.6, 2, 3, 4 and 5 inches of mercury. These recorded values are included on the field sheets included in Appendix XIII on the attached DVD.

Following the initial step test performed on HSVE-1, the blower was shut off and the subsurface pressures were allowed to equilibrate. After approximately 10 minutes, the long-term pilot test was initiated. The initial wellhead vacuum of ~2 inches of mercury was applied to HSVE-1 and extraction well parameters were measured at 30 minute intervals. Additionally, vacuum influences were measured on a series of monitoring points consisting of onsite monitoring wells and soil vapor monitoring points. The points consisted of SS-D1, SS-D2, SS-2C, SS-3C, SS-C4, SS-C5, SS-C6, SS-C7, SS-C8, EW-1, SVE-1, DW-1C, DW-3C, DW-5C, DW-4D, DW-5D, DW-10D, DW-13D, DW-14D, DW-15D, DW-16D, DW-18D, DW-21D and DW-22D. The locations of these monitoring points are presented on figure 13 and figure 16. Following 1 hour and 15 minutes of running the test with ~2 inches of mercury of wellhead vacuum, the wellhead vacuum was increased to ~3 inches of mercury. This vacuum was maintained for 1 hour and 15 minutes, after which the wellhead vacuum was increased to ~4 inches of mercury. This vacuum was maintained for 1 hour and 15 minutes, after which the wellhead vacuum was increased to ~5 inches of mercury. The wellhead vacuum was maintained at ~5 inches of mercury for the remainder of the pilot test which lasted an additional 1 hour. The recorded values for both the extraction well (HSVE-1) and the monitoring points are presented on the field sheets included in Appendix XIII on the attached DVD.

The results of the SVE pilot test performed on HSVE-1 indicated a substantial vacuum influence throughout the subsurface resulting from the screened area. The points where significant vacuum was observed were located in Area C and Area D. Subsurface vacuum isopleth maps for wellhead vacuum rates of 2 inches of mercury (Hg"), 3 Hg", 4 Hg", and 5 Hg" are shown on figures 21, 22, 23 and 24, respectively. Although there were some onsite monitoring points which indicated positive and/or no recorded vacuum, these anomalous readings are believed to be the result of compromised screened intervals within the suspect wells (previously installed PVC wells which have been exposed to the free-phase product over time) and or a result of the exposed nature of the alleyway. As a result of this pilot test, it was determined that horizontal soil vapor extraction well(s) is effective in removing vapor phase from the subsurface of the Site and to prevent subsequent indoor air soil vapor intrusion.

6.0 OFFSITE INTERIM REMEDIAL MEASURES

6.1 Bronx River Boom Maintenance

In addition to the RI activities, the volunteer, SUSA Mt. Vernon, LLC conducted routine maintenance of a boom system located along the bank of the Bronx River. The Bronx River boom system consisting of an inner sorbent boom and an outer hard boom, prevents leachate percolating from the riverbank from entering the main flow of the Bronx River. Once trapped, the leachate then solidifies on the water's surface and is periodically removed for disposal. Since the beginning of the RI, five (5) separate boom maintenance rounds have been performed. The first boom maintenance round was performed on September 22, 2006. This round removed boom material which had been present since the NYSDEC last performed a maintenance round. The second boom maintenance round was performed on April 3, 2007. The third boom maintenance round was performed on June 20, 2007. The fourth boom maintenance round was performed on April 18, 2008. The fifth (and most recent) boom maintenance round was performed on November 3, 2008. All of the waste sorbent boom material and solidified seep material generated during the change-out activities was placed in plastic garbage bags, drummed and disposed of as non-hazardous waste. All of the non-hazardous boom waste was disposed of at Vexor Technology, Inc. located in Medina, Ohio. The US EPA ID number for this facility is OHD077772895. The manifests for the waste sorbent boom material are attached in Appendix XI on the attached DVD.

Following the June 20, 2007 boom maintenance round (performed in response to flooding of the Bronx River); on June 22, 2007 there was an upriver spill (soybean oil from a salad dressing manufacturer). Upon request from the onsite personnel consisting of the Mount Vernon Fire Department and the Westchester County Department of Health, the boom system was used to contain the spill in the river. The waste sorbent boom material from this maintenance round was placed in plastic garbage bags, drummed and the spiller was responsible for disposal. Additionally, the spiller incurred the cost for the boom change-out activities as well as for the replacement sorbent boom material. The manifest for the waste sorbent boom material from the upriver spill is attached in Appendix XI on the attached DVD.

On November 3, 2008, the most recent maintenance round of the Bronx River boom system was performed. Again, this round consisted of replacement of the sorbent boom as well as re-positioning the hard boom to ensure it properly contains any seep material that may not be contained/absorbed by the sorbent boom. All of the waste sorbent boom material and solidified seep material generated during the change-out activities was placed in plastic garbage bags, drummed and disposed of as non-hazardous waste. The manifest for the waste sorbent boom material is attached in Appendix XI on the attached DVD. The next boom maintenance round is anticipated to be performed in January/February 2009 unless conditions require earlier or later action.

Maintenance of the Bronx River boom system is scheduled to be performed periodically, with maintenance rounds being scheduled in response to observed field conditions. It should be noted that the amount of leachate observed along the banks of the Bronx River has decreased since September 2006.

NYSDEC consultant will continue to maintain the Bronx River boom system in accordance with the BCP Agreement between SUSA/Mt. Vernon and NYSDEC.

7.0 ONSITE INTERIM REMEDIAL MEASURES

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the remedial investigation and alternatives analysis. The IRMs implemented at the Site were performed to address residual source and/or suspected source material in the subsurface (i.e., contaminated/NAPL saturated soil and USTs) to minimize the amount of future in-situ remediation required at the Site.

Although not accepted as an approved IRM by the NYSDEC, a pilot study was performed to evaluate the effectiveness of a chemical oxidation material for in-situ remediation of dissolved phase VOC contamination.

Cleaning up the Site will require meeting NYSDEC soil and groundwater standards. The standards will be based on future commercial use. The Brownfield Program establishes four cleanup "tracks":

- **Track 1** is designed to permit any future use without reliance on institutional or engineering controls for soil contamination. For groundwater, there is an allowance for volunteers to qualify if the quantity of groundwater contamination has been reduced to "asymptotic levels" and long-term engineering or institutional controls to restrict groundwater use are proposed. This clean-up track is not applicable to the Site.
- **Track 2** aims to achieve cleanup levels set forth in the NYSDEC tables for reasonably anticipated site use without reliance on institutional controls for soil. However, institutional controls may be used to satisfy groundwater cleanup standards.
- **Track 3** sites will be permitted to use site-specific characteristics (e.g., depth to groundwater) instead of tables to establish cleanup levels.
- **Track 4** will allow site-specific risk assessments for determining soil cleanup criteria. Institutional or engineering controls can be used. Additionally, the top two feet of soil for residential uses and top one foot of soil for nonresidential

uses must comply with the Track 2-Restricted Use Soil Cleanup Objectives tables. These tables are presented in Appendix XXIII.

The IRMs conducted at the Site during the performance of the remedial investigation included: closure activities for USTs and ASTs remaining onsite; and, excavation and removal of impacted site soils. Additionally, an application round of a chemical oxidation compound was performed to evaluate the effectiveness for in-situ remediation of dissolved phase contamination in Area D.

Due to the presence of residual contamination at the Site, Track 1 (unrestricted use) is not a valid cleanup track for the Site. Therefore, considering the proposed future Site usage is to remain commercial (self-storage facility), and due to the fact that residual soil and groundwater contamination was detected at the Site, the remedial approach used during the implementation of onsite IRMs was a combination of Track 2 and Track 4. These clean-up tracks were performed in an effort to reach the appropriate Site clean-up objective, which is 6NYCRR 375-6.8(b) Restricted Use Soil Cleanup Objectives for Protection of Public Health (Commercial).

7.1 UST/AST Closure Activities

In order to confirm and verify the tank closure activities performed at the Site prior to LBG work and to conduct removal of several of the tanks abandoned onsite, tank closure activities were performed. The tank closure activities consisted of:

- collection of soil and groundwater samples from the area of previously removed USTs;
- determine if additional USTs are present beneath the site;
- removal of the 10,000-gallon aboveground fuel oil storage tank from the basement of Area B;
- removal of several USTs listed as historically closed in-place from Areas B, C and D;
- removal of several USTs which were not identified during the previous IRM and/or investigations.

The tank closure activities are summarized by each Area below:

7.1.1 Area A

Available site records indicate that the following tanks were present in Area A: six 1,500-gallon USTs along the northeast portion of the parking lot (listed as having been removed by ERM and designated as UST-1A, UST-2A, UST-3A, UST-4A, UST-5A and UST-6A); three USTs of unknown size located beneath the Area A corridor connecting Area A and Area B (removed prior to ERMs involvement in the original project and heretofore designated as UST-7A, UST-8A and UST-9A); and, two USTs of unknown size in the southern portion of the parking lot (recorded as having been removed prior to ERMs involvement in the original project and heretofore designated as UST-10A and UST-11A); The former locations of tanks within Area A are presented on figure 4.

In 2007, LBG performed soil excavation activities to verify that tanks UST-1A, UST-2A, UST-3A, UST-4A, UST-5A and UST-6A had been removed as conflicting records by ERM stated that these six tanks had been abandoned in-place. The excavation activities revealed that the six 1,500-gallon USTs had been removed and a filter fabric liner had been installed marking the extent of the old excavation. The exploratory trenching excavation was then backfilled.

Confirmation soil sampling was performed at the former locations of the eleven USTs in Area A. The confirmation soil sampling consisted of performing GeoProbe soil borings: at the approximate center of the former location of the UST-1A to UST-6A (GP-1A to GP-6A); one GeoProbe boring between the former locations of UST-7A, UST-8A and UST-9A in the loading dock area (GP-USTPR-3); and, two GeoProbe borings between the former locations of UST-10A and UST-11A (GP-USTPR-1 and GP-USTPR-2). These sample locations are presented on figure 29. Of note, the locations for GeoProbe sampling in the loading dock were limited due to the presence of electrical panels in the area.

In addition to the UST closure GeoProbe soil borings, one GeoProbe boring was advanced in between UST-1A and UST-2A (GP-LBG-HP6), which was a previous sample location HP-6 from the ERM investigation. In addition to the tank closure sampling, one GeoProbe boring was advanced in the onsite drywell (GP-Drywell) located in the southwest corner of the parking lot. This was performed to determine if this drywell is or has historically been a preferential pathway for surface contaminant spills to the subsurface. All of the confirmation GeoProbe soil boring locations performed in Area A are shown on figure 25.

For each GeoProbe boring, continuous soil samples were collected from grade to the boring terminus. All of the soil samples were described on a geologic log and screened with a PID for the presence of VOCs. For each GeoProbe boring location, soil samples were collected (for submission to the laboratory analysis) from the following depths within the boring: one from approximately 0-2 feet below the estimated elevation of the bottom of the tank and one from the depth location where the highest PID reading was obtained. Additionally, two groundwater samples were collected from the boring for laboratory analysis. The soil and groundwater samples were collected in laboratory supplied containers and submitted to the laboratory for analysis of VOCs, SVOCs and total metals.

In addition to the UST GeoProbe investigation, the drywell formerly present in the southwest corner of the parking lot was cleaned out with a "guzzler" vacuum truck to remove refuse/leaves/detritus and increase its efficiency for storm-water drainage. While cleaning it out, it was observed that the drywell was not properly constructed. The "drywell" was constructed of bricks extending approximately 1.5 feet into the subsurface. Additionally, during the cleaning activity, a pipe was uncovered which bisected the side of the drywell. The drywell was excavated; exposing a 3,000-gallon UST. This UST, referred to as UST-P, was observed to have been cut open and filled with concrete slurry. Although an odor was observed in the soil surrounding the tank, the concrete within the tank did not exhibit any off-gas VOCs when screened with a PID. The concrete was broken apart using an excavator mounted jackhammer and taken offsite for recycling. The tank was observed to be in good condition with no observed pitting or corrosion holes. On the western side of the UST (in the location of the drywell), stained soil was observed and some soil surrounding the tank exhibited hydrocarbon odors. The contaminated soil was primarily detected adjacent to the pipe fittings on the tank. The soil surrounding and beneath UST-P was excavated and stockpiled onsite for offsite disposal. In order to facilitate the excavation and due to limited space in the parking lot, some of the soil was transferred to the Area D commercial space for offsite disposal. The extent of the excavation was limited based on the presence of building foundations in the area. After the excavation was completed; two bottom samples (B-1 and B-2), two south sidewall samples (S-1 and S-2) and one east sidewall sample (E-1) were collected from the tank excavation. Additionally, one bottom sample was collected from the excavation in the area of the former drywell (DWB-1). These endpoint sample locations are presented on figure 26. All endpoint samples were submitted to laboratory for analysis of VOCs, SVOCs and total metals.

According to historical documents, the parking lot was historically improved with a paint removal building. This building was constructed in 1956 (in connection with Technical Color & Chemical Works, Inc.) and was later demolished to its foundation (date not known). The continued presence of the foundation is illustrated in figures prepared and submitted by ERM (the previous environmental consultants for the Site) as part of their environmental investigations of the Site. Additionally, review of blueprints obtained from Fuller & D'Angelo, P.C. (the architects for Area A building) showed the location of the former 1-story paint removal building. Based on the October 2006 and March 2007 soil vapor sampling rounds performed at the Site, the highest concentration of PCE detected in soil vapor was detected in Area A (15,000 ug/m^3 [micrograms per cubic meter] in SVP-2 in October 2006). Based on the documented historical presence of USTs within this former building, the parking lot area was excavated and the building foundation was demolished/removed. The foundation consisted of concrete slab (which was not continuous) and rock walls running from the street to the Area A/Area B corridor. During the excavation activities, product delineation well DW-3A was destroyed. This well was subsequently replaced with a stainless steel replacement product delineation well R-3A. The extent of the Area A parking lot excavation is shown on figure 27. The soil excavated from the parking lot was stockpiled onsite and disposed offsite as non-hazardous petroleum contaminated soil (based on waste characterization). On April 21, 2008, a total of 516.49 tons (generated in association with the UST-P closure and parking lot exploratory excavation activities) was taken offsite by Innovative and disposed of at Soil Safe, Inc. – Bridgeport located in Logan Township, New Jersey. Copies of the disposal manifests for the parking lot excavated soil are included in Appendix XI on the attached DVD.

As a result of the excavation work performed in the parking lot of Area A, it was confirmed that no additional USTs were present in the subsurface beneath the former paint remover building foundation. After the excavation was completed to a final depth of approximately 11-12 ft bg, it was backfilled with RCA fill to eliminate the presence of an open excavation pending installation of the drywells and construction of the final parking lot.

Considering the removal of the former "drywell" from the parking lot, the City of Mount Vernon required that a new drywell system be installed in the parking lot. This new dry-well was required because the maximum projected storm-water load exceeded the capacity of the storm-water drain line which discharges to the main storm-water sewer line located on Oak Street. On November 14, 2008 an additional excavation was advanced in the center of the parking lot for the installation of four drywells. The excavation encompassed the area previously excavated in association with the foundation removal activities. The extent of the area excavated is presented in figure 22. The soil and fill excavated in association with the installation of the drywells was segregated separating the fill material from soil not previously excavated. All material was stockpiled onsite and disposed of offsite as non-hazardous petroleum contaminated soil (based on waste characterization). On November 26, 2008, a total of 205.68 tons (generated in association with drywell installation activities) was taken offsite by Innovative and disposed of at Soil Safe, Inc. – Bridgeport located in Logan Township, New Jersey. Copies of the disposal manifests for the parking lot excavated soil are included in Appendix XI on the attached DVD. After the completion of the excavation required for the installation of the drywells, two bottom samples were collected from the area (Parking Lot B-1 and Parking Lot B-2). These endpoint sample locations are presented on figure 26. All endpoint samples were collected in laboratory supplied containers and submitted to the laboratory for analysis of VOCs, SVOCs and total metals.

The drywells were installed and the excavation was backfilled with a minimum of 1 foot of 1 1/2-inch gravel surrounding each drywell to approximately 2 ft bg. The remainder of the parking lot was re-graded with the segregated RCA backfill material and final grade (in preparation for the asphalt) was graded with Item 4 stone. The parking lot was then paved with a 4-inch thick asphalt cap.

7.1.2 Area B

Based on available records, four (4) USTs were historically present beneath the first floor of Area B and nine (9) vaulted ASTs were historically present in the basement of Area B. The four USTs were recorded as being located beneath the concrete slab of the first floor (eastern portion) of Area B while the ASTs were recorded as being located in the basement (western portion) of Area B. The former locations of tanks historically within Area B are presented on figure 5. Past ERM reports state that the four USTs (UST-E, UST-F, UST-G and UST-H) were cleaned out, inspected and abandoned in place after the tanks were filled with inert foam. Eight of the nine ASTs were previously removed (AST-1 through AST-8) from the Site and one AST (AST-9) was left in place because it was used to store fuel oil for the operation of the boilers.

First Floor USTs

On August 23-24, 2006, fourteen GeoProbe borings (GP-1 to GP-14) were drilled in the first floor of Area B. The locations of these GeoProbe borings were selected based on previous environmental reports for the Site and were located in an area assumed to be downgradient of the abandoned USTs. For each GeoProbe boring, continuous soil samples were collected from grade to the boring terminus. All of the soil samples were described on a geologic log and screened with a PID for the presence of VOCs. The soil sample from each boring that exhibited the highest PID headspace-vapor concentration was collected for laboratory analysis. In the absence of headspace-vapor readings, the sample collected closest to the groundwater level was submitted to the laboratory for analysis for VOCs and SVOCs. It should be noted that none of the soil samples screened in the field during the GeoProbe sampling activities exhibited a PID concentration over 20 parts per million (ppm). In addition to the soil sampling, groundwater samples were collected from GP-2, GP-6, GP-9 and GP-12 using temporary piezometers installed in the boring. Groundwater samples were then collected from the piezometers using a peristaltic pump and polyethylene tubing. The groundwater samples were collected in laboratory supplied containers and submitted to the laboratory for analysis for VOCs and SVOCs. The location of GeoProbe borings is shown on figure 28.

Between August 2007 to October 2007, the first floor of Area B was excavated to expose the USTs (UST-E, UST-F, UST-G and UST-H) which were reported as abandoned in-place in ERM reports. The historically documented locations of these USTs in Area B are shown on figure 5.

Upon completing the removal of the storage units and concrete slab, the entire area was excavated to expose the abandoned tanks. Based on the excavation activities, it was determined that only three abandoned tanks were present in this area. All three USTs were verified to be 3,000-gallon tanks; contrary to ERM reports stating that UST-E, UST-F and UST-G were 3,500-gallons, 4,000-gallons and 3,000-gallons, respectively. During the tank closure activities, an occupant from an adjacent property stated that he remembered "some time ago" that there was a large tank removed from the area and taken away from the Site. This provides an explanation for why UST-H was not located during the tank closure activities. The USTs that were confirmed to have been abandoned in place (UST-E, UST-F and UST-G) were observed to have been cut open, cleaned and filled with inert foam (as listed in the ERM reports). These tanks were subsequently: cut open to expose the entire inside; the foam was removed from the tanks (and stored in an onsite roll-off dumpster pending offsite disposal); the tanks were removed from their excavations and cut into pieces. Prior to cutting the tanks, they were inspected and observed to be in good condition with no corrosion holes and/or pitting (with the exception of the access holes cut into them by ERM for the abandonment activities). The cut tank pieces were then taken to Pascap Co., Inc., in Bronx, New York for recycling.

After the tanks were cleaned and removed from the excavations, endpoint confirmation samples were collected. The endpoint confirmation samples consisted of: two bottom samples from beneath each tank excavation (EB-1 and EB-2, FB-1 and FB-2 and GB-1 and GB-2); two west sidewall samples from the UST-E excavation (EW-1 and EW-2); one north sidewall sample from each tank excavation (EN-1, FN-1 and GN-1); one south sidewall sample from each tank excavation (ES-1, FS-1 and GS-1);

and, two east sidewall samples from the UST-G excavation (GE-1 and GE-2). The excavation extents as well as the sidewall sample locations for Area B are shown on figure 29. All endpoint samples were submitted to the laboratory for analysis of VOCs, SVOCs and total metals.

After UST-E, UST-F and UST-G were removed, the remainder of the first floor area slab was removed and the exploratory excavations were advanced to verify that UST-H was not present in a location other that was listed in historical documents. The entire first floor area was excavated to a depth of approximately 10 feet below grade. The results of the exploratory excavations revealed that UST-H was no longer present in the subsurface of the first floor of Area B. The extents of the exploratory excavations completed in Area B are shown on figure 30.

The resulting excavations in the first floor of Area B were backfilled with excavated soil (screened in the field) and the entire area was re-graded to approximately one (1) foot below final grade elevation. A total of approximately 100 tons of soil was removed as a result of the re-grading activities. This soil was incorporated along with the topsoil removed from other areas. Based on waste classification this soil was disposed of offsite as non-hazardous petroleum impacted soil. From September to December 2007, the excavated Area B/C/D topsoil was taken offsite by Innovative and disposed of at Clean Earth of Carteret, Inc. located in Carteret, New Jersey. Copies of the disposal manifests for the excavated Area B/C/D topsoil are included in Appendix XI on the attached DVD. An 8-inch layer of gravel was then added above the backfilled area. A 2-inch diameter sub-slab passive ventilation pipe was installed within the gravel layer down the center of the room. The location of sub-slab depressurization system is shown on figure 31. After the gravel layer was leveled, a covering of polyethylene sheeting was installed on top of the gravel. The seams were folded and double taped. Lastly, a 4-inch thick concrete slab (reinforced with welded wire mesh) was installed. Expansion joints were saw-cut into the concrete slab. Following a 28 day cure time, the concrete slab finished with an epoxy/paint covering. The passive ventilation pipe was piped to the roof of the building along a brick supporting column and vented to the roof. The end of the pipe on the roof was completed with a wind-powered turbine to provide a minimal vacuum on the sub-slab passive ventilation pipe. A diagram of the sub-slab passive vent system is shown on figure 32.

Basement ASTs

In order to confirm that the subsurface was not negatively impacted by the historical presence of the ASTs in the basement of Area B, several GeoProbe borings were advanced in the historical locations of the tanks. As part of these subsurface sampling activities, both soil and groundwater samples were collected.

On September 6 and 7, 2006, ten GeoProbe borings (GP-AST-1, GP-AST-2, GP-AST-3, GP-AST-4A, GP-AST-4B, GP-AST-5A, GP-AST-5B, GP-AST-6, GP-AST-7 and GP-AST-8) were advanced at locations of the previously removed ASTs. These boring locations are shown on figure 28. Prior to drilling, the area was visually inspected to identify any potential spill areas. Based on the visual observation, no staining was observed on the concrete in the areas where the ASTs were historically located. For each GeoProbe boring, continuous soil samples were collected from grade to the boring terminus. All of the soil samples were described on a geologic log and screened with a PID for the presence of VOCs. The soil sample from each boring that exhibited the highest headspace-vapor concentration was collected for laboratory analysis. In the absence of PID headspace-vapor readings, the sample collected closest to the groundwater level was submitted to the laboratory for analysis for VOCs and SVOCs. Additionally, groundwater samples were collected from GP-AST-1, GP-AST-2, GP-AST-3, GP-AST-6 and GP-AST-7 using temporary piezometers installed in the completed boring. Groundwater samples were then collected from the piezometers were then sampled using a peristaltic pump and polyethylene tubing. The groundwater samples were collected in laboratory supplied containers and submitted to the laboratory for analysis for VOCs and SVOCs.

Between November 18 and 30, 2006, closure activities were performed on the remaining AST in Area B (AST-9). AST-9 was observed to be a 10,000-gallon single wall steel tank which was most recently used to store fuel oil for the boiler. Prior to closure activities, the area surrounding the tank was sealed off with a polyethylene sheeting barrier and a carbon filtration air ventilation system was set-up for handling vapors. After an access hole was cut into the tank, AST-9 was purged of vapors and cut open and the residual contents of AST-9 were removed and the interior of the tank was cleaned. After the tank was cleaned it was cut into pieces and removed from the excavation. For several days during the closure of this tank, NYSDEC representatives were onsite observing the activities. Prior to cutting the tank, it was inspected and observed to be in good condition with no corrosion holes and/or pitting. Additionally, there were no signs of leaking or spills observed beneath and/or surrounding the AST. The contents of the tank were removed and stored in 55-gallon drums for offsite disposal. On February 7, 2007, nine drums of non-hazardous waste (generated from the cleaning of AST-9 as well as oil soaked sorbents and debris from the cleaning of tanks UST-D, UST-A, UST-B and UST-10) was taken to Clean Earth of North Jersey in South Kearney, New Jersey for disposal. The USEPA ID Number for the Clean Earth of North Jersey disposal facility is NJD991291105. A copy of the disposal manifest for the above listed waste is included in Appendix XI on the attached DVD. The cleaned and cut tank pieces were taken to Pascap Co., Inc., in Bronx, New York for recycling.

In addition to the tanks that were recorded as historically being present at the Site, pipes were identified beneath the slab in the boiler room. A stick-up was located in an adjacent room to the boiler room and upon inspection it was determined to have residual oil in it. On June 8, 2007, LBG supervised the performance of a high vacuum operation to remove the residual fuel oil observed from this pipe. The residual oil was vacuumed out of the pipe and the concrete was removed from this area (boiler room and trench). After the concrete slab was removed and the pipe was traced, it was determined that the pipe stick-up which contained the residual oil was the termination point. This pipe appears to have been connected to the boiler and to one of the ASTs in the basement of Area B.

After the concrete slab was removed from the boiler room, the four pipes which penetrated the northern wall of the boiler room into Area C were uncovered. It was determined that these pipes were historically connected to the USTs beneath the first floor slab in Area B (UST-E, UST-F, UST-G and UST-H). The pipes were removed and on November 16, 2007 a grab soil sample was collected from the pipe trench beneath the piping run (Boiler Room Pipe Trench Bottom) and submitted to the laboratory for analysis of VOCs, SVOCs and total metals. The location of this grab soil sample is presented on figure 28.

On September 10, 2007, a GeoProbe boring (GP-BR-1) was advanced in the boiler room to characterize the soil in this area. The location of this boring is presented on figure 28. For this GeoProbe boring, continuous soil samples were collected from grade to the boring terminus. All of the soil samples were described on a geologic log and screened with a PID for the presence of VOCs. The soil sample that exhibited the highest PID headspace vapor concentration was collected in laboratory supplied containers and submitted to the laboratory for analysis for VOCs and SVOCs.

Following completion of the sampling activities in the boiler room, the excavation was backfilled with clean fill and the entire area was re-graded to approximately one (1) foot below final grade elevation. A 2-inch layer of gravel was then added above the backfilled area. After the gravel layer was leveled, a covering of polyethylene sheeting was installed on top of the gravel. The seams were folded and double taped. Lastly, a 4-inch thick concrete slab (reinforced with welded wire mesh) was installed.

7.1.3 Area C

Four vaulted ASTs (AST-13, AST-15, AST-16 and AST-19) and one UST (UST-D) were previously identified by ERM as being located in Area C. ERM reports state that the four ASTs (historically located in the vault area under the sidewalk) were cleaned and removed from the Site. Also according to ERM reports, UST-D was abandoned in place since it was in the vicinity of a foundation wall. Additionally, some of the ERM figures showed an additional UST (referred to in this report as UST-W) in the basement of Area C adjacent to the former location of the vaulted ASTs.

LBG performed subsequent tank closure activities within Area C. These activities consisted of: removal of UST-D and collection of endpoint samples from the excavation; tracing of suspect stick-up pipes; subsequent identification of four (4) additional USTs (UST-W, UST-X, UST-Y and UST-Z); removal of UST-W, UST-X, UST-Y and UST-Z; collection of endpoint confirmation samples from the excavations; and, attempting to collect closure samples from beneath the slab where the vaulted ASTs were historically located. The former locations of all tanks historically within Area C are presented on figure 6.

In November 2006, UST-D was uncovered and found to be a 4,000-gallon single-wall steel UST. This is contrary to past ERM reports stating that UST-D was a 7,500-gallon UST. The tank was observed to have previously been cut open and abandoned with inert foam; however, the headspace within the UST had elevated VOC readings when screened with the PID. Following waste characterization of the foam and the residual water/sludge from the UST, on December 4, 2006 the waste material was removed from the tank by TradeWinds using a guzzler vacuum truck for disposal offsite. On December 6, 2006, a total of 1,754-gallons of non-hazardous waste were taken to Clean Water of New York in Staten Island, New York for disposal. The USEPA ID Number for the Clean Water of New York disposal facility is NYD000968545. A copy of the disposal manifest is included in Appendix XI on the attached DVD. After the tank was cleaned it was inspected and observed to be in good condition with no corrosion holes or major pitting. It was then cut into pieces and removed from the excavation. The cleaned and cut tank pieces were taken to Pascap Co., Inc., in Bronx, New York for recycling. After the UST was removed from the excavation, four sidewall endpoint confirmation samples (N-1, S-1, E-1 and W-1) and two bottom endpoint confirmation samples (B-1 and B-2) were collected. The soil samples were screened in the field with a PID. The bottom sample PID concentrations were all below 20 ppm while the sidewall soil sample PID concentrations were all below 225 ppm. The locations and sample depths for the endpoint confirmation soil samples as well as the extents of the UST excavations are shown on figure 33. The endpoint soil samples were collected in laboratory supplied containers and submitted to the laboratory for analysis for VOCs and SVOCs and total metals.

Based on the results of the utility tracing activities performed on July 3, 2007, a suspect UST was identified in the eastern portion of Area C. As a result of this anomaly, the concrete floor slab and wood floor was removed in this area exposing the subsurface soils. Based on the waste characterization analytical results for the wood, it was disposed of as hazardous waste due to elevated concentrations of xylenes and lead (F003 [spent non-halogenated solvents] and D008 [lead]). A total of 70 cubic yards of contaminated wood debris/waste was take offsite as hazardous waste for disposal at Stablex Canada, Inc. located in Blainville, Quebec. The USEPA ID Number for the Stablex Canada, Inc. disposal facility is NYD980756415. Copies of the disposal manifests for the contaminated wood are included in Appendix X on the attached DVD. The concrete was taken off-site for recycling. Of note, headspace analyses performed on multiple crushed concrete samples showed no observable PID readings.

After removing parts of the concrete slab and wood floor and upon exposing the subsurface in Area C, it was verified that there was an UST present in the area where the anomaly was detected by the utility tracing activities. This tank was subsequently labeled as UST-W. In July 2007, after the tank was exposed, it was revealed that this tank (a 3,000-gallon single-wall steel UST) had been previously closed in place and was filled with clean sand. In preparation for the excavation activities, a polyethylene barrier was erected surrounding the presumed extent of the UST. The sand was then removed from the UST-W. After the tank was cleaned it was inspected and observed to have 4 corrosion holes approximately 1/4-inch in diameter in the tank. It was then cut into pieces and removed from the excavation. The cleaned and cut tank pieces were taken to Pascap Co., Inc., in Bronx, New York for recycling. PID measurements confirmed that there were no VOCs in the sand, which was stockpiled onsite for later reuse as backfill. While UST-W was being excavated, there was visually impacted soil identified along the northeastern sidewall of the tank area (in the location of the piping connection to the tank). This soil was adjacent to a structural supporting column which limited the extent of the excavation. During and after the removal of the UST-W, several soil samples were collected from the excavation and screened for the presence of petroleum components. All soil screened showed PID readings below 75 ppm and all endpoints sample PID readings were below 55 ppm. After UST-W was removed and accessible soil was excavated (to the extent possible with the equipment which could fit in the space), endpoint soil samples were collected. Five sidewall and two bottom endpoint confirmation samples were collected. One endpoint sample (WS-2) was collected from adjacent to the structural supporting column where the contamination was observed. All endpoint soil samples were collected in laboratory supplied containers and submitted to the laboratory for analysis for VOCs and SVOCs and total metals.

Following the closure of UST-W, the second anomaly identified in Area C (adjacent to UST-W) was confirmed to be an additional UST (UST-X). This tank was previously unidentified on any historical reports and/or Site documents and was observed to be a 3,000-gallon single walled steel UST. While UST-W had been previously abandoned in place, UST-X had only the fill and vent pipes cut and no closure activities had been performed prior to covering the tank with concrete slab. UST-X was purged of vapors and cut open. After an access hole was cut into the tank, the residual contents of UST-X were removed from the tank and the interior of the tank was cleaned. After the tank was cleaned it was inspected and observed to be in good condition with no corrosion holes or major pitting. It was then cut into pieces and removed from the excavation. The cleaned and cut tank pieces were taken to Pascap Co., Inc., in Bronx, New York for recycling. During and after the removal of the UST-X, several soil samples were collected from the excavation and screened for the presence of petroleum components. The PID readings ranged from 0.0 ppm to 20 ppm with the exception of the western sidewall area (where the piping was connected to the tank) where the final endpoint PID concentration was 1,350 ppm. Once the UST was cleared from the excavation, six sidewall endpoint confirmation samples (XN-1, XN-2, XS-1, XS-2, XW-1, and XE-1) and two bottom endpoint confirmation samples (XB-1 and XB-2) were collected. The locations and sample depths for the endpoint confirmation soil samples as well as the extents of the UST excavations are shown on figure 33. The endpoint soil samples were collected in laboratory supplied containers and submitted to the laboratory for analysis for VOCs and SVOCs and total metals.

Following the closure of UST-W, the excavation was extended to the south upon observing disrupted soil adjacent to the excavation sidewall. Once the excavation was extended, piping associated with another UST was discovered, and further excavation revealed an additional UST (UST-Y) to be present. This tank was previously unidentified on any historical reports and/or Site documents and was observed to be a 3,000-gallon single walled steel UST. Similar to UST-X, UST-Y had only had the fill and vent pipes cut and no closure activities had been performed prior to covering the tank with concrete slab. UST-Y had a small amount of residual sludge within it. UST-Y was purged of vapors and cut open. After an access hole was cut into the tank, the residual contents of UST-Y were removed from the tank and the interior of the tank was cleaned. After the tank was cleaned it was inspected and observed to be in good condition with no corrosion holes or major pitting. UST-4 was then cut into pieces and removed from the excavation. The cleaned and cut tank pieces were taken to Pascap Co., Inc., in Bronx, New York for recycling. During and after the removal of the UST-Y, several soil samples were collected from the excavation and screened for the presence of petroleum components. The PID readings for the soil surrounding the tank were all below 40 ppm with the exception of one bottom sample (YB-3) which had a PID concentration of 300 ppm. Once the UST was cleared from the excavation, five sidewall endpoint confirmation samples (YN-1, YN-2, YS-1, YS-2, and YE-1) and three bottom endpoint confirmation samples (YB-1, YB-2 and YB-3) were collected. All endpoint sample locations were approved by the onsite NYSDEC representative (Kathy Eastman). The locations and sample depths for the endpoint confirmation soil samples as well as the extents of the UST excavations are shown on figure 33. The endpoint soil samples were collected in laboratory supplied containers and submitted to the laboratory for analysis for VOCs and SVOCs and total metals.

Following the closure of UST-Y, the excavation was extended to the south upon observing disrupted soil adjacent to the excavation sidewall. Once the excavation was extended, piping associated with another UST was discovered, and further excavation revealed an additional UST (UST-Z) to be present. This tank was previously unidentified on any historical reports and/or Site documents and was observed to be a 3,000-gallon single walled steel UST. Similar to UST-X and UST-Y, UST-Z had only had the fill and vent pipes cut and no closure activities had been performed prior to covering the tank with concrete slab. The soil adjacent to the tank (where the pipes were observed) was visibly contaminated and when screened exhibited PID concentrations ranging from 800-1,100 ppm. Additionally, UST-Z had approximately one to two inches of sludge in the bottom. UST-Z was purged of vapors, cut open and the residual contents of UST-Z were removed from the tank. After the tank was removed from the excavation it was inspected and observed to be in good condition with no corrosion holes and only minimal pitting. It was then cut into pieces and removed from the excavation. The cleaned and cut tank pieces were taken to Pascap Co., Inc., in Bronx, New York for recycling.

During and after the removal of the UST-Z, several soil samples were collected from the excavation and screened for the presence of petroleum components. The PID readings ranged from 0.0 ppm to 1,500 ppm. Once the UST was cleared from the excavation, five sidewall endpoint confirmation samples (ZN-1, ZN-2, ZS-1, ZS-2 and ZW-1) and two bottom endpoint confirmation samples (ZB-1 and ZB-2) were collected. All endpoint sample locations were approved by the onsite NYSDEC representative (Kathy Eastman). The locations and sample depths for the endpoint confirmation soil samples as well as the extents of the UST excavations are shown on figure 33. The endpoint soil samples were collected in laboratory supplied containers and submitted to the laboratory for analysis for VOCs and SVOCs and total metals.

All accessible contaminated soil was excavated from around UST-W, UST-X, UST-Y and UST-Z, and was stockpiled in the Area D commercial space. This soil (approximately 5 cubic yards) was stockpiled in the Area D commercial space. This soil was characterized and was subsequently disposed of as hazardous waste along with the soil excavated from the Area D hot spot excavation.

In September 2007, during the closure activities for UST-W, UST-X, UST-Y and UST-Z, the vaulted area beneath the sidewalk and North West Street was accessed. The vault was filled with refuse and was subsequently cleared out and additional access areas were opened (cinder block walls were removed). After the vault was cleaned out, the floor and walls were visually inspected. Based on this inspection, no areas of significant staining were observed in or around the areas where the vaulted ASTs were historically located. On September 10, 2007, soil borings were attempted where the vaulted ASTs (AST-13, AST-15, AST-16 and AST-19) were historically located. The borings were attempted with a limited-access track-mounted GeoProbe rig; however, in each of the four locations (GP-AST13, GP-AST15 GP-AST16 and GP-AST19), refusal was encountered within the first 1-3 feet of the boring. Figure 34 shows the location of GeoProbe borings in Area C. Throughout the vaulted area, the concrete slab thickness and hardness prevented the GeoProbe rig from penetrating the slab and reaching the subsurface soils. No soil and/or groundwater samples could be collected for analysis; the concrete slab in this area was observed to be in good condition with no evidence of significant spills and/or gross contamination. Following the removal of the remainder of the concrete floor and wood floor in the main section of Area C, an attempt was also made to remove the concrete from the vault area using excavating equipment. The concrete was removed from the vault area where possible (in some cases the concrete was approximately 2 to 3 feet thick); however, the majority of the slab could not be removed. All underlying soil which was exposed was screened with a PID and no elevated concentrations were identified in the headspace from crushed concrete from this area and/or the underlying soil (where it was accessible) in the areas where the former ASTs were located. All apparent subsurface impacts in the area near the historical locations of the vaulted ASTs could be attributed to the adjacent USTs (UST-W, UST-X, UST-Y and UST-Z). Based on the field observations and the thickness of the concrete in this area, the ASTs historically located in the vault area have not impacted the subsurface soil and/or groundwater.

Following the tank closure activities, the tank excavations were backfilled with clean fill. After backfilling the excavations, the remainder of the concrete in Area C (east of the dividing wall which runs along the western side of the elevator) was broken apart using excavators and track-mounted breakers and removed from the Site. The concrete was taken off-site for recycling. Headspace analyses performed on multiple crushed concrete samples showed no observable PID readings. After the concrete was removed, a layer of topsoil (approximately 2 feet thick) was excavated from the entire area. Additionally, multiple exploratory excavations were completed throughout Area C to determine if additional USTs were present. The extent of the excavation activities performed in Area C area presented on figure 35. All excavated topsoil was temporarily stockpiled in the Area D commercial space pending waste classification and offsite disposal. A total of 702.04 tons of soil was removed as a result of the regrading activities (which included approximately 100 tons of soil generated from the Area B UST excavation). Based on waste classification, this soil was disposed of offsite as non-hazardous petroleum impacted soil. From September to December 2007, the excavated Area B/C/D topsoil was taken offsite by Innovative and disposed of at Clean Earth of Carteret, Inc. located in Carteret, New Jersey. Copies of the disposal manifests for the excavated Area B/C/D topsoil are included in Appendix XI on the attached DVD.

After all of the topsoil in Area C was excavated and the area re-graded to approximately 16 inches below final grade elevation, a 12-inch layer of washed 3/4-inch gravel was then added above the backfilled area. Six (6) 2-inch diameter passive sub-slab ventilation pipes were installed within the gravel layer down the center of the room. The locations of these passive sub-slab ventilation pipes are shown on figure 31. After the gravel layer was leveled, a covering of polyethylene sheeting was installed on top of the gravel. The polyethylene seams were folded and double taped. A 4-inch thick concrete slab (reinforced with welded wire mesh) was installed in the area. Expansion joints were installed/saw-cut in the concrete slab.

7.1.4 Area D

7.1.4.1 Alleyway

Historical ERM investigations identified three USTs (UST-A, UST-B and UST-10) located in the alley of Area D. ERM reports state that UST-A and UST-B were left in place at the Site as they were used for storm-water control during heavy rain events. UST-10 was identified as being historically used for storage of waste solvents. ERM reports state that this tank was cleaned, filled with inert foam and abandoned in place. The former locations of all tanks historically within Area D are presented on figure 7.

During the winter 2006-2007, LBG performed subsequent tank closure activities in the alleyway consisting of removal of UST-A, UST-B and UST-10. The concrete throughout the alleyway (the majority of which was 1-foot thick and reinforced with rebar) was broken apart and taken offsite for recycling. Of note, headspace analyses performed on multiple crushed concrete samples showed no observable PID readings.

After the concrete was removed, UST-A and UST-B were uncovered and were both observed to be 3,500-gallon single-wall steel USTs. The tops of both UST-A and UST-B were exposed and both tanks were observed to be intact (not previously abandoned). Both tanks contained water. The associated fill and vent pipes were cut off adjacent to each tank. Additionally, neither AST-A or AST-B were connected to the storm-water drains at the extents to the alleyway.

Both tanks contained residual water. Both UST-A and UST-B were purged of vapors and cut open. Once they were cut open, it was revealed that both tanks contained residual sludge/still bottoms (presumably from past manufacturing activities) much of which appeared to be hardened paint and varnish. After an access hole was cut into each tank, the residual contents were removed from both tanks and the interior of both tanks were cleaned. All of the residual sludge were stored in 55-gallon steel drums for offsite disposal. After the tanks were cleaned they were inspected and observed to be in good condition with no corrosion holes or major pitting. Each UST was then cut into pieces and removed from the excavation. The cleaned and cut tank pieces were taken to Pascap Co., Inc., in Bronx, New York for recycling. At the request of the NYSDEC, the waste generated from each tank was characterized separately. The UST-A waste contaminants consisted of VOCs including benzene, toluene ethylbenzene, xylenes (BTEX) in addition to n-propylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, sec-butylbenzene, tert-butylbenzene and 4-isopropyltoluene. UST-B contained the same contaminants (at higher concentrations) and also contained methylene chloride and several SVOCs (naphthalene, 2-methylnaphthalene, Di-n-butyl phthalate and Bis(2-ethylhexyl)phthalate). Copies of the analytical reports are included in Appendix XIV.

During and after the removal of UST-A, several soil samples were collected from the excavation and screened for the presence of petroleum components. Following the removal of UST-A the excavation extent was limited by the building to the south and east. Three sidewall endpoint confirmation samples (N-1, S-1 and W-1) and two bottom endpoint confirmation samples (B-1 and B-2) were collected. The locations of these endpoint confirmation samples are shown on figure 36. The endpoint soil samples were collected in laboratory supplied containers and submitted to the laboratory for analysis for VOCs and SVOCs and total metals. After the endpoint confirmation samples were collected, the excavation was backfilled with clean fill to stabilize the area to ensure the building foundation was not impacted/undermined.

Kathy Eastman, Project Manager for the NYSDEC, was onsite during the cleaning and removal of UST-B. During and after the removal of UST-B, several soil samples were collected from the excavation and screened for the presence of petroleum components. The PID readings screened from the UST-B excavation were all 0.0 ppm. Once UST-B was removed from the excavation, four sidewall endpoint confirmation samples (north sidewall, south sidewall east sidewall and west sidewall) and three bottom endpoint confirmation samples (Bottom 1, Bottom 2 and Bottom 3) were collected. The locations of these endpoint confirmation samples are shown on figure 36. The endpoint soil samples were collected in laboratory supplied containers and submitted to the laboratory for analysis for VOCs and SVOCs and total metals. After the endpoint confirmation samples were collected, the excavation was backfilled with clean fill to stabilize the area to ensure the building foundation was not impacted/undermined.

UST-10, a 10,000-gallon single wall tank was abandoned onsite and filled with an inert foam. After UST-10 was uncovered and cut open a sample of the foam was collected in a laboratory supplied container and submitted to the laboratory for waste characterization analysis. The foam (contaminated with VOCs) was subsequently removed from UST-10 and disposed of offsite prior to removing the tank. Approximately 20 cubic yards of waste foam was transported to Republic Environmental in Hatfield, Pennsylvania for disposal. After the foam was removed from the tank, 437 gallons of contaminated water were also evacuated from the tank. This water (non-hazardous waste based on laboratory analysis) was transported offsite and disposed of at Clean Water located at 3249 Richmond Terrace in Staten Island, New York. Copies of the disposal manifests for the UST-10 foam and waste water are included in Appendix XI on the attached DVD.

After the foam was removed from the tank, the interior was cleaned. Once cleaned, the tank was inspected and observed to be in good condition with no corrosion holes or major pitting. It was then cut into pieces and removed from the excavation. The cleaned and cut tank pieces were taken to Pascap Co., Inc., in Bronx, New York for recycling.

During and after the removal of UST-10, several soil samples were collected from the excavation and screened for the presence of petroleum components. The PID readings ranged from 0.0 ppm to 10 ppm. All endpoint confirmation soil samples screened in the field had PID concentrations of 0.0 ppm with the exceptions of B-1 and B-2 which had PID concentrations of 0.5 ppm and 0.6 ppm, respectively. The excavation extent of UST-10 was limited by the building to the east and the retaining wall to the west. After the excavation was completed, seven sidewall endpoint confirmation samples (NS-1, NS-2, NS-3, SS-1, SS-2, SS-3 and ES-1) and five bottom endpoint confirmation samples (B-1, B-2, B-3, B-4 and B-5) were collected. The locations of these endpoint confirmation samples are shown on figure 36. No sidewall soil sample was collected on the side adjacent to UST-B because the soil between the two tanks was removed to facilitate the excavation activities. The endpoint soil samples were collected in laboratory supplied containers and submitted to the laboratory for analysis for VOCs and SVOCs and total metals. After the endpoint confirmation samples were collected, the excavation was backfilled with clean fill to stabilize the area to ensure the building foundation was not impacted/undermined.

Following removal of the USTs from the alley area, soil and groundwater samples were collected from the area of each tank. This confirmation sampling consisted of drilling GeoProbe soil borings at the approximate center of the former location of the USTs. The locations of these GeoProbe borings are shown on figure 37. For each GeoProbe boring location, soil samples were collected (for submission to the laboratory for analysis) from the following depths within the boring: one from approximately 12 to 16 ft bg which was the estimated elevation below the bottom of the tank and one from the termination point of the boring (refusal). Additionally, two groundwater samples were collected from each boring; one from the water table and one from the termination of the boring. These soil and groundwater samples were submitted to laboratory for analysis for VOCs, SVOCs and total metals.

The sludge cleaned from UST-A, UST-B and UST-10 was stored in steel 55-gallon drums pending offsite disposal. A total of nine (9) 55-gallon drums of sludge were generated during the closure of these USTs. Samples of the waste generated from the tank closure activities were submitted to AMRO for waste classification. Based on the analytical results of the waste, it was disposed of as hazardous waste due to elevated concentrations of xylenes, 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene (F003, F005 [spent solvent waste]). Following receipt of the laboratory analysis, the waste was removed from the Site by Innovative Recycling Technologies, Inc. (Innovative) of Lindenhurst, New York. On June 22, 2007 the waste was transported and disposed of under the Site's USEPA ID Number NYD056301971. The waste was disposed of as hazardous soil based on the laboratory analysis. The waste was disposed of at Chemtron under their disposal facility USEPA ID Number of OHD066060609. Copies of the disposal manifests for the waste are included in Appendix X on the attached DVD.

In 2008, during the excavation activities performed in the Area D (former commercial space), suspected fill pipes and vent pipes were discovered running along the western wall of the commercial space (see Commercial Space and Adjacent Room section below). The concrete floor for the former remediation room in the alleyway was jack-hammered to allow access to the subsurface. Once the concrete was removed, the soil was dug out by hand and the top of an additional tank was discovered (heretofore referred to as UST-U). This tank was observed to be a 3,000-gallon single wall steel UST. The former location of UST-U is shown on figure 7. Since this tank was located beneath the former remediation room, the room had to be demolished to remove the tank. This presented a logistical problem as the south wall of the room served as a structural support for the fire escape serving the 2nd and 3rd floors of the building. A temporary brace was installed to support the fire escape while UST-U was removed. Following the removal of the former remediation room and the remaining concrete slab, UST-U was uncovered. While uncovering UST-U, another UST was discovered adjacent to the north. This tank (referred to as UST-T) was located beneath the bathroom connected to the southwest corner of the commercial space. The former location of UST-T is shown on figure 7. On May 22, 2008, a vacuum truck operated by TradeWinds was used to remove 789 gallons of contaminated water and waste oil from UST-T and UST-U. Based on the analytical results of the waste, it was disposed of as hazardous waste due to residual material detected in the tank (D001 [mineral spirits]). The waste was disposed of as hazardous waste at Norlite Corporation of Cohoes, New York under their disposal facility USEPA ID Number of NYD080469935. A copy of the disposal manifest for the waste is included in Appendix X on the attached DVD.

However, since the tanks were not able to be removed from the subsurface (due to the continued presence of the fire escape), the access ports collected rainwater as a result of a subsequent storm event. Again on June 16, 2008, a vacuum truck operated by TradeWinds was used to remove 522 gallons of contaminated rainwater from UST-T and UST-U.

On June 17, 2008, UST-U was removed from the excavation and verified to be a 3,000-gallon single wall steel UST. UST-U was then cut open, revealing that the tank contained residual material (presumably from past manufacturing activities) much of which appeared to be hardened paint and varnish. After an access hole was cut into the tank, the residual contents were removed from the tank and the interior was cleaned. A total of three drums of tank sludge and one drum of tank bottoms were cleaned out of UST-U. Based on the nature of the hardened varnish, it was not able to be removed from the tank interior by hand. As such, the tank was cut open and the material was scraped off of the interior of the tank using the excavator. Six drums of dried product were scraped from the interior of UST-U. All of the residual waste from UST-U was stored in ten 55-gallon steel drums for offsite disposal. On November 6, 2008, the ten drums of waste generated from the cleaning of UST-U were disposed of as hazardous based on the laboratory analysis (D018 [benzene] and F002, F003 and F005 [spent solvent waste]). The waste was disposed of at Chemtron under their disposal facility USEPA ID Number of OHD066060609. A copy of the disposal manifest for the waste is included in Appendix X on the attached DVD.

After the tanks were cleaned they were inspected and observed to be in good condition with no corrosion holes or major pitting. UST-U was removed from the excavation, the excavator was able to be positioned so that UST-T could be pulled from beneath the bathroom wall. On June 20, 2008, UST-T was removed from beneath the bathroom and observed to be an approximately 500-gallon single walled riveted steel UST. UST-T was then cut open, revealing that the tank contained residual sludge/tank bottoms. After an access hole was cut into the tank, the residual contents were removed from the tank and the interior was cleaned. A total of two 55-gallon steel drums of sludge/tank bottoms were cleaned out of UST-T. On November 6, 2008, the two drums of waste generated from the cleaning of UST-T were disposed of as hazardous due to elevated concentrations of toluene and xylenes as shown in the laboratory analysis (D018 [benzene] and F002, F003 and F005 [spent solvent waste]). The waste was disposed of at Chemtron under their disposal facility USEPA ID Number of OHD066060609. A copy of the disposal manifest for the waste is included in Appendix X on the attached DVD.

After both UST-U and UST-T were removed, the excavation was advanced as far as possible without undermining the building foundations. Five sidewall endpoint confirmation samples (AT-1, AT-2, AT-3, AT-4 and AT-5) were collected, all of which had PID concentrations of 0.0 ppm. The bottom of the excavation was visibly impacted with red and purple stained soil. As such, the excavation was benched down to facilitate reaching the maximum depth of the excavation. Soil was screened with a PID continuously, with PID concentrations ranging from approximately 1,000 ppm to 5,000 ppm. All excavated soil was stockpiled in the commercial space (on poly sheeting) pending offsite disposal. After reaching a total depth of 13 feet below grade (approximate elevation of the groundwater table), bottom endpoint confirmation samples (AT-6, AT-7, AT-8 and AT-9) were collected. The locations of these endpoint confirmation samples are shown on figure 36. The endpoint soil samples were collected in laboratory supplied containers and submitted to the laboratory for analysis for VOCs, SVOCs and total metals. After the endpoint confirmation samples were collected, the excavation was backfilled with clean fill (compacted at 1-foot lifts) to stabilize the area and to ensure that the building foundation was not impacted or undermined.

On July 25, 2008, 95.22 tons of soil removed from the UST-U and UST-T excavation were disposed of offsite as hazardous waste due to elevated concentrations of toluene and xylenes (D001 [mineral spirits]). The waste soil was disposed of at Chemtron under their disposal facility USEPA ID Number of OHD066060609. Copies of the disposal manifests for the waste are included in Appendix X on the attached DVD. After both tanks were cleaned they were inspected and observed to be in good condition with no corrosion holes or major pitting. The cleaned and cut tank pieces were taken to Pascap Co., Inc., in Bronx, New York for recycling.

Following the tank closure activities, the temporary brace was replaced with a permanent fire escape structural support. A plan showing the extent of the temporary brace as well as the permanent fire escape structural support is presented on figure 38.

7.1.4.2 <u>Commercial Space and Adjacent Room</u>

<u>Hot Spot Excavation</u>

After the concrete slab/wood floor was broken and removed from Area C, the same activity was performed in Area D to provide access to the subsurface. The primary reason for this activity was to facilitate the performance of exploratory trenching to determine if previously unidentified USTs were present and if so, if they were active sources.

On October 22, 2007, following the removal of the overlying concrete slab, soil excavation was completed in the room adjacent to the commercial space (the southern portion of Area D). No additional USTs were located in this room. Following the exploratory trenching, preparations were made to excavate the grossly contaminated soil in this area. The excavation activities were performed in this area based on the evaluation of historical fluid level measurements. These measurements revealed that the free-phase product was localized in this area (southern portion of Area D). As such, it was suspected that an unidentified tank may be present in the subsurface in this area. Additionally, this is the area where past product removal efforts performed by ERM were unsuccessful due to the high viscosity of the product. Considering all of these factors, this excavation (referred to as the "hot spot' excavation) was performed in the area where the greatest thicknesses of free-phase product (NAPL) had been historically observed (in the area of the former product delineation well DW-13D, see figure 8).

After several feet overlying soil (which did not reveal impact based on field screening) was excavated from the area, the excavation of hot spot soil was performed. At approximately 10 ft bg, visually impacted soil was encountered within the excavation. All soil from 10 ft bg to the termination of the excavation at approximately 18 ft bg was segregated from other soil onsite and stockpiled in the commercial space (on poly sheeting). A total of 129.015 metric tons of hazardous contaminated soil was removed and disposed of offsite in association with the "hot spot' excavation. Of note, much of the soil removed from this excavation was saturated with free-phase product (NAPL). The excavation was expanded laterally to the limitations of the excavating equipment and/or the presence of building structural components. A replacement groundwater/product extraction well (EW-1D) was installed in the center of the completed excavation and the resulting excavation was backfilled with washed gravel to approximately 2-3 feet above the top of screen around the riser pipe. The gravel was then covered with a polyethylene liner and the resulting excavation was re-graded with clean soil (originally from the same area from approximately 1-5 ft bg). A final one foot layer of pea gravel was installed to 4 inches below grade and the sub-slab depressurization piping (from Area C as well as this room) was trenched to the commercial space. The pea gravel was covered with a taped polyethylene liner and completed with a 4-inch thick concrete slab.

Commercial Space Excavation

Historical ERM investigations identified UST-34, UST-35, UST-36 and UST-C within the commercial space of Area D. These USTs (4,000-gallon, 4,000-gallon, 4,000-gallon and 1,500-gallon respectively) were found by ERM to contain fluids and sludge. After the fluids and sludge were removed the tanks were cut open and disposed offsite. Approximately 30 cubic yards of contaminated soils were removed from this area as part of the ERM tank closure activities. The locations of these tanks are shown on figure 7. No additional work was reported to have been done to address residual soil contamination in this area by ERM.

Considering the absence of closure documentation for UST-34, UST-35, UST-36 and UST-C, LBG conducted a subsurface investigation and collected soil and groundwater samples at the location of these tanks. The confirmation sampling consisted of performing GeoProbe soil borings at the approximate center of the former location of the USTs. For each GeoProbe boring, continuous soil samples were collected from grade to the boring terminus. For each GeoProbe boring location, soil samples were collected (for submission to the laboratory) from the following depths within the boring: one from approximately 0-2 feet below the estimated elevation of the bottom of the tank and one from the location where the highest PID reading was obtained. Additionally, two groundwater samples were collected from each boring; one from the water table and one from the termination of the boring. These samples were submitted to laboratory for analysis for VOCs, SVOCs and total metals. Laboratory analytical results of the LBG GeoProbe tank closure samples for UST-34, UST-35, UST-36 and UST-C indicated that soil and groundwater in the area contained levels of VOCs and total metals exceeding the applicable NYSDEC standards. As such, the concrete slab was removed from the commercial space of Area D to provide access to the subsurface for excavation of contaminated soil.

Following the removal of the concrete slab, exploratory trenching was performed to determine if any tanks (listed as previously removed or unidentified) were present in the area. During these excavation activities, a previously undiscovered UST (referred as UST-V) was discovered along the southern wall of the commercial space. UST-V was observed to be an "old" (based on riveted construction) 275-gallon steel tank. On January 9, 2008, UST-V was removed from the Area D commercial space and verified to be a 275-gallon single wall riveted steel UST. The tank was in good condition with no visual corrosion holes or pitting. UST-V was then cut open, revealing that the tank contained residual sludge/tank bottoms. After an access hole was cut into the tank, the residual contents were removed from the tank and the interior was cleaned. A total of one 55-gallon steel drum of sludge/tank bottoms were removed from UST-V. After UST-V was removed from the excavation, the soil surrounding the tank was excavated to the maximum extent possible (limited based on the building foundation).

The UST excavation was then backfilled with clean fill to prevent undermining of the foundation wall. On November 6, 2008, one drum of waste generated from the cleaning of UST-V was disposed of as hazardous based on the laboratory analysis (D018 [benzene] and F002, F003 and F005 [spent solvent waste]). The waste was disposed of at Chemtron under their disposal facility USEPA ID Number of OHD066060609. A copy of the disposal manifest for the waste is included in Appendix X on the attached DVD.

Following the removal of UST-V, the soil excavation was expanded to remove all accessible contaminated soil from the subsurface beneath the historical locations of UST-34, UST-35, UST-36 and UST-C. A figure illustrating the extent of the excavation as well as the location of the endpoint confirmation soil sample is presented as figure 39. The extent of the excavation was limited by the presence of the building foundations (south and west) and by the confined space which limited the size of the excavator. As shown on figure 39, the excavation was completed to a depth of approximately 13 ft bg.

A total of 1,128.20 tons of contaminated soil was excavated from the subsurface in the area beneath/surrounding the former locations of UST-34, UST-35, UST-36 and UST-C and disposed of as non-hazardous petroleum contaminated soil (based on laboratory analysis). As a result of the excavation activities, several of the product delineation well previously installed in the commercial space by ERM (DW-4D, DW-5D, DW-6D, DW-7D, DW-8D, DW-9D and DW-10D) and monitor well MW-4D were destroyed. Two replacement delineation wells (R-4D and R-5D) were installed in the commercial space to provide future groundwater characterization information.

All soil excavated from the Area D commercial space was taken offsite under manifest by Innovative and disposed of at Soil Safe, Inc. - Bridgeport located in Logan Township, New Jersey. Copies of the disposal manifests for the parking lot excavated soil are included in Appendix XI on the attached DVD. Upon reaching the extents of the excavation (or >50.0 ppm PID concentrations during the field screening), the excavation was terminated. Excavation endpoint confirmation samples were collected from the termination points of the excavation and submitted to the laboratory for analysis for VOCs, SVOCs and total metals. A figure illustrating the extent of the excavation as well as the location of the endpoint confirmation sample locations is presented as figure 39.

Following the completion of the excavation activities, the resulting excavation was backfilled with clean 1/2 inch highly permeable pea stone. This material was selected to facilitate future sub-slab depressurization activities as well as the application of a chemical oxidization compound (for a pilot test and for potential future application events). The purpose of chemical oxidation application is to enhance in-situ remediation of the residual contamination. The groundwater monitoring wells, product delineation wells and soil vapor extraction well present in the area will also facilitate future applications of the chemical oxidization compound if deemed to be effective.

8.0 CHEMICAL OXIDATION APPLICATION AREA D EXCAVATION

Following the tank closure activities in the Area D commercial space, LBG performed a field pilot study to determine the site feasibility of the use of chemical oxidization technology for remediation of soil and groundwater contamination at the Site. The Chemical Oxidation Application activities in the Area D excavation were performed according to the work plan submitted to the NYSDEC in July 2008.

The objectives of the Chemical Oxidation Application activities were:

- to determine the effect of chemical oxidization compound applied to the subsurface facilitated by a former excavation backfilled with more permeable material; and,
- monitor the chemical oxidization efficiency for reducing concentrations of dissolved phase VOCs in the groundwater which will be determined by quarterly groundwater monitoring.

The selected chemical oxidant used was RegenOx™. RegenOx™ (manufactured by Regenesis [http://www.regenesis.com/products/chemOx/regenOx/]) is an advanced chemical oxidation technology that destroys contaminants through powerful, yet controlled chemical reactions and not through biological means. This product maximizes in-situ performance while using a solid alkaline oxidant that employs a sodium percarbonate complex with a multi-part catalytic formula. RegenOx™ directly oxidizes contaminants while its unique catalytic component generates a range of highly oxidizing free radicals that rapidly and effectively destroy a range of target contaminants.

The RegenOx™ application is designed to remove significant amounts of contamination from the subsurface. The application process enables the two part (Part A and Part B) product to be combined just prior to use. Part A is the oxidizer powder and Part B is the liquid activator. Part A consists of a mixture of sodium percarbonate [$2Na_2CO_3$- $3H_2O_2$], sodium carbonate [Na_2CO_3], sodium silicate and silica gel. Part B consists of a mixture of sodium silicate solution, silica gel and ferrous sulfate. Both parts of the product were packaged and shipped to the Site in 30 lb. 5-gallon PVC buckets (approximately 3 gallons of material per bucket).

Two typical application methods may be employed at the Site: direct application to a completed soil excavation and direct-injection techniques (into existing wells onsite). The first application method is direct application to the completed excavation. This method was employed at the Site in the Area D commercial space. RegenOx™ was applied to the completed excavation area to target the impacted groundwater beneath the source area. As stated prior, the excavation was backfilled with clean 1/2-inch highly permeable pea stone. This material was selected to allow the RegenOx™ solution to percolate directly to the water table during the application activities. Volume and density application rates for RegenOx™ were based on the manufacturer's recommendations. A RegenOx™ Summary Page outlining the summary of the RegenOx™ totals (recommended dosage rates) provided by the manufacturer is included in Appendix XV.

The application was performed from October 14 to 18, 2008. The application activities consisted of mixing a total of 4,020 pounds or the two part RegenOx™ with water at a mix ratio for a 5% solution as per the manufacturer's recommendation. For every 30 pounds of Part A and 30 pounds of Part B, there was 60 gallons of water. The solution was mixed for between a half hour and an hour to dissolve all of the Parts A and B and to ensure all material was mixed into solution. The RegenOx™ applications were applied to three trenches in the southwest corner of the Area D commercial space. The locations of the application trenches are shown on figure 40. Future groundwater monitoring rounds will be used to evaluate the effectiveness of the chemical oxidation applications for in-situ remediation.

A second application method would involve using direct-injection techniques into existing onsite wells). The injection method of the RegenOx™ may be performed after evaluation of the data collected from subsequent groundwater monitoring data is obtained and the effectiveness of the first application is evaluated.

8.1 Manual NAPL Bailing/Pumping

In order to immediately address the free phase NAPL observed in select onsite groundwater monitor wells, manual bailing/pumping activities were performed to remove NAPL from the subsurface. The NAPL removal activity consisted of extracting the product using disposable bailers and a peristaltic pump where possible. The product recovery volumes were recorded on daily field sheets. These product bailing field sheets are included in Appendix XVI. As of May 5, 2009, a total of approximately 40-gallons of NAPL have been recovered from onsite monitor wells MW-1B, DW-20B, DW-5C, DW-3D, DW-14D, DW-21D, EW-1D and R-4D.

9.0 EVALUATION OF METHODS FOR CONTROLLING OFFSITE CONTAMINANT MIGRATION

The groundwater contamination beneath the Site has impacted downgradient areas including the Bronx River. One purpose of the remedial investigation was to collect data for evaluating remediation methods for controlling the offsite migration of free-phase product and groundwater with dissolved contaminants. The following activities summarized below were performed to determine the most effective method to achieve this goal.

9.1 Sub-Surface Characterization for Potential Hydraulic Barrier

In order to determine the feasibility of installing a physical barrier to stop contamination from flowing from the Site to the adjacent areas and Bronx River, a subsurface investigation on western perimeter of the Site was performed. The subsurface investigation consisted of a geologic evaluation which was intended to validate or rule out the feasibility of installing a physical barrier using grout material.

From January 22 to 25, 2007, eight GeoProbe borings were drilled along the western perimeter of Areas C and D. These borings were performed by a New York State licensed driller with onsite supervision by an LBG hydrogeologist. These borings, HB-1 to HB-8, were completed at the locations shown on figure 41. During the drilling, continuous soil samples were collected from grade to the boring terminus. All soil samples were evaluated by the field hydrogeologist and soil compositions were recorded on a geologic log. All geologic logs are included in Appendix IX. For each GeoProbe boring location, soil samples were collected (for submission to the laboratory) from the following depths within the boring: one from the water table; and one from the terminus of the boring (just above bedrock refusal). These samples were collected in laboratory supplied containers and submitted to laboratory for analysis for VOCs, SVOCs and total metals.

Based on the evaluation of the soil samples collected from the GeoProbe borings, the subsurface soil is primarily composed of silt and fine sand with varying amounts of very fine to coarse sand, gravel and rock fragments. Although more highly permeable sand would be more conducive to the application of a grout barrier wall, the fact that the subsurface at the Site contains varying amounts of fine to medium sand lend to the possibility that a grout barrier (constructed through multiple grout injection wells) would be a feasible method of installing a physical barrier to prevent migration of contamination flowing from the downgradient perimeter of the Site. Based on this evaluation, a grout injection pilot test was performed to evaluate actual onsite applicability of grout injection.

9.2 Grout Injection Pilot Test

A grout injection pilot test was performed on April 4, 5 and 6, 2007. Grouting is the act of injecting certain substances into the void space of earth materials to reduce or eliminate their permeability, consolidate them or increase their strength. The grout injection pilot test was performed to determine feasibility of this method for creating a hydraulic barrier on the Site.

The advantages of using grout injection points for the construction of an impermeable subsurface barrier include:

- it can be performed in very tight access and low overhead clearance conditions;
- pinpoint treatment;
- wide range of applications;
- it is non-hazardous;
- there is no associated waste disposal;
- it is non-destructive to existing building foundations; and,
- it causes minimal impact to the surface environment.

Quality control maintained throughout the duration of the pilot test included procedural inspection and documentation of the work activity, oversight to ensure proper grout mix ratio and injection rates, and assessment of ground condition before and after the pilot test.

The grout injection pilot test was performed using a GeoProbe drill rig for both the injection point (GIP-1) as well as the grout sampling points (GSP-1 and GSP-2). The locations of the grout injection point and the grout sampling points are shown on figure 41.

The injection point GIP-1 was advanced to bedrock (approximately 30 ft bg) upon which the boring reached refusal. After the boring was terminated at bedrock surface the grout slurry was mixed in preparation for the injection. The grout mixture consisted of 94 lbs. bag of portland cement; 5 lbs. of bentonite and 6.5 gallons of water and was determined based on technical literature data. The grout was mixed onsite and injected into GIP-1 using a progressive cavity (Moyno 2L4) pump. This pump is capable of pumping at a rate of up to 10 gpm (water) at a maximum of approximately 300 psi (pounds per square inch). The injection was started at just above bedrock (26 ft bg) where approximately 10 gallons of grout were injected to the subsurface. The piping was then raised two feet from the first grout injection stage and another mixture was pumped into the injection point at 24 ft bg. This procedure was continued at 2 to 2.5-foot intervals to the surface. The grout was then allowed to set overnight. The following day, two grout sampling points GSP-1 and GSP-2 located at 2 feet on either side GIP-1 were advanced and the soil samples were collected to determine the extent of the grout dispersion. The grout sampling point locations are shown on figure 41. The geologic logs describing the soil classifications are included in Appendix IX on the attached DVD. The soil samples collected from GSP-1 and GSP-2 did not contain any grout which indicated that this technology was not feasible for creating a subsurface hydraulic barrier.

9.3 Horizontal Extraction Wells Pumping Tests

In order to evaluate the feasibility of groundwater remediation using horizontal extraction wells groundwater pumping tests were conducted at HEW-1 and HEW-2. HEW-1 is a 4-inch diameter stainless steel horizontal well constructed with 50 feet of screen installed beneath Area D and Area C. HEW-2 is a 4-inch diameter stainless steel horizontal well constructed with 200 feet of screen installed beneath Area C and Area B. The purpose of the horizontal wells pumping test was to determine the feasibility of using these types of wells for groundwater remediation and as a hydraulic barrier for controlling offsite migration and removing free-product and groundwater with dissolved VOCs (Bronx River).

9.3.1 Horizontal Extraction Well HEW-1 Pumping Test

The pumping test performed on the horizontal groundwater extraction well (HEW-1) was initiated on May 22, 2007 and continued until June 1, 2007. Prior to starting the pumping test, groundwater levels and free-phase product levels were measured in pumping Well EW-1D and surrounding Monitor Wells DW-3D, DW-4D, DW-5-D, DW-6D, DW-7D, DW-8D,

DW-10D, DW-12D, DW-13D, DW-14D, DW-15D, DW-16D, DW-17D, DW-21D, DW-22D, DW-1C, DW-2C, DW-3C, DW-4C, DW-5C, DW-6C, DW-7C, DW-18C, DW-19C, DW-20C, DW-1B, MW-6C and SVE-1. All groundwater levels and free-phase product levels were measured from the respective top of casings. Groundwater elevations were then determined based on the values obtained from the top of casing elevation survey. A groundwater elevation contour map showing the direction of groundwater flow prior to the horizontal Well HEW-1 pumping test on May 22, 2007 is shown on figure 42.

Water was extracted from HEW-1 using a recycling jet pump system utilizing a holding tank (water reservoir for operating the jet pump). For the pump test, the intake was set at the terminus of the well (the end of the 50-foot screened section). The initial pump rate purged the standing water within the well (approximately 35 gallons) and the subsequent sustained pumping rate was limited based on the aquifer yield. The pumping rate was confirmed incrementally by measuring the volume of water pumped from the holding tank to the onsite 21,000-gallon fractionation tank over measured time intervals. A long-term sustained flow rate of approximately 0.25-0.3 gpm was maintained throughout the duration of the pumping test. During the pumping test, depth to groundwater was measured on selected monitoring wells, product delineation wells and soil vapor extraction well. Field data showing these measurements recorded from the observation wells are included in Appendix XVII on the attached DVD. Depth to groundwater measurements collected from the onsite observation wells were used to calculate the drawdown induced by HEW-1 pumping.

Table 7 shows the depth to product, depth to groundwater and drawdown prior to and at the end of HEW-1 240 hour pumping test. The data indicate that groundwater pumping from the horizontal Well HEW-1 induced a drawdown to approximately 180 feet upgradient of the horizontal well while removing the product and groundwater with dissolved phase VOCs from the area.

Figure 43 illustrates the groundwater elevation contour after approximately 240 hours of pumping (June 1). A comparison between figure 42 and figure 43 showed that the general direction of groundwater flow prior to and at the end of the test was to the west towards the Bronx River. The groundwater elevation contours at the end of the pumping test as shown on figure 43 indicates a change in flow patterns. For example, the distance between elevation contour line in Area C increased from approximately 40 feet to approximately 65 feet at the end of the test. The drawdown is the highest at the center of the well screen where the contributing groundwater yield is smallest. A change in elevation contour lines was also observed in Area D between the start of the pumping test and the end of the test. The change in distance between groundwater elevation contour line results from a change in hydraulic gradient. The hydraulic gradient in Area D (upgradient of HEW-1) increased to a maximum of 0.02 ft/ft at the end of the test versus 0.008 ft/ft at the beginning of the test. The area located downgradient (west) of HEW-1 also showed a change in hydraulic gradient from 0.0125 ft/ft prior to the test to 0.0083 at the end of the pumping test (figure 43). This change in hydraulic gradient demonstrates that hydraulic control along the downgradient (western) property boundary at the Site is feasible utilizing horizontal groundwater extraction wells.

The results of the horizontal well HEW-1 pumping test demonstrated that a low volume pumping rate has the potential to remove groundwater with dissolved phase VOCs and free-phase product from the subsurface as well as control the onsite hydraulic gradient. Based on the drawdown versus time data, the drawdown was continuing to increase in a linear fashion at the end of the pumping test. Should the pumping be continued for a longer period of time, it would induce a cone of depression sufficient to control further migration of both free-phase product and groundwater with dissolved VOCs and/or to potentially draw free-phase product for extraction from the subsurface. The pumping test results indicated that groundwater containment in an aquifer with low permeability can be effectively achieved through the use of horizontal extraction well(s). Accordingly, it is feasible for the groundwater and free-phase product remediation at the Site to be accomplished by the pump and treat technology utilizing a series of horizontal groundwater/product extraction wells in conjunction with periodic product removal from vertical monitoring/delineation/extraction wells.

9.3.2 Horizontal Extraction Well HEW-2 Pumping Test

Based on the results of the pumping test performed on HEW-1, a second horizontal extraction Well HEW-2 was installed along the northwestern property boundary. The second horizontal well was installed with the purpose to determine if groundwater pumping from this well can be used to create a hydraulic barrier to prevent offsite migration of contamination.

The pumping test performed on the horizontal groundwater extraction well (HEW-2) was initiated on March 17, 2008. Prior to starting the pumping test, groundwater and free-phase product levels were measured in selected monitor wells. All groundwater and free-phase product levels were measured from top of casing. Groundwater elevations were then determined based on the values obtained from the top of casing elevation survey. A contour map showing groundwater elevations and directions of groundwater flow prior to horizontal Well HEW-2 pumping test on March 17, 2008 is shown on figure 44.

Water was extracted from HEW-2 using a recycling jet pump system utilizing a holding tank (reserve for operating the jet pump). For the pump test, the intake was set at the center of the screened interval of the well (approximately 160 feet into the well). Following the removal of standing water within the well (approximately 140 gallons) a long-term sustained flow rate of approximately 3.0 gpm was maintained throughout the duration of the pumping test. During the pumping test, the depth to groundwater was measured on selected groundwater monitoring wells, product delineation wells and one soil vapor extraction well. Field sheets showing the depth to water measurements recorded from the observation wells are included in Appendix XVIII on the attached DVD. Water-level data collected from the onsite observation wells were used to calculate the drawdown distribution around HEW-2.

Table 8 lists the depth to product, depth to water, product thickness and drawdown in selected monitoring wells prior to startup of HEW-2 pumping test on March 17, 2008 and after 38 hours into the pumping test on March 19, 2008. The data show that HEW-2 pumping for 38 hours was capable of creating a drawdown in monitoring wells located between 2 and 59 feet from the horizontal well.

It should be noted that after approximately 38 hours of the pumping test, a storm event occurred and continued for approximately 27 1/2 hours. During this storm event, the pumping test was continued; however, the recharge rate of the groundwater table was significantly greater than the extraction rate. Notwithstanding the excessive recharge influence of the storm event which caused the groundwater table to rise, the groundwater pumping rate was able to maintain a linear drawdown. The groundwater elevation contours prior to the HEW-2 pumping test (figure 44) show an evenly distributed hydraulic gradient of approximately 0.011 feet per foot with direction of groundwater flow to the west. The 38-hour groundwater elevation contours continue to show a direction of groundwater flow to the west (figure 45). The groundwater elevation data show that the maximum hydraulic gradient of approximately 0.02 feet per foot was observed in Area D while a smaller hydraulic gradient of approximately 0.007 feet per foot was observed in Area C.

The change in hydraulic gradient and drawdown observed after 38 hours into the test demonstrated that a pumping rate of 3 gpm has the potential to hydraulically control further migration of both free-phase product and groundwater with dissolved VOCs while removing free-phase product. The pumping test results indicated that groundwater and free-phase product remediation at the Site could be accomplished by the pump and treat technology utilizing horizontal groundwater/product extraction wells.

10.0 NATURE AND EXTENT OF CONTAMINATION

Based on the remedial investigation, a comprehensive characterization of the nature and extent of contamination at the Site has been completed. This characterization evaluates the quality of onsite conditions for: soil vapor/indoor air; soil; and, groundwater. These remedial investigations of each of the three media are further described below.

10.1 Soil Vapor Quality

On October 3, 4, 5 and 6, 2006, LBG conducted an initial soil vapor intrusion sampling at the Site. The soil vapor intrusion sampling was performed in order to determine if the sub-surface contamination includes elevated levels of VOCs in the soil vapor. The data will be used to evaluate the impact of soil vapor intrusion on the indoor air quality at the Site. The vapor samples were collected from the newly installed sub-slab soil vapor sampling points and soil vapor sampling points. The October 2006 soil vapor sampling locations are shown on figure 13. The soil vapor sampling protocol was described in Section 5.3.3 of the report.

The laboratory analysis of the soil vapor samples concluded that several VOCs were detected in the soil vapor beneath the Site. The compounds which were detected at the highest concentrations included: tetrachloroethene; dichlorodifluoromethane; pentane; acetone; carbon disulfide; methylene chloride; hexane; 2-butanone; heptane; and, toluene. Many other VOCs were detected in the soil vapor, however at lower concentrations. The highest concentrations of VOCs in the soil vapor were detected in the following areas: the western portion of the parking lot near SVP-2 (PCE); dichlorodifluoromethane and PCE in Area A; acetone, toluene, xylene and PCE in Area B; the southwestern portion of Area C near SS-C2 and SS-C5 (acetone, hexane, methylene chloride, heptane, 2-butanone, carbon disulfide and xylene); and, on the southern part of Area D near SS-C8 (PCE, acetone). It should be noted that none of the indoor air samples collected contained concentrations of PCE, TCE and/or methylene chloride above the established NYSDOH air guidance values. However; based on the NYSDOH Soil Vapor/Indoor Air Matrices (which correlates soil vapor concentrations and indoor air), the recommended course of action for the Site are: Monitor/Mitigate based on the PCE detected in the soil vapor (maximum of 630 ug/m^3 in SS-A1) and indoor air (estimated 3.4 ug/m^3) in Area A; Monitor/Mitigate based on the PCE detected in the soil vapor (maximum of 340 ug/m^3

in SS-B1) and indoor air (estimated 4.3 ug/m^3) in Area B; and, take reasonable and practical actions to identify source(s) and reduce exposures based on the PCE detected in the soil vapor (maximum of 22 ug/m^3 in SS-D2) and indoor air (estimated 3.8 ug/m^3) in Area D.

Summary tables showing the VOC concentrations detected in the soil vapor, indoor air and outdoor ambient air samples from the October 2006 sampling round are presented on tables 9 through 14. A copy of the laboratory report is included in Appendix XIX on the attached DVD.

On March 4, 5, 7 and 8, 2007, LBG conducted a second soil vapor intrusion sampling at the Site. This supplemental sampling was performed in order to collect soil vapor intrusion data during the "heating season". Like the initial round, the objective of the second sampling round was to determine if the subsurface contamination includes elevated levels of VOCs in the soil vapor and, if present, to evaluate the impact to the indoor air quality at the Site. Samples were collected from the sub-slab soil vapor sampling points and soil vapor sampling points. The March 2007 soil vapor sampling locations are shown on figure 13. The soil vapor samples were collected according to the previously presented sampling protocol (Section 5.3.3).

The laboratory analysis of the soil vapor samples concluded that several VOCs were detected in the soil vapor beneath the Site. The compounds which were detected at the highest concentrations were similar to the previous sampling round. These compounds included tetrachloroethene; dichlorodifluoromethane; pentane; acetone; carbon disulfide; methylene chloride; hexane; 2-butanone; heptane; and, toluene; however, these compounds were detected at concentrations significantly lower than those detected in the October 2006 sampling round. The main exception to this trend would be 1,1,2,2-tetrachloroethane, which was not detected in the October 2006 sampling round but was present at 3,500 ug/m^3 (SS-C2) and 2,000 ug/m^3 (SS-C5) in the southwest corner of Area C. Many other VOCs were detected in the soil vapor, however at lower concentrations. The highest concentrations of VOCs in the soil vapor were detected in the following areas: the western portion of the parking lot near SVP-2 (PCE); dichlorodifluoromethane and PCE in Area A; acetone, toluene and PCE in Area B; the southwestern portion of Area C near SS-C2 and SS-C5 (1,1,2,2-tetrachloroethane, acetone, hexane, methylene chloride, heptane, 2-butanone, carbon disulfide and xylene); and, on the southern part of Area D near SS-C8 (PCE, acetone, pentane, carbon disulfide, methylene chloride, hexane, isooctane, toluene and xylene) 1,1,1-trichloroethane, and SS-D2 (acetone). It should be noted that none of the indoor air samples collected contained concentrations of PCE, TCE and/or methylene chloride above the established NYSDOH air guidance values. However; based on the NYSDOH Soil Vapor/Indoor Air Matrices (which correlates soil vapor concentrations and indoor air), the recommended course of action for the Site are: Monitor based on the PCE detected in the soil vapor (maximum of 110 ug/m^3 in SS-A5) and indoor air (1.22 ug/m^3) in Area A; No Further Action based on the PCE detected in the soil vapor (maximum of 32 ug/m^3 in SS-B1) and indoor air (estimated 0.6 ug/m^3) as well as the TCE detected in the soil vapor (maximum of 2.2 ug/m^3 in SS-B3) and indoor air (estimated 0.215 ug/m^3) in Area B; and, Monitor based on the PCE detected in the soil vapor (maximum of 860 ug/m^3 in SS-C8) and indoor air (estimated 1.56 ug/m^3) as well as the TCE detected in the soil vapor (maximum of 19 ug/m^3 in SS-C4) and indoor air (estimated 0.322 ug/m^3) in Area C.

Summary tables showing the VOC concentrations detected in the soil vapor, indoor air and outdoor ambient air samples from the March 2007 sampling round are presented on tables 15 through 20. A copy of the laboratory report is included in Appendix XIX on the attached DVD.

On October 22, 2009, LBG conducted a third soil vapor sampling event at the Site. This supplemental sampling was performed in order to collect a soil vapor sample from the southern perimeter of the Site to assess the potential for offsite impact to the property adjacent to the south. Like the initial round, the objective of the second sampling round was to determine if the subsurface contamination includes elevated levels of VOCs in the soil vapor. A sample was collected from a temporary soil vapor sampling point installed in the alley to the south of Area A. The October 2009 soil vapor sampling location is shown on figure 13. The soil vapor sample was collected according to the previously presented sampling protocol (Section 5.3.3). The only difference was that the QA/QC procedure consisted of real time monitoring using a helium tracer gas and a helium detector.

The laboratory analysis of the soil vapor sample collected from SVP-3 on October 22, 2009 concluded that several VOCs were detected in the soil vapor beneath this portion of the Site at low concentrations. The compounds which were detected at the highest concentrations were similar to the previous sampling round. These compounds included: dichlorodifluoromethane; trichlorofluoromethane; acetone; and 1,1,1-trichloroethane. Many other VOCs were detected in the soil vapor, however at lower concentrations. It should be noted that (although not a direct standard) none of the VOC concentrations for PCE, TCE and/or methylene chloride were present at concentrations below the established NYSDOH air guidance values. A summary table showing the VOC concentrations detected in the soil vapor sample from the October 2009 sampling round is presented on table 19.

Following both the 2006 and 2007 soil vapor intrusion sampling rounds, the slab on grade throughout the facility was removed and contaminated soil and free-phase product were removed during the excavation activities. After soil excavation, a layer of highly permeable gravel has been set in the first floor of Area B and the majority of the basement of Area C and all of Area D. Additionally, within the gravel layer, several sub-slab depressurization pipes were installed to be utilized as a passive vapor remediation system. If necessary, the passive sub-slab depressurization system can be converted to an active system by connecting these pipes to vacuum blowers.

10.2 Soil Quality

10.2.1 Area A (Including Parking Lot)

Based on remedial investigation activities conducted in 2007 and 2008, subsurface soil quality was characterized in Area A. The soil samples collected from GeoProbe drilling in conjunction with LBG USTs closure activities for the previously removed USTs were used to evaluate soil quality in Area A. Closure sampling for UST-P, sampling of the former drywell located in the southwest corner of the parking lot, installation of additional delineation well DW-4, sampling following the exploratory excavation activities in the existing parking area, and collection of bottom samples following the excavation activities for the installation of the required replacement drywells were also used to define soil quality. The locations of soil sample(s) submitted for laboratory analysis based on the highest observed PID reading and/or the most visibly contaminated sample at a sampling location in Area A are presented in figures 25 and 26.

10.2.1.1 Volatile Organic Compounds (VOCs)

Initially, the highest concentrations of VOCs in Area A were detected at the GP-Dry Well sampling location. This soil sample, collected from 22 to 26 ft bg, exhibited concentrations of toluene (17,000 ug/kg), xylenes (7,400 ug/kg), 1,2,4-trimethylbenzene (21,000 ug/kg) and 1,3,5-trimethylbenzene (7,000 ug/kg).

The initial sampling prompted additional investigation activities for the former dry well. The resulting investigation identified UST-P; which was removed as an IRM during this RIWP. After the removal of UST-P, the highest level of VOC contamination detected in Area A was in the soil samples collected from the two bottom endpoint confirmation samples (B-1 and B-2), with elevated VOCs also detected in the south sidewall endpoint confirmation sample (S-1). UST-P endpoints B-1, B-2 and S-1 all had toluene concentrations exceeding Part 375 Protection of Groundwater RUSCOs, with the highest concentration (65,000 ug/kg) detected in B-2 at 10 ft bg. The B-2 endpoint sample location is adjacent to where the GP-Dry Well boring was previously advanced. The only other VOC detected above Part 375 Protection of Groundwater Restricted Use Soil Clean-up Objectives (RUSCOs) was in the UST-P endpoint samples was benzene, which was detected at a concentration of 220 ug/kg in the S-1 sidewall sample.

The two soil samples Parking Lot B-1 and Parking Lot B-2, which were collected from the bottom of the excavation in the center of the parking lot, had concentrations of VOCs exceeding Part 375 Protection of Groundwater RUSCOs. Parking Lot B-1 contained acetone (2,100 ug/kg), benzene (350 ug/kg), toluene (11,000 ug/kg) and methylene chloride (7,600 ug/kg) in concentrations exceeding Part 375 Protection of Groundwater RUSCOs. Parking Lot B-2 contained benzene (71 ug/kg), toluene (2,700 ug/kg) and methylene chloride (480 ug/kg) in concentrations exceeding Part 375 Protection of Groundwater RUSCOs.

Methylene chloride was detected at concentrations exceeding Part 375 Protection of Groundwater RUSCOs in GP-1A to GP-6A, GP-UST-PR-1 and GP-UST-PR-3. Additional VOCs detected above Part 375 Protection of Groundwater RUSCOs included GeoProbe soil sample GP-UST-PR-3 (10 to 15 ft bg), which had elevated concentrations of benzene and toluene; GP-UST-PR-3 (35 to 39.5 ft bg) which had acetone and GP-4A (4 to 8 ft bg), which had a concentration of methylene chloride of 120 ug/kg. The only other VOC detected above

Part 375 Protection of Groundwater RUSCOs was PCE which was detected in the GP-4A sample (4 to 8 ft bg). The remainder of the samples collected had no VOC concentrations exceeding Part 375 Protection of Groundwater RUSCOs.

The soil sample collected from delineation well DW-4A showed no detectable VOCs. This soil sample, which was collected during the installation of this well, was used to laterally delineate the onsite contamination on the southern perimeter of the Site.

Another area where no detectable VOCs were observed included the samples OTB-1 and OTB-2 which were collected from beneath approximately 12 ft bg in the former location of tanks UST-1A to UST-6A. Summary tables for VOCs detected in soil for Area A are presented on tables 21 to 24.

Figure 46 presents the distribution of <u>total VOCs</u> detected in soil samples collected from Area A. As a result of this distribution of soil contamination in Area A, the excavation and resulting soil disposal activities were focused on the center of the parking lot as well as the southwest corner (the removal of UST-P and the former drywell). A total of 722.17 tons of non-hazardous soil was excavated from Area A and disposed offsite at an approved and licensed disposal facility. Excavation extents were limited due to the presence of the building foundations. It should be noted that all VOC concentrations in Area A were below Part 375 Protection of Public Health (Commercial) Restricted Use Soil Cleanup Objectives.

10.2.1.2 Semivolatile Organic Compounds (SVOC)

The only SVOCs detected in Area A soils consisted of benzo (a) anthracene, chrysene, benzo (b) fluoranthene, benzo (k) fluoranthene and benzo (a) pyrene. The soil samples where these concentrations exceeded Part 375 RUSCOs were all from the shallow depths of 4 to 8 ft bg. This contamination may be attributed to the fill material previously placed beneath the asphalt which consisted of primarily ash and waste demolition debris. Subsequently, the area where there was the highest concentration of SVOCs exceeding Part 375 RUSCOs (the former location of tanks UST-1A to UST-6A) was later excavated to a depth of approximately 12 ft bg during the exploratory excavation activities in the Area A parking lot (former paint remover building) and the installation of the replacement drywells. The resulting endpoint confirmation sample OTB-1 contained no detectable concentrations of SVOCs while OTB-2 showed significantly reduced SVOC concentrations.

The above listed SVOCs were also detected in the endpoint confirmation samples collected from the UST-P excavation, the former dry well excavation bottom (DWB-1), as well as the confirmation closure samples collected for previously removed tanks UST-10 and UST-11 (samples GP-UST PR-1 and GP-UST PR-2).

All other soil samples collected from Area A had SVOCs at concentrations below the Part 375 RUSCOs, including DW-4A (35 ft bg) along the southern property boundary.

The elevated SVOC concentrations in the subsurface may be attributed the historical operations at the Site. Polycyclic aromatic hydrocarbons (PAHs), specifically those detected in Area A, are associated with coal combustion. Assuming that the ash and debris used as backfill on the Site was from the historical operations at the Site (a former bakery) or imported to the Site, then this would explain the elevated SVOC concentrations in the soil. Additionally, the removal of the fill material overlying the native soil should be an effective remedy against additional SVOCs leaching into the subsurface native soils. A summary of SVOCs detected in soil samples collected from Area A is listed on tables 25 to 28.

10.2.1.3 Metals

Total metals analysis performed on the GeoProbe confirmation soil samples collected from Area A show elevated concentrations (exceeding Part 375 RUSCOs) of lead and mercury in only 2 samples. These compounds exceeded Part 375 RUSCOs for soil samples: GP-4A (4 to 8 ft bg) [lead at 870 mg/kg], and GP-6A (12 to 16 ft bg) [mercury at 1.17 mg/kg].

Total metals analysis performed on Area A excavation endpoint samples showed elevated concentrations (exceeding Part 375 RUSCOs) of arsenic and lead in only 3 confirmation soil samples. These compounds exceeded Part 375 RUSCOs for soil samples: B-1 (10 ft bg) [arsenic at 20.8 mg/kg]; B-2 (10 ft bg) [arsenic at 17.9 mg/kg]; and, Parking Lot B-2 (11 ft bg) [lead at 824 mg/kg]. This fill material was excavated (down to native soil) from the parking lot area. These elevated metals concentrations are attributed to the fill material previously present in the subsurface. However; the elevated metals concentrations in the subsurface may also be attributed to regional site background concentrations resulting from the surrounding area.

Soil quality data for metal concentrations for Area A are presented on tables 29 to 32.

Additionally, copies of the Category B Deliverables laboratory analytical reports are presented in Appendix XX.

10.2.2 Area B

Soil quality data for Area B were evaluated from GeoProbe samples collected in 2006 and 2007; in conjunction with the closure sampling of the previously removed ASTs, a perimeter sampling from in-place USTs, and post-excavation endpoint sampling performed following the removal of USTs from the first floor area. In addition, split-spoon soil samples collected from a GeoProbe soil boring in the boiler room and surface soil sample (collected from the pipe trench) were also used for soil quality characterization in this area. The soil sample(s) with the highest observed PID concentration and/or the most visible contamination were submitted for laboratory analysis. Soil sampling locations for Area B are shown on figures 28 and 29.

10.2.2.1 VOCs

The first floor portion of Area B and basement of Area B was initially characterized using GeoProbe soil sampling (GP-1 to GP-14 and GP-AST-1 to GP-AST-8, respectively). These sample locations are shown on figure 28. The highest level of VOC contamination observed in the Area B GeoProbe soil samples consisted of methylene chloride (just exceeding Part 375 RUSCOs in thirteen sample locations. Of note, all UST and AST GeoProbe soil samples had VOC concentrations below Part 375 RUSCOs for Protection of Public Health (Commercial). A summary of the VOCs detected in the first floor GeoProbe soil samples and the basement GeoProbe soil samples is presented on table 33 and table 34, respectively.

In September 2007, an additional GeoProbe boring was advanced at the entrance to the boiler room in Area B. BR-1 (16 to 20 ft bg) had VOC concentrations all below Part 375 RUSCOs. A summary of the VOCs detected in the boiler room GeoProbe soil sample is presented on table 35.

The pipe trench bottom sample was collected from the eastern wall (where the pipes ran from the Area B/C partition wall to the first floor of Area B) of the boiler room. This sample (collected after the pipes were removed) had VOC concentrations all below the laboratory detection limit. A summary of the VOCs detected in the boiler room pipe trench bottom sample is presented on table 36.

The soil sample collected from delineation Well DW-21B (installed immediately upgradient from the former locations of UST-E, UST-F and UST-G) showed no detectable VOCs. This soil sample was used to laterally delineate the onsite contamination on the eastern perimeter of the Site in Area B. A summary of the VOCs detected in the soil for the DW-21B sampling location is presented on table 24.

After the first floor USTs were removed, the excavation endpoint confirmation samples were collected. These sample locations are shown on figure 29. Laboratory analyses from sidewall and bottom samples show that only methylene chloride was detected over the Part 375 RUSCOs. Methylene chloride was detected over the Part 375 RUSCOs for Protection of Groundwater in all but the south sidewall samples (ES-1, FS-1 and GS-1) and the east sidewall for UST-G (GE-1). A summary of the VOCs detected in the soil for the UST-E/UST-F/UST-G excavation endpoints is presented on table 37.

Figure 47 presents the distribution of <u>total VOCs</u> detected in all soil samples collected from Area B. Based on an evaluation of the total VOC distribution and concentrations, no significant VOC soil contamination is present in Area B.

10.2.2.2 SVOCs

Similar to Area A, the only SVOCs detected in Area B soils above the Part 375 RUSCOs consist of benzo (a) anthracene, chrysene, benzo (b) fluoranthene, benzo (k) fluoranthene, and benzo (a) pyrene; with the addition of indeno (1,2,3-cd) pyrene.

All SVOCs from the first floor GeoProbe soil sampling locations (GP-1 to GP-14) were detected at concentrations below the Part 375 RUSCOs. A summary of the SVOCs detected at the first floor GeoProbe soil sampling locations is presented on table 38.

All SVOC concentrations in the soil collected from DW-21B (33 to 35 ft bg) were below the laboratory detection limit. A summary of the SVOCs analytical results for the DW-21B soil sampling location is presented on table 28.

The soil sample from the additional GeoProbe boring advanced in the entrance to the boiler room in Area B (BR-1 16 to 20 ft bg) had SVOC concentrations all below the laboratory detection limit. A summary of the SVOCs analytical results for the boiler room GeoProbe soil sample is presented on table 39.

The highest SVOC concentrations in Area B were detected in the soil samples collected from the shallow depths (0 to 4 ft bg) of the basement AST GeoProbe soil samples. All of the deep samples collected in this area had no SVOCs at concentrations exceeding the laboratory detection limit. As such, these elevated SVOC concentrations are likely reflecting contamination related to the fill material beneath the concrete slab. This area of the basement was one of the areas where the concrete slab was not removed due to the limited access in the area. It should be noted that the concrete slab in the basement of Area B (where the ASTs were historically located) was observed to be in good condition with minimal sign of wear, degradation, cracking or other conditions which would create/have created a preferential pathway for spills to the subsurface. A summary of the SVOCs detected in the basement GeoProbe soil sampling locations is presented on table 40.

No SVOCs were detected at concentrations exceeding Part 375 RUSCOs for the UST-E/UST-F/UST-G excavation endpoint soil samples. A summary of the SVOCs detected in the soil for the UST-E/UST-F/UST-G excavation endpoints is presented on table 41.

The only SVOCs detected above the Part 375 RUSCOs for the boiler room pipe trench bottom soil sample were benzo (a) anthracene, chrysene and benzo (a) pyrene. All other SVOCs detected in the boiler room pipe trench bottom soil sample were below Part 375 RUSCOs. A summary of the SVOCs detected in the boiler room pipe trench bottom soil sample is presented on table 42.

10.2.2.3 Metals

Total metals analysis performed on Area B UST-E/UST-F/UST-G excavation endpoint samples showed elevated concentrations (exceeding Part 375 RUSCOs) for arsenic and barium (table 43). Soil was excavated to the bottom of the tanks (to facilitate tank removal) however the majority of it was left in place. The excavation extent was regulated in the field based on readings obtained by screening the material with a PID.

The boiler room pipe trench bottom soil sample contains no metals with concentrations exceeding the Part 375 RUSCOs. A summary of the metals detected in the boiler room pipe trench bottom soil sample is presented on table 44.

The elevated metals concentrations in the subsurface are most likely attributed to a combination of factors, including the historic use of coal ash and urban fill as backfill material as well as regional background concentrations. Similar to the fill observed in Area A, the fill material beneath the slab consisted of primarily ash and waste demolition debris. The elevated metals concentrations reflective of the UST-E/UST-F/UST-G excavation endpoint soil samples and the pipe trench bottom soil sample are believed to be associated with this historical fill. However, considering the depth of the soil sample collected from DW-21B (33 to 35 ft bg), the fact that it contained a slightly elevated concentration of chromium (17.4 mg/kg) suggests that the exceedance is attributable to regional background concentrations resulting from the surrounding area history (table 32).

Additionally, copies of the Category B Deliverables laboratory analytical reports are presented in Appendix XX.

10.2.3 Area C

Based on the performed remedial investigation activities, sub-surface soil quality was characterized in Area C. The soil samples consisted of GeoProbe samples (collected after the removal of UST-D from the water table and from the top of bedrock) as well as post-excavation endpoint samples collected following the removal of UST-D, UST-W, UST-X, UST-Y and UST-Z. Additionally, soil quality analysis was obtained from samples collected during the installation of the groundwater monitor/product delineation wells and during the drilling of the hydraulic barrier investigation GeoProbe borings. Following the removal of the tanks from Area C, the excavations were extended to the maximum possible depth. The lateral extents of the excavation were primarily limited by structural components of the building (support pillars and perimeter walls) and the excavation depths were limited by the size of the excavating equipment that was able to fit inside of the building interior; resulting in a maximum excavation depth of approximately 8 ft bg. For all sample locations, the soil sample(s) collected for laboratory analysis represent the soil with the highest observed PID concentration and/or the most visibly contaminated endpoint location available. Soil sampling locations for Area C are shown on figures 33 and 34.

10.2.3.1 VOCs

The post-excavation endpoint samples collected from the UST-D excavation indicated that no VOCs exceeded the Part 375 RUSCOs. However, analysis of the GeoProbe soil sample collected from the former area of UST-D (GP- Tank D [15 to 20 ft bg]) showed that toluene was the only VOC detected above the Part 375 RUSCO for Protection of Groundwater at a concentration of 5,000 ug/kg. This concentration exceeds the established Part 375 RUSCO for Protection of Groundwater for toluene of 700 ug/kg. Of note, this sample was collected near the groundwater table, at a depth which was beyond the limit of the excavation equipment. Summaries of the VOCs detected in the UST-D post-excavation endpoint samples and the GP-Tank D GeoProbe soil samples are presented on table 45 and table 46, respectively.

The soil samples collected from both DW-18C (installed on the northern edge of Area C) and DW-20B (installed on the southwestern edge of Area C but previously identified to be located in Area B) showed concentrations of VOCs exceeding the Part 375 RUSCOs for ethylbenzene, xylenes, n-propylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, sec-butylbenzene and naphthalene. DW-18C is located adjacent to Area D, where historical investigations have shown the majority of the free-phase NAPL exists onsite. The data suggest that soil in this area may have been impacted from contamination migrating from Area D. All VOC concentrations in the soil sample collected from DW-19C (installed on the southern edge of Area C) were below the Part 375 RUSCOs with the exception of methylene chloride. A summary of the VOCs detected in the soil samples collected during the installation of DW-20B, DW-18C and DW-19C is presented on table 24.

VOC concentrations in all endpoint soil samples collected from excavations UST-D, UST-W, UST-X, UST-Y and UST-Z were below Part 375 RUSCOs for Protection of Public Health (Commercial). Post-excavation samples for UST-D and UST-Y indicated that no VOCs exceeded the Part 375 RUSCOs for Protection of Groundwater. Post-excavation samples for UST-W had several VOCs (xylene, acetone, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene and sec-butylbenzene detected at concentrations that exceed their respective Part 375 RUSCOs for Protection of Groundwater. Post-excavation samples for UST-X had two VOCs (acetone and methylene chloride) detected at concentrations that exceed Part 375 RUSCOs for Protection of Groundwater. Post-excavation bottom sample ZB-1 for UST-Z had 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene detected at concentrations exceeding their respective Part 375 RUSCOs for Protection of Groundwater. The high concentrations of xylene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, sec-butylbenzene and 4-isopropyltoluene detected in the completed UST-W excavation were was located on the south sidewall sample located adjacent to a foundation footer which prevented additional soil from being excavated. The acetone and methylene chloride concentrations detected in excavation endpoints were only slightly above Part 375 RUSCOs for Protection of Groundwater of 50 ug/kg. As was the case for all four tanks (UST-W, UST-X, UST-Y and UST-Z), the excavations were expanded to their limits as defined by the presence of interior building structural footings. A summary of the VOCs detected in the UST-W, UST-X, UST-Y and UST-Z excavation endpoint confirmation soil samples is presented on table 45.

The soil samples were collected in Area C for subsurface evaluation of the feasibility of installation of a hydraulic barrier (GP-HB-2, GP-HB-4, GP-HB-5, GP-HB-6 and GP-HB-7). Several of these sampling locations (GP-HB-2 10 to 15 ft bg, GP-HB-4 10 to 15 ft bg, and GP-HB-6 25 to 27 ft bg) have concentrations of VOCs in exceedance of the Part 375 RUSCOs. The sample from boring GP-HB-2, which is located approximately 15 feet north of the UST-D excavation, has concentrations of toluene (2,600 ug/kg), xylenes (7,000 ug/kg), 1,2,4-trimethylbenzene (28,000 ug/kg) and 1,3,5-trimethylbenzene (12,000 ug/kg) which exceed the Part 375 RUSCOs. The samples from borings GP-HB-4 and GP-HB-6 have concentrations of ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, n-propylbenzene and n-butylbenzene which exceed the Part 375 RUSCOs. Overall, the highest VOC concentrations appear to be present in the shallow sample interval for the GeoProbe borings (which encompasses the soil/groundwater interface). A summary of the VOCs detected in the hydraulic barrier sampling location soil samples is presented on table 47.

Figure 48 presents the distribution of total VOCs detected in all soil samples collected from Area C. The distribution of VOC soil contamination in Area C indicates the highest levels of total VOCs along the western perimeter of Area C with localized soil contamination in the area of former USTs UST-W and UST-Z as well as MW-18C (on the northern perimeter of Area C). An important factor to mention, the highest concentrations of total VOC soil contamination along the western perimeter of Area C were observed in soil samples collected from the soil/groundwater interface. As such, the high concentrations of total VOCs can be attributed to free-phase product (NAPL) and/or dissolved phase VOCs. Additionally, excavation extents were limited in the area of the former USTs due to the presence of the building foundations and/or support pillars.

10.2.3.2 SVOCs

Both the post-excavation endpoint samples collected from the UST-D excavation and the GeoProbe soil samples collected from the UST-D excavation indicated that no SVOCs exceeded the Part 375 RUSCOs. Summary tables of the SVOC concentrations for the UST-D post-excavation endpoint samples and the GP- Tank D GeoProbe soil samples are presented on table 48 and table 49, respectively.

The post-excavation endpoint samples collected from the UST-W, UST-X, UST-Y and UST-Z excavations indicated that no SVOCs exceeded the Part 375 RUSCOs. A summary of the SVOCs concentrations for the UST-W, UST-X, UST-Y and UST-Z excavation endpoint confirmation soil samples is presented on table 48.

The hydraulic barrier GeoProbe soil samples GP-HB-2, GP-HB-4, GP-HB-5, GP-HB-6 and GP-HB-7 indicate that no SVOCs exceeded the Part 375 RUSCOs. A summary of the SVOCs concentrations for the hydraulic barrier GeoProbe soil samples GP-HB-2, GP-HB-4, GP-HB-5, GP-HB-6 and GP-HB-7 is presented on table 50.

10.2.3.3 Metals

Analysis of total metals for the endpoint samples collected from the Tank D excavation indicated that only one compound (mercury) was detected in one location (bottom sample B-2) at a concentration exceeding the Part 375 RUSCO for Protection of Groundwater

(0.73 mg/kg). This sample location is shown on figure 33. Additionally, the GeoProbe soil samples collected from the Tank D excavation area (15 to 20 ft bg and 25 to 29.5 ft bg) indicated that all metals concentrations were below Part 375 RUSCOs. The metals concentrations for the UST-D post-excavation endpoint samples and the GP-Tank D GeoProbe soil samples are summarized on table 51 and table 52, respectively.

The post-excavation endpoint samples collected from the UST-W, UST-X, UST-Y and UST-Z excavations indicated that total metals concentrations were below Part 375 RUSCOs for all endpoint samples collected from the excavations except one; YE-1. YE-1 had an arsenic concentration (17.0 mg/kg) which exceeded the Part 375 RUSCO of 16 mg/kg. A summary of the metals concentrations for the UST-W, UST-X, UST-Y and UST-Z excavation endpoint confirmation soil samples is presented on table 51.

The hydraulic barrier GeoProbe soil samples GP-HB-2, GP-HB-4, GP-HB-5, GP-HB-6 and GP-HB-7 indicate that all total metals concentrations were below Part 375 RUSCOs. A summary of the metals concentrations for the hydraulic barrier GeoProbe soil samples GP-HB-2, GP-HB-4, GP-HB-5, GP-HB-6 and GP-HB-7 is presented on table 53.

Additionally, copies of the Category B Deliverables laboratory analytical reports are presented in Appendix XX.

10.2.4 Area D (Including Alley)

Based on the remedial investigation activities, the sub-surface soil quality was characterized throughout Area D. The soil samples collected by GeoProbe drilling in conjunction with the closure sampling of the previously removed USTs and post-excavation endpoint sampling obtained following the removal of UST-A UST-B, UST-C, UST-10, UST-34, UST-35, UST-36, UST-T, UST-U and UST-V were used to evaluate soil quality in Area D and alley area. Additionally, analysis of soil samples collected during the installation of the groundwater monitor/product delineation wells and endpoint soil samples from excavations were also used to evaluate soil quality in this area. The soil sample(s) collected for laboratory analysis represent the soil with the highest observed PID concentration and/or the most visibly contaminated samples from available endpoint locations. Soil sampling locations for Area D are shown on figures 36 and 37.

10.2.4.1 VOCs

Following the removal of UST-A and UST-B located in the alley area, analysis of the endpoint confirmation soil samples showed that all VOCs were below the Part 375 RUSCOs with the exception of UST-A endpoint N-1 (methylene chloride) and UST-B Endpoint East Sidewall (toluene). Analysis of the endpoint confirmation soil samples following the removal of UST-10 (in the alley) and UST-V (in the commercial space) showed that all VOCs were below the Part 375 RUSCOs with the exception of methylene chloride. A summary of the VOCs detected in the UST-A, UST-B, UST-10 and UST-V endpoint confirmation soil samples is presented on table 54.

The excavation endpoint soil samples collected following the removal of UST-T and UST-U represent the highest concentrations of VOCs detected in the soil at the Site. The soil sample locations (AT-1 to AT-9) are presented on figure 36. These soil samples were collected following the removal of approximately 80 cubic yards of soil down to the water table. The locations in the excavation where the highest VOCs concentrations were detected are the bottom samples for UST-T (AT-6 and AT-7) and the bottom samples for UST-U (AT-8 and AT-9). AT-6 and AT-7 (collected from beneath the former waste oil tank UST-T) contained the highest concentrations of benzene (AT-6 at 5,400 ug/kg), toluene (AT-6 at 5,700,000 ug/kg), ethylbenzene (AT-7 at 140,000 ug/kg), xylene (AT-7 at 459,000 ug/kg), tetrachloroethene (AT-7 at 8,000 ug/kg), 1,1,1-trichloroethane (AT-6 at 22,000 ug/kg), isopropyltoluene (AT-6 at 4,300 ug/kg), n-propylbenzene (AT-6 at 9,200 ug/kg), 1,2,4-trimethylbenzene (AT-6 at 25,000 ug/kg) and 1,3,5-trimethylbenzene (AT-6 at 61,000 ug/kg). The bottom sample AT-8 from UST-U also contained toluene, ethylbenzene and xylenes at some of the highest concentrations present at the Site. Of note, the bottom samples collected from the UST-T/UST-U excavation are the only endpoint soil samples to have VOC concentrations (toluene, ethylbenzene and xylene) exceeding Part 375 RUSCOs for Protection of Public Health (Commercial). A summary of the VOCs detected in the UST-T and UST-U endpoint confirmation soil samples is presented on table 54.

Following the removal of UST-A, UST-B and UST-10, GeoProbe soil samples were also collected from the former areas of the tanks. These samples were collected from depths which were beyond the reach of the excavating equipment (the groundwater table and bedrock/the confining layer). The GeoProbe soil samples (GP-Tank 10 WT [12 to 16 ft bg], GP-Tank 10 CL [20 to 24 ft bg], GP-Tank A WT [10 to 15 ft bg], GP-Tank B WT [12 to 16 ft bg] and GP-Tank B CL [24 to 27 ft bg]) all contained concentrations of VOCs in exceedance of Part 375 RUSCOs. These VOCs include toluene, ethylbenzene, xylene, n-propylbenzene, 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene. Only soil sample GP-Tank A CL [25 to 27 ft bg] had concentrations below the Part 375 RUSCOs for all VOCs. A summary of the VOCs detected in the UST-A , UST-B and UST-10 GeoProbe soil samples is presented on table 55.

In order to verify the closure activities of UST-34, UST-35, UST-36 and UST-C (completed by ERM), GeoProbe soil samples were collected from the former areas of these tanks. The results of the sampling indicated VOC concentrations in the subsurface beneath the former locations of UST-36 and UST-C are all below the Part 375 RUSCOs with the exception of GP-Tank-C (4 to 8 ft bg) which had methylene chloride at a concentration of 77 ug/kg. However, the soil samples collected from beneath the former locations of UST-34 and UST-35 indicated that significant contamination remains in the subsurface. The VOCs detected above Part 375 RUSCOs in these samples include ethylbenzene, xylene, methylene chloride, isopropylbenzene, n-propylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, sec-butylbenzene, 4-isopropyltoluene and naphthalene. A summary of the VOCs detected in the UST-34, UST-35, UST-36 and UST-C GeoProbe soil samples is presented on table 56.

The initial GeoProbe soil sampling for UST-34, UST-35, UST-36 and UST-C prompted additional investigation activities in the commercial space. The resulting investigation identified that significant contaminated soil remained in place at the Site (presumable related to these tanks). After the hot spot excavation activities were completed in the Area D adjacent room, the excavation was continued into the commercial space. Following the completion of the commercial space excavation to a depth of 13 ft bg (which is below the water table), endpoint confirmation soil samples were collected from several locations. The locations of these endpoint soil samples (B-1, B-2, B-3, B-4, B-6, B-7, S-1, S-2, S-3, S-4, S-7 and S-8) are shown on figure 36. The highest levels of VOC contamination observed in this excavation were detected in the soil samples collected from the bottom of the excavation and from the southwestern corner of the commercial space. This area is immediately downgradient from the former locations of UST-34 and UST-35. Similarly, the VOCs exceeding Part 375 RUSCOs, include ethylbenzene, xylene, isopropylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene and sec butylbenzene from sample locations B-1, B-2, B-3, B-4, B-6, B-7, S-3 and S-4. The locations within the excavation where these VOCs were detected at the highest concentrations are: ethylbenzene detected in B-2 (2,600 ug/kg); xylene detected in B-2 (23,400 ug/kg); isopropylbenzene detected in B-4 (18,000 ug/kg); 1,2,4-trimethylbenzene detected in B-4 (85,000 ug/kg); 1,3,5-trimethylbenzene detected in B-4 (490,000 ug/kg) and sec butylbenzene detected in B-2 (6,900 ug/kg). The excavation in this area was advanced as far as was possible while maintaining the structural integrity of the building foundation. All remaining VOCs detected in the excavation endpoint samples were below the Part 375 RUSCOs. A summary of the VOCs detected in the commercial space excavation endpoint confirmation soil samples is presented on table 57.

Four soil samples were collected in Area D for subsurface evaluation of the feasibility of installation of a hydraulic barrier (GP-HB-1, GP-HB-3, GP-HB-8 and GP-HB-9). Several of the samples from these locations (GP-HB-1 15 to 20 ft bg, GP-HB-3 20 to 25 ft bg, and GP-HB-8 15 to 20 ft bg, GP-HB-9 15 to 20 ft bg, and GP-HB-9 20 to 25 ft bg) have concentrations of VOCs in exceedance of the Part 375 RUSCOs for Protection of Groundwater. The sample from GP-HB-1, which is located approximately 20 feet west of the UST-A and UST-B excavations, exceeds Part 375 RUSCOs for toluene (21,000 ug/kg), ethylbenzene (1,100 ug/kg), xylenes (6,800 ug/kg) and 1,2,4-trimethylbenzene (20,000 ug/kg). GP-HB-3 20 to 25 ft bg (from the boring advanced and sampled prior to the installation of DW-16D) exceeds Part 375 RUSCOs for ethylbenzene (1,400 ug/kg), xylenes (6,500 ug/kg) and 1,2,4-trimethylbenzene (24,000 ug/kg) and 1,3,5-trimethylbenzene (10,000 ug/kg). GP-HB-8 and GP-HB-9 were advanced along the northern perimeter of the Site. GP-HB-8 15 to 20 ft bg, from the boring advanced and sampled prior to the installation of DW-17D, only exceeds Part 375 RUSCOs for xylenes (1,700 ug/kg), 1,3,5 trimethylbenzene (10,000 ug/kg), and 1,2,4-trimethylbenzene (5,800 ug/kg). GP-HB-9 15 to 20 ft bg exceeds Part 375 RUSCOs for xylenes (2,500 ug/kg) and 1,2,4-trimethylbenzene (18,000 ug/kg). GP-HB-9 20 to 25 ft bg exceeds Part 375 RUSCOs for ethylbenzene (1,100 ug/kg), xylenes (11,000 ug/kg), n-propylbenzene (7,400 ug/kg), 1,2,4-trimethylbenzene (54,000 ug/kg) and 1,3,5-trimethylbenzene (23,000 ug/kg). Overall, the highest VOC concentrations detected in the Area D hydraulic barrier soil samples appear to be present in the shallow sample interval for the Geo-Probe borings (which is closest to the soil/groundwater interface) with the exception of GP-HB-9. A summary of the VOCs detected in the hydraulic barrier sampling location soil samples is presented on table 47.

Nine wells were installed in Area D during the remedial investigation: EW-1 (later replaced with EW-1D); SVE-1 (later excavated out and installed in pea gravel backfill); DW-16D; DW-17D; DW-21D; DW-22D; DW-23D; R-4D and R-5D. The soil samples collected from DW-23D (installed adjacent to UST-A in the alley) contained benzene (610 ug/kg) and toluene (180,000 ug/kg) at concentrations which exceed the Part 375 RUSCOs. EW-1 and DW-21D were both installed in the room adjacent to the south of the commercial space. This is where historically the majority of the free-phase NAPL (thickness and lateral extent) has been observed in the subsurface. Both EW-1 and DW-21D contain several VOCs (ethylbenzene, xylene, methylene chloride, n-propylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene) which exceed the Part 375 RUSCOs. This area was subsequently excavated (adjacent to DW-21D but encompassing EW-1) to approximately 18 ft bg as the hot spot excavation. The four remaining Area D wells (SVE-1, DW-22D, R-4D and R-5D) were all installed in the commercial space. Soil samples collected from these four sampling locations contained ethylbenzene, xylene, n-propylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene sec-butylbenzene and naphthalene at concentrations exceeding the Part 375 RUSCOs. For all samples the highest contaminant compound is 1,2,4-trimethylbenzene with the exception of DW-23D which is toluene. A summary of the VOCs detected in the soil samples collected during the installation of EW-1, SVE-1, DW-21D, DW-22D, DW-23D, R-4D and R-5D is presented on table 24.

Figure 49 presents the distribution of <u>total VOCs</u> detected in all soil samples collected from Area D. The distribution of total VOC soil contamination in Area D indicates that the highest concentrations of total VOCs are in the west/southwestern portion of Area D. The highest concentrations of total VOC soil contamination were detected in the endpoint samples collected beneath the former USTs UST-T and UST-U. A total of 95.22 tons of hazardous soil was excavated from the UST-T/ UST-U area of the Site and disposed offsite at an approved and licensed disposal facility. High concentrations of total VOC soil contamination were detected in soil samples collected from the southern portion of Area D (the 'hot spot' area) and the commercial space. A total of 129.015 tons of hazardous soil was excavated from the 'hot spot' area and a total of 1,128.2 tons of non-hazardous soil was excavated from commercial space at the Site and disposed offsite at an approved and licensed disposal facility. All excavation extents were limited due to the presence of the building foundations. Similar to the observations in Area C, the highest concentrations of total VOC soil contamination were detected in soil samples collected from the soil/groundwater interface. As such, the high concentrations of total VOCs can be attributed to free-phase product (NAPL) and/or dissolved phase VOCs.

10.2.4.2 SVOCs

Laboratory analysis for excavation sidewall and bottom endpoint confirmation soil samples collected from the UST-10, UST-T, UST-U and UST-V excavations showed that all SVOCs were below the Part 375 RUSCOs. Additionally, all bottom endpoint confirmation soil samples collected from the UST-A and UST-B excavations showed that all SVOCs were below the Part 375 RUSCOs. However, five SVOCs (benzo (a) anthracene, chrysene, benzo (b) fluoranthene, benzo (k) fluoranthene, benzo (a) pyrene) were detected at concentrations exceeding Part 375 RUSCOs for sidewall samples collected from the UST-A and UST-B excavations. The locations where one or more of the listed compounds were detected in exceedance of Part 375 RUSCOs are: UST-A sidewalls N-1, S-1 and W-1; and UST-B sidewalls North Sidewall and East Sidewall. These endpoint confirmation soil sample locations are shown on figure 19. A summary of the SVOCs detected in the UST-10, UST-T, UST-U, UST-V, UST-A and UST-B endpoint confirmation soil samples is presented on table 58.

The UST-A, UST-B and UST-10 closure confirmation GeoProbe soil samples were collected in the former locations of the tanks. These soil samples were collected from depths which were beyond the reach of the excavating equipment (the groundwater table and bedrock/the confining layer). All GeoProbe soil samples (GP-Tank 10 WT [12 to 16 ft bg], GP-Tank 10 CL [20 to 24 ft bg], GP-Tank A WT [10 to 15 ft bg], GP-Tank B WT [12 to 16 ft bg] and GP-Tank B CL [24 to 27 ft bg]) contained concentrations of SVOCs in concentrations below the Part 375 RUSCOs. A summary of the SVOCs detected in the UST-A, UST-B and UST-10 GeoProbe soil samples is presented on table 59.

In order to verify the closure activities of UST-34, UST-35, UST-36 and UST-C (closed by ERM), GeoProbe soil samples were collected from the former locations of these tanks (as per historical documents). The results of the sampling indicated SVOC concentrations in the subsurface beneath the former locations of UST-34, UST-35, UST-36 and UST-C were all below the Part 375 RUSCOs in the deep soil samples. Several SVOCs exceeded the Part 375 RUSCOs in the shallow (4 to 8 ft bg) soil samples collected from GP-Tank 36 however, this soil was subsequently excavated and disposed offsite as part of the commercial space excavation. A summary of the SVOCs detected in the UST-34, UST-35, UST-36 and UST-C GeoProbe soil samples is presented on table 60.

Of the nine wells installed in Area D throughout the course of the remedial investigation, samples only from R-4D and R-5D were analyzed for SVOCs. DW-16D and DW-17D soil characterization is summarized using soil samples collected from GP-HB-3 and GP-HB-8 borings. R-4D and R-5D were both installed in the commercial space. All SVOC concentrations detected in both R-4D and R-5D were below Part 375 RUSCOs. A summary of the SVOCs detected in the soil samples collected during the installation of R-4D and R-5D is presented on table 28.

Four soil samples were collected in Area D for subsurface evaluation of the feasibility of installation of a hydraulic barrier (GP-HB-1, GP-HB-3, GP-HB-8 and GP-HB-9). All soil samples collected from these soil borings for laboratory analysis (both shallow and deep) contain SVOCs at concentrations below the Part 375 RUSCOs. A summary of the SVOCs detected in the Area D hydraulic barrier sampling location soil samples is presented on table 50.

Once the commercial space excavation was completed to a depth of 13 ft bg (below the water table), endpoint confirmation soil samples were collected from several locations. The locations of these endpoint soil samples (B-1, B-2, B-3, B-4, B-6, B-7, S-1, S-2, S-3, S-4, S-7 and S-8) are shown on figure 36. Soil samples from all of the endpoints contained SVOCs in concentrations below the Part 375 RUSCOs with the exception of S-2. Excavation endpoint soil sample S-2 contained benzo (a) anthracene, chrysene and benzo (a) pyrene at concentrations slightly exceeding Part 375 RUSCOs. A summary of the SVOCs detected in the commercial space excavation endpoint confirmation soil samples is presented on table 61.

10.2.4.3 Metals

The laboratory results of the soil samples collected from Area D indicate that metals contamination (arsenic, barium, mercury and selenium) remains in the soil in concentrations which exceed the Part 375 RUSCOs.

Multiple endpoint soil samples were collected from the completed Area D UST excavations for UST-A, UST-B, UST-T and UST-U. Total metals concentrations exceeding the applicable Part 375 RUSCOs include: arsenic (UST-B, UST-T and UST-U); barium (UST-U); and mercury (UST-A and UST-V). A summary of the total metals detected in the Area D UST excavation endpoint confirmation soil samples is presented on table 62.

The UST-A, UST-B and UST-10 closure confirmation GeoProbe soil samples (collected from the groundwater table and bedrock/the confining layer) were analyzed for total metals. The results of the laboratory analyses indicate that no metals were detected at concentrations exceeding Part 375 RUSCOs. A summary of the metals detected in the UST-A, UST-B and UST-10 GeoProbe soil samples is presented on table 63.

Laboratory analysis for the GeoProbe soil samples collected for UST-34, UST-35 and UST-C (closed by ERM), indicated that all metals concentrations are below Part 375 RUSCOs. Additionally, the deep GeoProbe soil sample collected UST-36 (GP-Tank 36 [28 to 29.5]), had metals below Part 375 RUSCOs. Only the shallow GeoProbe soil sample collected for UST-36 (GP-Tank 36 [4 to 8]) contained metals (arsenic, barium and lead) at concentrations exceeding Part 375 RUSCOs. Of note, this soil was removed as part of the commercial space excavation. The remaining metals concentrations were all below the Part 375 RUSCOs. A summary of the total metals detected in the UST-34, UST-35, UST-36 and UST-C GeoProbe soil samples is presented on table 64.

Once the commercial space excavation was completed to a depth of 13 ft bg, endpoint confirmation soil samples were collected from several locations and submitted to the laboratory for analysis of total metals. The locations of these endpoint soil samples (B-1, B-2, B-3, B-4, B-6, B-7, S-1, S-2, S-3, S-4, S-7 and S-8) are shown on figure 36. The laboratory analytical results indicated that all metals concentrations in the endpoint soil samples were below Part 375 RUSCOs with the exception of selenium in B-2. A summary of the total metals detected in the commercial space excavation endpoint confirmation soil samples is presented on table 65.

Of the nine wells installed in Area D throughout the course of the remedial investigation, only samples from R-4D and R-5D were analyzed for total metals. DW-16D and DW-17D soil characterization is summarized using soil samples collected from GP-HB-3 and GP-HB-8 borings. R-4D and R-5D were both installed in the commercial space. All metals concentrations detected in R-4D and R-5D were below Part 375 RUSCOs. A summary of the total metals detected in the soil samples collected during the installation of R-4D and R-5D is presented on table 32.

Four soil samples were collected in Area D for subsurface evaluation of the feasibility of installation of a hydraulic barrier (GP-HB-1, GP-HB-3, GP-HB-8 and GP-HB-9). All metals concentrations in the soil samples collected from these soil borings were below Part 375 RUSCOs. A summary of the total metals detected in the Area D hydraulic barrier sampling location soil samples is presented on table 53.

Additionally, copies of the Category B Deliverables laboratory analytical reports are presented in Appendix XX.

10.3 Groundwater Quality – GeoProbe Sampling

The onsite groundwater was characterized from samples collected from temporary GeoProbe borings advanced throughout the Site and subsequently from the onsite and offsite network of groundwater monitoring wells and product delineation wells (both previously existing and those installed in conjunction with the Remedial Investigation). The results of the groundwater sampling at the Site are presented below.

10.3.1 Area A (Including Parking Lot)

GeoProbe groundwater samples from Area A (associated with UST closure confirmation activities) were collected from two discrete depths: one from the water table; and, one from the confining layer (the soil-bedrock interface). All samples collected were submitted to a laboratory for analysis of VOCs, SVOCs and total metals.

The GeoProbe groundwater sampling locations (figure 25) were performed to evaluate the groundwater beneath the former locations of UST-1A to UST-6A, UST-7 to UST-10 and the former parking lot drywell.

The results of the laboratory analysis indicated that all VOC concentrations are below the NYSDEC TOGS guidance values for the majority of the sampling locations. The locations where VOC concentrations exceed TOGS include: GP-4A and GP-5A at the water table (PCE at 6.5 ug/l and 18 ug/l, respectively); GP-UST-PR-3 at the water table and the confining layer (benzene at 1.1 ug/l and 2.1 ug/l, respectively); and, GP-Dry Well at the water table and the confining layer (toluene [21,000 ug/l and 5,900 ug/l], ethylbenzene [20 ug/l and 19 ug/l], xylene [60.3 ug/l and 62 ug/l], 1,2,4-trimethylebenzene [8.4 ug/l and 8.7 ug/l] and 1,2-dichlorobenzene [9.8 ug/l and 9.1 ug/l].

The results of the laboratory analysis indicated that all SVOC concentrations are below the NYSDEC TOGS guidance values for the Area A GeoProbe groundwater samples.

The results of the laboratory analysis indicated that all of the Area A GeoProbe groundwater samples contain concentrations of metals exceeding the NYSDEC TOGS guidance values with the exception of GP-Dry Well, GP-UST-PR1 and GP-UST-PR2. The metals detected exceeding the NYSDEC TOGS guidance values include arsenic, barium, chromium, mercury and selenium. Of note, the metals concentrations are significantly higher in the groundwater sample collected from the water table than those collected from the confining layer.

Groundwater Quality summary tables for Area A GeoProbe groundwater samples are presented on table 66 for VOCs; table 67 for SVOCs; and table 68 for total metals.

Additionally, copies of the Category B Deliverables laboratory analytical reports are presented in Appendix XXI.

10.3.2 Area B

GeoProbe groundwater samples from Area B (associated with UST and AST closure confirmation activities) were collected from both the first floor and the basement. Four groundwater samples were collected in the first floor (borings GP-2, GP-6, GP-9 and GP-12) and from the basement (borings GP-AST-1, GP-AST-2, GP-AST-3, GP-AST-6 and GP-AST-7). The Area B GeoProbe groundwater sampling locations are shown on figure 28. All samples collected were submitted to a laboratory for analysis of VOCs and SVOCs.

The results of the laboratory analysis indicated that all VOC and SVOC concentrations for both the first floor GeoProbe groundwater samples and the basement GeoProbe groundwater samples are below the NYSDEC TOGS guidance values (in addition to the laboratory detection limit).

Groundwater Quality summary tables for Area B GeoProbe groundwater samples are presented on tables 69 to 70 for VOCs and on tables 71 to 72 for SVOCs.

Additionally, copies of the Category B Deliverables laboratory analytical reports are presented in Appendix XXI.

10.3.3 Area C

Only two UST closure GeoProbe groundwater samples were collected from Area C, from the boring advanced following the removal of UST-D. Additionally, groundwater samples were collected from the hydraulic barrier GeoProbe borings GP-HB-2, GP-HB-4, GP-HB-5, GP-HB-6 and GP-HB-7. For each boring, groundwater samples were collected from two discrete depths: one from the water table (WT); and, one from the confining layer/soil-bedrock interface (CL). The Area C GeoProbe groundwater sampling locations are shown on figure 34 and figure 41. Both samples collected were submitted to a laboratory for analysis of VOCs, SVOCs and total metals.

The results of the laboratory analysis indicated that all VOCs in both of the GP-Tank D GeoProbe groundwater samples are below the NYSDEC TOGS GWQS with the exception of the following compounds: toluene, ethylbenzene, isopropylbenzene, n-propylbenzene, 1,2,4-trimethylbenzene, sec-butylbenzene, n-butylbenzene and naphthalene. All VOC concentrations exceeding the TOGS GWQS from the GP-Tank D GeoProbe groundwater samples are only slightly above NYSDEC TOGS guidance values. All four hydraulic barrier GeoProbe sampling locations From Area C contain VOCs in concentrations exceeding the TOGS GWQS. The highest concentration detected in these borings were in the groundwater samples collected from GP-HB-2 WT (located approximately 30 feet north of UST-D) in which toluene was detected at a concentration of 3,200 ug/l. On average the remaining VOCs are detected at concentrations approximately 2 orders of magnitude greater than TOGS GWQS.

The results of the laboratory analysis indicated that all SVOC concentrations are below the NYSDEC TOGS guidance values for the Area C GeoProbe groundwater samples (GP-Tank D and hydraulic barrier GeoProbe sampling locations) with the exception of naphthalene.

The results of the laboratory analysis indicated that all metals concentrations were below the NYSDEC TOGS guidance values for all the Area C GeoProbe groundwater samples collected from GP-Tank D. Additionally, all metals concentrations are below the NYSDEC TOGS guidance values for all groundwater samples collected from the Area C hydraulic barrier GeoProbe borings with the exception of borings GP-HB-4 and GP-HB-7 which had concentrations of chromium exceeding TOGS GWQS. Of note, the sample with the chromium concentration exceeding TOGS GWQS was collected from the confining layer for both borings (the deep sample). All metals concentrations detected in the groundwater samples collected from the water table sample are below the respective NYSDEC TOGS GWQS.

Groundwater Quality summary tables for Area C GeoProbe groundwater samples are presented on tables 73 to 74 for VOCs; tables 75 to 76 for SVOCs; and tables 77 to 78 for total metals.

Additionally, copies of the Category B Deliverables laboratory analytical reports are presented in Appendix XX.

10.3.4 Area D (Including Alleyway)

GeoProbe groundwater samples were collected from Area D in association with UST closure confirmation activities. Additionally, groundwater samples were collected from the four Area D hydraulic barrier GeoProbe borings GP-HB-1, GP-HB-3, GP-HB-8 and GP-HB-9. For each boring, groundwater samples were collected from two discrete depths: one from the water table; and, one from the confining layer/soil-bedrock interface. All groundwater samples collected from these borings were submitted to a laboratory for analysis of VOCs, SVOCs and total metals.

The GeoProbe groundwater sampling locations (figure 37) were performed to evaluate the groundwater beneath the former locations of UST-A, UST-B, UST-10, UST-34, UST-35, UST-36 and UST-C.

The results of the laboratory analysis indicated that all of the groundwater samples analyzed contain VOC at concentrations exceeding the NYSDEC TOGS guidance. The VOC detected at the highest concentrations beneath the alleyway tanks UST-A and UST-B include toluene and xylene. Toluene is nearly five orders of magnitude above the NYSDEC TOGS guidance values beneath UST-A. The VOC detected at the highest concentrations beneath the commercial space tanks UST-34, UST-35, UST-36 and UST-C include xylenes, 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene. Although VOC concentrations exceed guidance values, the maximum concentration for any specific compound beneath the commercial space tanks is 3,500 ug/l detected in GP-Tank 34 collected from the water table. All four hydraulic barrier GeoProbe sampling locations collected form Area D contain VOCs in concentrations exceeding the TOGS GWQS. The highest concentrations detected in these borings were in the groundwater samples collected from GP-HB-1 CL (located adjacent to UST-A) in which toluene was detected at a concentration of 120,000 ug/l and benzene was detected at a concentration of 940 ug/l. On average the remaining VOCs are detected at concentrations approximately 2 orders of magnitude greater than TOGS GWQS.

The results of the laboratory analysis indicated that all SVOC concentrations (with the exception of naphthalene) are below the NYSDEC TOGS guidance values for all of the Area D GeoProbe groundwater samples (GP-Tank D and hydraulic barrier GeoProbe sampling locations).

The results of the laboratory analysis indicated that all metals concentrations are below the NYSDEC TOGS guidance values for all the Area D GeoProbe groundwater samples in the commercial space. Only one sample collected from the alleyway contained metals in concentrations which exceed the TOGS GWQS, GP-Tank 10 WT (chromium at 126 ug/l). Additionally, all metals concentrations are below the NYSDEC TOGS guidance values for all groundwater samples collected from the Area D hydraulic barrier GeoProbe borings with the exception of borings GP-HB-3 and GP-HB-8 which had concentrations of chromium exceeding TOGS GWQS. Of note, the sample with the chromium concentration exceeding TOGS GWQS was collected from the confining layer for both borings (the deep sample). All metals concentrations detected in the groundwater samples collected from the water table sample are below the respective NYSDEC TOGS GWQS.

Groundwater quality summary tables for Area D GeoProbe groundwater samples are presented on tables 74, 79 and 80 for VOCs; tables 76, 81 and 82 for SVOCs; and tables 78, 83 and 84 for total metals. Additionally, copies of the Category B Deliverables laboratory analytical reports are presented in Appendix XXI.

10.3.5 Groundwater Monitoring Well and Product Delineation Well Sampling

10.3.5.1 July 2005 Groundwater Sampling

As part of the initial Site characterization, groundwater samples were collected from three monitor wells and eight product delineation wells on July 6 and July 7, 2005. The groundwater samples were analyzed for VOCs by EPA Method 8260.

The results of the laboratory analysis indicated that VOC concentrations in groundwater at the Site exceed the NYSDEC TOGS GWQS in multiple locations. It should be noted that the majority of the groundwater monitoring/product delineation wells at the Site were inaccessible due to the presence of steel storage units (self-storage units leased at the Site). The highest concentrations of VOCs were detected in MW-6C (the southwest corner of Area C), DW-1C (adjacent to UST-D), and DW-12D (the northwestern corner of Area D). Of note, groundwater samples could not be collected from several wells due to the presence of free-phase product/NAPL.

A fluid-level summary for the July 2005 sampling event is presented on table 2. Also, a summary of VOC concentrations in groundwater in July 2005 is presented on table 85.

10.3.5.2 June 2007 Groundwater Sampling

In June 2007, the second groundwater monitoring round was performed at the Site. This monitoring round incorporated wells previously installed at the Site by ERM and eight additional new wells installed as part of the remedial investigation. The locations of the wells sampled during the 2007 groundwater monitoring round are presented on figure 15.

Compared to the eleven wells sampled in 2005 (the wells which were located at the Site), four (4) groundwater monitor wells and twenty five (25) product delineation wells (including SVE-1) were sampled. In addition to the onsite well measurements, two wells along the Bronx River were sampled (DW-16 and DW-19). Of note, this groundwater sampling round was performed prior to any of the major soil excavation activities at the Site.

Groundwater samples could not be collected from several existing wells (MW-6C, DW-1B, DW-3C, DW-5C, DW-10D, DW-13D and DW-14D), due to the presence of free-phase product/NAPL. Additionally, several of the newly installed delineation wells were not sampled due to the presence of free-phase product/NAPL (DW-21D and EW-1D). Two wells located along the Bronx River (DW-17 and DW-18) were not sampled due to the presence of product. A fluid-level summary for the June 2007 sampling event is presented on table 86. Additionally, a figure illustrating the approximate extent of free-phase product (NAPL) with any measurable thickness is presented on figure 50.

A comparison between VOC concentrations detected in the groundwater samples collected from the same sampling locations in 2005, the concentrations show minimal fluctuation. Several of the newly installed delineation wells (DW-20B and DW-23D) as well as previously installed well not identified in 2005 show significantly higher VOC concentrations than any detected in 2005. A summary of VOC concentrations in groundwater in June 2007 is presented in table 87. Based on the dissolved phase VOC concentrations detected in groundwater, isoconcentration contour lines illustrating the distribution of total VOCs throughout the Site and downgradient (estimated) is presented on figure 51. Based on evaluation of this figure, the source of the groundwater contamination appears to be concentrated in the southern portion of Area D, where the highest volume of free-phase product has been historically observed (in the area of the hot spot excavation and the alleyway tanks UST-T and UST-U). The dissolved phase plume extends to the west towards the Bronx River (following the static hydraulic gradient). Of note, the lateral extent of high concentration dissolved phase total VOCs (>10,000 ug/l) appears to be minimal suggesting that the free-phase product (NAPL) is not highly soluble in water. This is consistent with the field observations of the free-phase product (NAPL) present in Area D, where it was observed to be a highly viscous polyurethane lacquer.

10.3.5.3 2008 Quarterly Groundwater Sampling Events

In March 2008, a regularly scheduled groundwater monitoring program was implemented at the Site. There were three (3) groundwater sampling rounds performed at the Site in 2008: March, June and October.

10.3.5.3.1 March 2008

The March 2008 groundwater monitoring round was the first sampling event performed after the Area D hot spot excavation (which removed 87 cubic yards of hazardous soil) was completed at the Site. This excavation encompassed the area of EW-1 (replaced by EW-1D) and DW-13D, where product was recorded at a thickness of up to 0.65 feet.

The locations of the wells incorporated in the March 2008 groundwater monitoring event are shown on figure 16. A fluid-level summary for the March 2008 sampling event is presented on table 88. Additionally, based on the March 2008 fluid level measurements, a figure illustrating the approximate extent of free-phase product (NAPL) with any measurable thickness is presented on figure 52.

A summary of VOC concentrations in groundwater in March 2008 is presented in table 89. Based on the dissolved phase VOC concentrations detected in groundwater, isoconcentration contour lines illustrating the distribution of total VOCs throughout the Site and downgradient (estimated) is presented on figure 53. As presented on this figure, all groundwater samples collected from Area A were below TOGS GWQS. The southern portion of Area B (DW-2A) was below TOGS GWQS, however; the northwestern corner of Area B exceeded TOGS GWQS for several VOCs including benzene, ethylbenzene, xylene, isopropylbenzene, n-propylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, sec-butylbenzene, 4-itopropyltoluene and naphthalene. The VOC concentrations in Area B are between 1 and 2 orders of magnitude higher than GWQS. Groundwater samples collected from Area C are slightly above TOGS GWQS, with the highest concentrations detected adjacent to the former location of UST-D (DW-3C) and along the northern edge of Area C adjacent to Area D (DW-18C). Area D is the location of the Site where the highest concentrations of dissolved phase VOCs are present in the groundwater. Exclusive of wells where free-phase product was observed (DW-10D, DW-14D and DW-21D), the highest concentrations of VOCs were observed in DW-3D, DW-5D and DW-12D which are located in the alleyway or along the western wall of the commercial space (adjacent to the alleyway). In addition to the onsite well measurements, two wells along the Bronx River were sampled (DW-16 and DW-19) and only DW-19 had VOC concentrations exceeding TOGS GWQS (isopropylbenzene [6.6 ug/l], n-propylbenzene [8.8 ug/l] and 1,2,4-trimethylbenzene [110 ug/l]). Two wells were not sampled due to the presence of product (DW-17 and DW-18).

10.3.5.3.2 June 2008

Following the March 2008 groundwater monitoring round, a total of 1,128.20 tons of contaminated soil was excavated from the subsurface in the Area D commercial space beneath/surrounding the historical locations of UST-34, UST-35, UST-36 and UST-C.

The locations of the wells incorporated in the June 2008 groundwater monitoring event are shown on figure 16. Of note, the majority of the wells in the commercial space (PVC wells DW-4D, DW-5D, DW-6D, DW-7D, DW-8D, DW-10D and MW-5D installed by ERM) were destroyed in conjunction with the commercial space excavation activities. In addition to the onsite well measurements, the four wells along the Bronx River were gauged, and two wells were not sampled due to the presence of product (DW-17 and DW-18). A fluid-level summary for the June 2008 sampling event is presented on table 90. Additionally, based on the June 2008 fluid level measurements, a figure illustrating the approximate extent of free-phase product (NAPL) with any measurable thickness is presented on figure 54.

A summary of VOC concentrations in groundwater in June 2008 is presented in table 91. Based on the dissolved phase VOC concentrations detected in groundwater, isoconcentration contour lines illustrating the distribution of total VOCs throughout the Site and downgradient (estimated) is presented on figure 55. Similar to the previous groundwater monitoring round, groundwater samples collected from Area A contained concentrations of VOCs below TOGS GWQS. The groundwater samples collected from Area B (DW-2A, DW-1B and DW-20B) all contained concentrations of VOCs exceeding TOGS GWQS. DW-2A showed only slight exceedances while DW-1B and DW-20B had VOC concentrations several orders of magnitude over standards. The highest concentrations of VOCs detected in Area C were in DW-5C with a toluene concentration of 38,000 ug/l. The remaining groundwater samples collected from Area C are slightly above TOGS GWQS, with the highest concentrations detected adjacent to the former location of UST-D (DW-3C) and along the northern edge of Area C adjacent to Area D (DW-18C). Of note, several samples in Area C have benzene concentrations exceeding TOGS GWQS. Area D is again the location of the Site where the highest concentrations of dissolved phase VOCs are present in the groundwater. Exclusive of DW-21D (where free-phase product was observed), the highest contaminant concentration was detected in DW-14D. The groundwater sample collected from DW-14D was only able to be collected after free-phase product was bailed from the well prior to sampling. The second highest dissolved phase VOC concentrations were detected in DW-23D which is located downgradient from DW-14D and also downgradient from the former locations of UST-T and UST-U. In addition to the onsite groundwater characterization, the two wells adjacent to the Bronx River (DW-16 and DW-19) both had detectable VOC concentrations, however; they are only slightly exceeding TOGS GWQS.

10.3.5.3.3 October 2008

The October 2008 groundwater monitoring round was the first sampling event performed after the 95.22 tons of soil (disposed of offsite as hazardous waste on July 25, 2008) was removed from the UST-U/UST-T excavation. Additionally, prior to the monitoring round, several new delineation wells were installed at the Site (R-3A, DW-4A, DW-21B, R-4D and R-5D), however; DW-21B and R-4D were not incorporated into the sampling event. The locations of the wells incorporated in the October 2008 groundwater monitoring event are shown on figure 16. In addition to the onsite well measurements, the four wells along the Bronx River were gauged, and two wells were not sampled due to the presence of product (DW-17 and DW-18). A fluid level summary for the October 2008 sampling event is presented on table 92. Additionally, based on the October 2008 fluid level measurements, a figure illustrating the approximate extent of free-phase product (NAPL) with any measurable thickness is presented on figure 56.

A summary of VOC concentrations in groundwater in October 2008 is presented in table 93. Based on the dissolved phase VOC concentrations detected in groundwater, isoconcentration contour lines illustrating the distribution of total VOCs throughout the Site and downgradient (estimated) is presented on figure 57. A significant variation (in comparison to previous sampling rounds) was observed in Area A. Newly installed replacement product delineation well R-3A (installed in the location of the former 'drywell' structure) had concentrations of multiple VOCs exceeding the TOGS GWQS, greater than 98% of which is represented by toluene (40,000 ug/l). This correlates with the highest compound (toluene) and concentration (65,000 ug/kg) of soil contamination detected in Area A, collected from UST-P bottom sample B-2 at 10 ft bg (adjacent to the former 'drywell' structure). The groundwater samples collected from Area B (DW-2A, DW-1B and DW-20B) all exceeded TOGS GWQS. DW-2A showed only slight exceedances while DW-1B and DW-20B had VOC concentrations 1 to 2 orders of magnitude over standards. The concentrations of VOCs detected in Area C were slightly lower than past sampling rounds, with the 1,000 ug/l isoconcentration line contracting slightly. The highest concentrations of VOCs detected at the Site were collected from Area D were observed in the samples collected from the alleyway. The highest concentration was detected in DW-23D (300,000 ug/l toluene) which is downgradient of the three Area D excavation locations (hot spot, commercial space, and UST-T/UST-U). This elevation in dissolved phase VOC concentrations could be attributed to the percolation of water through overlying soils in the area of the UST-T/UST-U excavation considering this area was acting as a temporary drainage area pending replacement of the asphalt cap.

In addition to the onsite groundwater characterization, the two wells adjacent to the Bronx River (DW-16 and DW-19) were sampled and only DW-19 had detectable VOC concentrations, however; they are only slightly exceeding TOGS GWQS. Also, the upgradient groundwater monitoring wells MW-7A and MW-8C show detectable levels of total VOCs (previously non-detect). Future sampling rounds will determine if this represents a trend.

In general, upon evaluation of the dissolved phase VOC concentrations throughout the Site, with the exception of R-3A and the UST-T/UST-U excavation area, the remaining groundwater samples show a general trend of decreasing concentrations.

10.3.5.4 2009 Quarterly Groundwater Sampling Events

In January 2009, the first quarter 2009 groundwater monitoring round was performed at the Site. This groundwater monitoring round was the first of four (4) groundwater sampling rounds scheduled to be performed at the Site in 2009.

10.3.5.4.1 January 2009

The January 2009 groundwater monitoring round constitutes the first sampling event performed after the chemical oxidation application was performed in the Area D commercial space in October 2008. The locations of the wells incorporated in the January 2009 groundwater monitoring event are shown on figure 16. All accessible onsite wells and four offsite wells (located along the Bronx River) were gauged prior to sampling. A fluid level summary for the January 2009 sampling event is presented on table 94. Additionally, based on the January 2009 fluid level measurements, a figure illustrating the approximate extent of free-phase product (NAPL) with any measurable thickness is presented on figure 58.

A summary of VOC concentrations in groundwater in January 2008 is presented in table 95. Based on the dissolved phase VOC concentrations detected in groundwater, isoconcentration contour lines illustrating the distribution of total VOCs throughout the Site and downgradient (estimated) is presented on figure 59. Similar to the last sampling round, the highest total VOC concentrations in Area A were detected in the sample collected from R-3A. DW-1A and DW-2A showed no detectable VOC concentrations. Groundwater samples collected from Area B (DW-1B and DW-20B) were not collected as these wells had free-phase product (NAPL) present on the groundwater when gauge. The concentrations of total VOCs detected in Area C again were slightly lower than past sampling rounds, with the total VOCs 1,000 ug/l isoconcentration line contracting again (DW-18C now with total VOCs of 540 ug/l). The highest concentrations of VOCs detected in Area D were observed in the samples collected from the alleyway. OF note, prior to the next groundwater sampling event (Second Quarter 2009 in April), a high vacuum round will be performed on many of the wells throughout the Site to clean out material from within the well as a result of construction activities at the Site. This high vacuum event will also be used as an opportunity to develop the onsite well to increase their performance. The highest VOC concentration was detected in DW-23D

(130,000 ug/l toluene) which is downgradient of the three Area D excavation locations (hot spot, commercial space, and UST-T/UST-U. Of note, this concentration represents a more than 56% decrease in concentration when compared to the October 2008 concentration. Additional/future groundwater monitoring events will be used to determine if this VOC reduction is the result of the chemical oxidation application. If it is determined that the chemical oxidation application effectively reduced dissolved phase VOC concentrations, additional application rounds can be performed in Area D. This will be evaluated in the future and if deemed appropriate, will be incorporated as a proposed remedial alternative.

In addition to the onsite groundwater characterization, the two wells adjacent to the Bronx River (DW-16 and DW-19) were sampled and only DW-19 had detectable VOC concentrations, however; they are only slightly exceeding TOGS GWQS. Also, similar to the previous groundwater monitoring round (October 2008), the upgradient groundwater monitoring wells MW-7A and MW-8C show detectable levels of total VOCs, although at slightly lower concentrations. Future sampling rounds will determine if this represents a trend.

In general, upon evaluation of the dissolved phase VOC concentrations throughout the Site shows minimal fluctuation when compared to the previous groundwater monitoring round (October 2008). As with previous groundwater sampling rounds, the dissolved phase VOC contamination appears to be isolated to: the area localized by R-3A in Area A; the area in the southwestern corner and along the western boundary of the Site in Area C; and, the area in the southern and western portions of Area D. Although minimal; a comparison of historical groundwater VOC concentrations shows a general trend of decreasing concentrations as well as distribution.

11.0 COMPARISON WITH STANDARDS, CRITERIA, AND GUIDANCE

Based on the residual contamination present at the Site as well as the anticipated future use of the Site (continued use as a commercial self-storage facility), the appropriate soil cleanup objective for the Site will be 6NYCRR 375-6.8(b) Restricted Use Soil Cleanup Objectives for Protection of Public Health (Commercial). To determine whether the soil, groundwater and soil vapor and indoor air contain contamination at levels of concern, data from the investigation were compared to the following SCGs:

- groundwater SCGs are based on NYSDEC "Ambient Water Quality Standards and Guidance Values";
- soil SCGs are based on 6 NYCRR Subpart 375-6 - Remedial Program Restricted Use Soil Cleanup Objectives; and, the Department's Cleanup Objectives ("Technical and Administrative Guidance Memorandum [TAGM] 4046; Determination of Soil Cleanup Objectives and Cleanup Levels)" were also utilized to evaluate onsite soil quality.
- soil vapor and indoor air SCGs are based on the NYSDOH Center for Environmental Health, Bureau of Environmental Exposure Investigation "Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006".

All respective groundwater quality standards, soil cleanup objectives and indoor air quality standards (if established), area presented in Appendix XXII. Additionally, summary tables presenting the laboratory analytical data compare contaminant concentrations to the above listed standards.

12.0 DATA USABILITY

QA/QC procedures were utilized throughout the project to ensure reliable data. AMRO, a NYSDOH - Environmental Laboratory Approval Program (ELAP) No. 11278 certified laboratory and Lancaster Laboratories, a NYSDOH - ELAP, No. PA00009 certified laboratory performed all analyses. Analytical methods used included Contract Laboratory Protocol methodologies. All analytical results are reported with Category B deliverables where required. Data Usability Summary Reports (DUSRs) were prepared for some of the Category B deliverables analytical results by Lori A. Beyer of L.A.B. Validation Corporation located in East Northpoint, New York. Copies of the Category B deliverables packages are included in Appendix XIX (soil vapor, indoor air and ambient air quality), Appendix XX (soil quality) and Appendix XXI (groundwater quality) on the attached DVD. Additionally, DUSRs prepared for the laboratory reports are included in Appendix XXIII on the attached DVD.

Based on past sampling completed on the Site, the primary contaminants are VOCs, SVOCs and metals. Accordingly, soil, groundwater, soil gas and ambient air samples were analyzed for VOCs and soil and groundwater were additionally analyzed for SVOCs and metals. Both soil and groundwater were analyzed by EPA Methods 8260, 8270 and total metals. Soil gas and ambient air samples were analyzed by EPA Method TO-15. Sampling methods, sample preservation requirements, sampling handling times and decontamination procedures for field equipment were conducted in accordance with NYSDEC and USEPA standard operating procedures and industry standards. All samples collected were maintained under chain-of custody procedures until delivery to the analyzing laboratory. The table below summarizes the sampling standards.

SUMMARY OF SAMPLE HANDLING AND PRESERVATION

Sample Collection Area	Media	Analytical Method	Holding Time	Preservation
Monitor Wells (newly installed) GeoProbe Soil Borings Excavation Grab Soil Samples	Soil	EPA Method 8260 EPA Method 8270 Total Metals	< 2 Weeks	ICE
Monitor Wells (existing and newly installed), GeoProbe Soil Borings	Groundwater	EPA Method 8260 EPA Method 8270 Total Metals	< 2 Weeks	ICE
Sub-Slab Soil Vapor Points Soil Vapor Points Indoor/Outdoor Ambient Air	Air	EPA Method TO-15 Propane (tracer)	NA	Avoid extreme heat

13.0 CONTAMINANT FATE AND TRANSPORT DISCUSSION

The onsite contamination consists of primarily VOCs which are present in the soil, groundwater, and soil vapor. There are several factors that affect contaminant migration in the matrices at the Site (soil, groundwater and soil vapor). Each of these factors have been evaluated and the difficulties and concerns associated with the presence of contamination in the subsurface will be presented below.

The onsite and offsite contamination, as determined through historical subsurface investigations, consists of VOCs present in the soil, groundwater as well as in the soil vapor. Although SVOCs and metals were detected in soil and groundwater samples at the Site in concentrations that were above maximum contaminant levels established by the NYSDEC, the source of this contamination appears to be a result of the urban fill found at the Site (and presumably throughout adjacent and surrounding properties). The Site use and surrounding properties are industrial/commercial. Because SVOC and metals contamination could be attributed to background levels, the contaminant fate and transport analysis will focus on the VOC contamination at the Site. The results of laboratory analysis of soil, groundwater and soil vapor samples collected from the Site have indicated that contaminants associated with the historical operations at the Site, *as well as chemicals not listed as having been used as part of the former onsite manufacturing operations (specifically chlorinated solvents)*, are present beneath the Site and surrounding properties.

Primary routes of migration for VOCs within the area of the Site are; direct flow of free-phase LNAPL contamination on top of the groundwater table; dissolved phase contamination flow within the groundwater; and, migration of soil vapors (resulting from volatilization of residual contamination in the subsurface soils as well as VOCs in groundwater). The migration of the dissolved phase contamination is related to the natural hydraulic flow of the groundwater. The migration of the VOCs in the soil vapor however is not constrained by hydrogeologic factors. The analytical results of groundwater samples collected at downgradient groundwater monitoring/product delineation wells and fluid-level measurements indicate that the contaminated groundwater and free-phase product has reached the Bronx River.

13.1 Contaminant Fate

Water solubility is one of the most important factors controlling fate and transport of organic contaminants. Where highly soluble polar solvent materials that can hydrogen-bond with water are quickly distributed and diluted (i.e., acetone), insoluble non-polar solvent materials as are present at the Site (i.e., xylene, toluene and ethylbenzene) are more likely to adsorb on solids, or accumulate in biota. Degradation processes are also concentration-dependent, so insoluble contaminants are more slowly transformed. An estimate of solubility is the first step to determine the fate and behavior of a contaminant. Based on the solubility of the contaminants at the Site, once it reaches the groundwater table, they are not fully miscible with the groundwater (they are not capable of mixing beyond a certain ratio without separation of two phases). A main problem in determining the solubility of the remaining primary contaminants (xylene, toluene and ethylbenzene) is how to accurately determine compositions of mixed solvents.

Based on the factors listed above, contaminant fate will be evaluated through comparison of past and future groundwater quality data at the Site as well as evaluation of performance data of additional remedial alternatives installed and proposed for installation at the Site (groundwater pump and treat, source area excavation, vapor extraction...). Evaluation of the performance data for these systems will allow a contaminant mass removal estimate to be calculated.

13.2 Contaminant Transport

After release to the subsurface, the VOCs migrated downward by gravity toward the water table. Due to the density of the chemicals used in association with the historical Red Devil Paint Division of Insilco/Red Devil Paints & Chemicals, Inc./Technical Color and Chemical Works, Inc. operations (all are light non-aqueous phase liquids [LNAPL]), upon reaching the water table, the VOCs float. This has been demonstrated through historical gauging of onsite and offsite groundwater monitoring wells. All of the detected free-phase product has been of the LNAPL type and no dense non-aqueous phase liquid (DNAPL) has been observed/measured.

13.3 Soil

Due to the fact that the Site and the surrounding area are primarily paved with limited recharge areas, downward percolation of surface water is considered a minimal contributor to transport. As such, transport within the vadose zone was by gravity and lateral diffusion throughout the pore spaces. Preferential pathways encountered during vertical migration would have accentuated lateral migration. A portion of the contaminants likely remains in the pore space due to the capillary attraction. Additionally, any free-phase product which reached the water table will spread laterally (primarily in the direction of the hydraulic gradient which is toward the Bronx River).

13.4 Groundwater

The transport of dissolved phase VOCs in groundwater (mass or solute transport) is dependent on the properties of the VOCs as well as the site specific hydraulic properties. The primary variable for dissolved phase contaminant transport is the groundwater flow. This determines the direction which the contamination plume will spread. Also contributing to the transport of the VOCs is advection which is a function of the quantity of the groundwater flowing within the subsurface. As the resulting plume moves downgradient, the plume widens (spreads laterally) and concentrations decrease away from the source. Additionally, dissolved phase VOCs will move from an area of greater concentration (source area) to an area where it is less concentrated, also known as diffusion. Diffusion will occur as long as a concentration gradient exists, irrespective of movement of the groundwater. Based on the historical subsurface investigations performed at the Site, the baseline regional hydraulic gradient at the Site is approximately 0.008 feet per foot to the west (toward the Bronx River).

13.5 Soil Vapor

Similar to transport in groundwater, transport in the gas phase may also be described by advection and dispersion. In most cases mechanical dispersion (contaminant distribution by air flow velocity variations) is ignored because gas velocities are generally too small due to steady state conditions (no forced air flow in the subsurface). As such, the effects of diffusion are generally much greater than dispersion in the gas phase. Additionally, based on this "steady state" condition, soil vapor migration direction cannot be determined without quantitative sampling. This sampling has been performed at the Site and results of the investigation are summarized in Section 5.7 above. Molecular diffusion coefficients are approximately four orders of magnitude greater in the gas than in the liquid phase. As such, residual contamination in the vadose zone will impact soil vapor faster than residual contamination impacting the groundwater (from the smear zone and/or free-phase product).

14.0 QUALITATIVE FISH/WILDLIFE EXPOSURE ASSESSMENTS

A qualitative Fish and Wildlife Resources Impact Assessment (FWRIA) was completed by EcolSciences, Inc. of Rockaway, New Jersey. The FWRIA was prepared following the guidelines as set forth in the NYSDEC DER-10 guidance Section 3.10 as well as guidance set forth in NYSDEC document entitled Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites (October 1994). The FWRIA was performed to: identify and describe fish and wildlife resources on the Site and within 0.5 miles of the Site; identify contaminant pathways and any fish and wildlife exposure pathways; and, to identify contaminants of ecological concern as defined in Section 1.3 of the DER-10. A copy of this FWRIA is included in Appendix XXIV on the attached DVD.

Based on visual observations of potential impact (as determined by an ecological site evaluation conducted on May 21, 2007), no areas of potential ecological concern resulting from past or present land use practices and/or facility operations were observed with the exception of seepage areas along the Bronx River. These seepage areas (observed on the east bank of the Bronx River in at least three areas) presented a sheen and/or a solid film on the riverbank and on the surface of the water. The seepage material was observed to be contained by booms placed along the river's edge. Of note, no film was observed outside the areas contained by the boom.

As for the determination of contaminants of ecological concern, EcolSciences evaluated the analytical results of surface water and sediment samples collected by ERM as part of their 1992-1994 remedial investigation. Based on the data evaluation, it was concluded that:

- groundwater conveyance of dissolved or floating contaminants present in the groundwater could be a potential migration pathway to adversely impact fish and wildlife resources due to the observation of seepage areas along the shoreline of the Bronx River.
- chemical constituents detected in the Bronx River sediments and surface waters include VOCs, SVOCs, and metals.

- several VOCs, SVOCs, and metals were present at concentrations in surface water and sediment samples exceeding their respective screening criteria for ecological risk.
- a comparison of concentrations of contaminants exceeding the screening criteria indicates that the exceedances are largely due to other sources in the watershed, not the Site.
- TCE and PCE, which were not detected in the sediment sample taken adjacent to the seepage area, were the only constituents identified as contaminants of environmental concern associated with the Site.
- the material discharging from the seepage area is being contained by a heavy weighted skirted boom in combination with a sorbent inner boom. Additionally, interim remedial measures were installed in 2007 for the purpose of reducing the volume of NAPL beneath the Site, further minimizing the impacts from the Site to the Bronx River.

Based on the onsite and offsite investigations, the subsurface contamination migrating from the Site to the Bronx River has negatively impacted the environmental status of the subsurface along the Bronx River. EcolSciences concluded that the seepage of contaminated groundwater into the Bronx River is only having a minor impact on sediments in the immediate vicinity of the seepage.

15.0 HUMAN HEALTH EXPOSURE ASSESSMENT

This section describes the types of human exposures that may present added health risks to persons at or around the Site.

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: (1) a contaminant source, (2) contaminant release and transport mechanisms, (3) a point of exposure, (4) a route of exposure, and (5) a receptor population.

The source of contamination is the location where contaminants were released into the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure. An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

Under the current and future use scenarios (self-storage facility), there exists the potential for exposure to VOCs via inhalation of vapor, or via incidental ingestion or dermal contact with contaminated subsurface soils. However, based on the fact that the entire Site is capped with asphalt/concrete, the potential for exposure due to dermal contact or ingestion is insignificant. The risk of exposure via inhalation of vapors is low due to the fact that the basement and excavated areas of the first floor have been fitted with a SSDS.

Groundwater in the vicinity of the project site is not utilized as a source of potential drinking water. Therefore, exposure via ingestion of contaminated groundwater is not expected.

16.0 SUMMARY AND CONCLUSIONS

The Site has a long history of industrial manufacturing activities related to the manufacture and distribution of paints and lacquers.[3] As a result of several factors including but not limited to: the nature of the materials used in conjunction with these activities; the means of onsite storage for chemicals used in the manufacturing; improper historical waste disposal and housekeeping practices; and, failure of the onsite chemical storage systems. The result of these combined factors was residual contamination of the subsurface beneath the Site and off-site.

The Remedial Investigation performed consisted of subsurface characterization activities performed throughout the Site to delineate the extent and concentration of soil, groundwater and soil vapor/indoor air contamination present at the Site. In addition to site characterization activities, Interim Remedial Measures implemented at the Site and several remedial alternative pilot studies were performed to evaluate potential remedial technologies.

As a result of the subsurface investigation and IRM activities performed at the Site, the Site has been comprehensively characterized. The Site characterization has defined the extent of soil vapor/indoor air, soil and groundwater contamination in the subsurface beneath the Site.

The results of the onsite soil vapor intrusion sampling rounds (performed prior to onsite IRM activities) indicated that soil vapor VOC concentrations beneath the Site are minimal. Additionally, none of the indoor air samples collected contained concentrations of PCE, TCE and/or methylene chloride (the only compounds with established indoor air guidance values) above the established NYSDOH air guidance values. Based on the NYSDOH Soil Vapor/Indoor Air Matrices (which correlate soil vapor concentrations and indoor air), the most conservative recommended courses of action for the Site (for the two sampling rounds) were: Monitor/Mitigate in Area A; Monitor/Mitigate in Area B; Monitor in Area C; and, take reasonable and practical actions to identify source(s) and reduce exposures in Area D. Following the soil vapor intrusion sampling rounds, mitigation activities were performed in Areas A, B, C and D. In Area A, this activity consisted of removal of an asphalt cap, UST closure activi-

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[3] From 1959 to 1971, Red Devil Paints & Chemicals, Inc. operated a paint facility, which blended and manufactured paints and varnishes. From 1971 to 1989, Red Devil was operated as a division of Insilco Corporation. In 1990 the paint facility ended its operations at the Site.

ties and excavation/removal of contaminated soil and installation of a new asphalt cap within the parking lot. In Areas B, C and D, these mitigation activities consisted of: removal of the slab on grade; UST closure activities; excavation/removal of contaminated soil and free-phase product; backfill with a highly permeable gravel (the first floor of Area B and the majority of the basement of Area C and all of Area D); the installation of several sub-slab depressurization pipes within the gravel layer; and installation of new reinforced concrete slab. These sub-slab depressurization pipes are currently used as a passive venting to the atmosphere via a roof-mounted wind turbine (producing minimal vacuum).

The installation of the sub-slab depressurization system would provide a means to address soil vapor beneath the Site in the future, if necessary. This system can be converted to an active system by connecting these pipes to vacuum blowers, thereby controlling soil vapor issues. Additionally, an active sub-slab depressurization would provide active remediation of contamination within unsaturated soils.

The results of the onsite soil sampling activities (consisting of hollow-stem auger split-spoon sampling, GeoProbe macro-core sampling and excavation endpoint sampling indicate that residual soil contamination exists in the subsurface throughout the Site. Based on the subsurface investigation, the areas at the Site where the highest concentration and distribution of VOC impacted soil is present include: the location of the former drywell in the parking lot of Area A; the western perimeter of Area C and the northeastern corner of the former UST-W excavation in Area C; and, the highest concentration of VOC contamination was detected in the south/southwestern portion of Area D. This is the area of the Site where the majority of the soil excavation/disposal activities were focused. The elevated metals concentrations in the subsurface soils (where detected) are most likely attributed to a combination of factors including the historic use of coal ash and urban fill as backfill material as well as regional site background concentrations. However; considering the depth of several soil samples containing metals at concentrations exceeding TAGM RSCO, the exceedance of metals throughout the Site can also be attributable to regional background concentrations resulting from the surrounding area history.

Although residual soil contamination remains beneath the Site, based on the fact that the entire Site is capped with asphalt/concrete the potential for exposure due to dermal contact or ingestion is insignificant. Additionally, engineering controls (in addition to the concrete and asphalt cap and sub-slab depressurization piping) can be utilized at the Site to remediate the residual soil contamination. These additional engineering controls include activation of the horizontal soil vapor extraction well (HSVE-1) as well as active vacuum extraction from the SSDS piping throughout Area C and Area D.

The results of the onsite groundwater sampling activities (GeoProbe sampling and groundwater monitoring well and product delineation well sampling), groundwater contamination exists in the subsurface throughout the Site. Based on the subsurface investigation, the areas at the Site where the highest concentration and distribution of VOC impacted groundwater is present include: the location of the former drywell in the parking lot of Area A (R-3A); the western perimeter of Area C; and, in the southwestern portion of Area D (DW-23D). There are the areas of the Site where the majority of the soil excavation/disposal activities were focused, thereby eliminating a significant volume of source material as well as free-phase product (NAPL). The results of the laboratory analysis indicated that SVOC concentrations in groundwater samples collected from the Site are below the NYSDEC TOGS guidance values with the exception of naphthalene in several locations. The results of the laboratory analysis indicated that the majority of the metals concentrations in groundwater samples collected from the Site are below the NYSDEC TOGS guidance values. Exceptions include arsenic, barium, chromium, mercury and selenium in Area A, and chromium in two locations in Area C and three locations in Area D.

Although residual groundwater contamination remains beneath the Site, groundwater in the vicinity of the Site is not utilized as a source of potable drinking water. In addition to the fact that the entire Site is capped with asphalt/concrete and the groundwater is a minimum of approximately 12 feet below ground surface, the potential for exposure via dermal contact or ingestion of contaminated groundwater is not possible. Additional engineering controls including multi phase extraction (groundwater, soil vapor and free-phase product) can be utilized at the Site to remediate the residual groundwater contamination as well as free-phase product (NAPL).

The pilot tests and pumping tests in conjunction with the IRMs performed at the Site were effective in removing a significant volume of contaminated material from the subsurface as well as determining the feasibility of potential future remedial alternatives at the Site based on the site specific subsurface conditions. As a result of the onsite UST/AST closure activities and excavation activities: sixteen (16) bulk storage tanks and their residual contents were removed from the Site; more than 2,550 tons of non-hazardous soil was removed from the Site (disposed of offsite at approved/licensed facilities); more than 11 tons of hazardous wood was removed from the Site (disposed of offsite at an approved/licensed facility); and, more than 224 tons of hazardous contaminated soil was removed from the Site (disposed of offsite at approved/licensed facilities). The results of the vertical groundwater pumping test showed that do to the low transmissivity of the subsurface sediments, vertical groundwater wells are not a feasible remedial alternative for removing contaminated groundwater or free-phase product (NAPL) at the Site. The results of the vertical soil vapor extraction well pilot test indicated that due to the tight formation present in the subsurface, neither high or low vacuum from a vertical soil vapor extraction well yields significant radius of influence to effectively remediate residual soil contamination at the Site. Based on the grout injection pilot test, a ground barrier (via multiple injection points along the downgradient perimeter of the Site) was ruled out as a method for installing a barrier to prevent the offsite migration of free-phase product (NAPL).

Although several future potential remedial alternatives were deemed to be not feasible for use at the Site, several alternatives were determined to be viable at the Site. Firstly, the results of the horizontal wells HEW-1 and HEW-2 pumping tests demonstrated that due to the geology at the Site (low transmissivity soil), a low volume pumping rate combined with the increased saturated thickness of a horizontal well has the potential to remove groundwater with dissolved phase VOCs and free-phase product from the subsurface as well as control the onsite hydraulic gradient. The pumping test data showed that the drawdown was continuing to increase in a linear fashion (excluding the influence from storm events) during both pumping tests. The data also show that with continuous pumping, it would induce a cone of depression sufficient to control further migration of both free-phase product (NAPL) and groundwater with dissolved VOCs and/or to remove free-phase product from the subsurface. Based on horizontal wells pumping test it was determined that the groundwater and free-phase product remediation at the Site can be accomplished by the pump and treat technology utilizing a series of horizontal groundwater/product extraction wells in conjunction with periodic product removal from vertical monitoring/delineation/extraction wells.

The horizontal soil vapor extraction well HSVE-1 pilot test demonstrated a substantial vacuum influence throughout the subsurface resulting from the increase in screened area provided by the horizontal well. As a result of this pilot test, it was determined that horizontal soil vapor extraction well(s) is effective in removing vapor phase from the subsurface of the Site. Additionally, operation of a horizontal soil vapor extraction well will act as an additional preventative measure reducing any potential for indoor air soil vapor intrusion.

In conclusion, subsurface residual contamination remains beneath the Site, primarily in dissolved phase (VOCs). As a result of the contaminant concentrations remaining at the Site, additional remedial action(s) are required at the Site to actively remediate the onsite groundwater as well as to control offsite contaminant migration. As such, a remedial alternatives analysis will be prepared and submitted to the NYSDEC.

dmd
July 19, 2010
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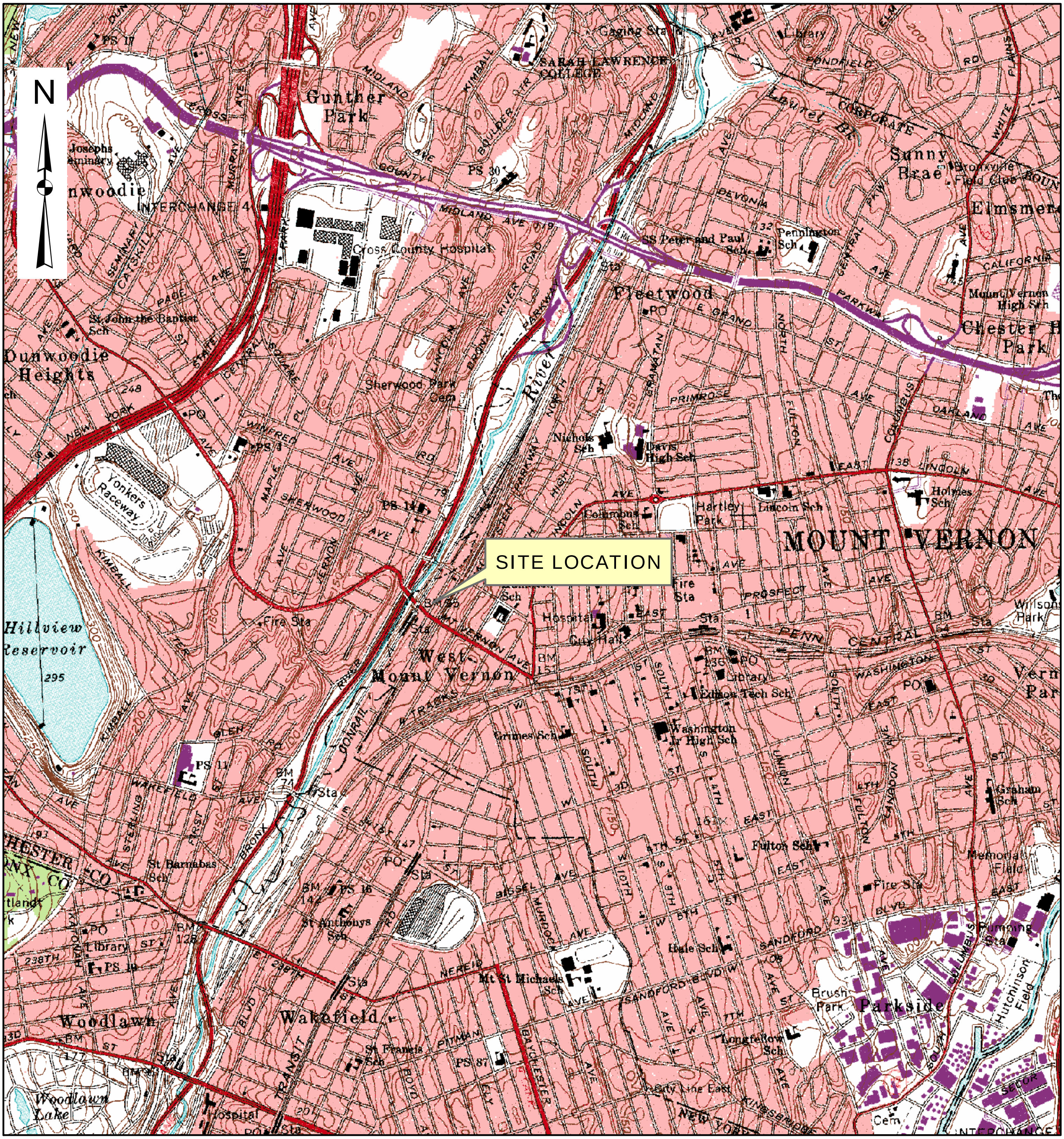
FIGURES



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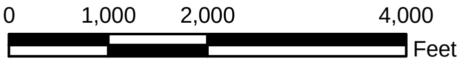


FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

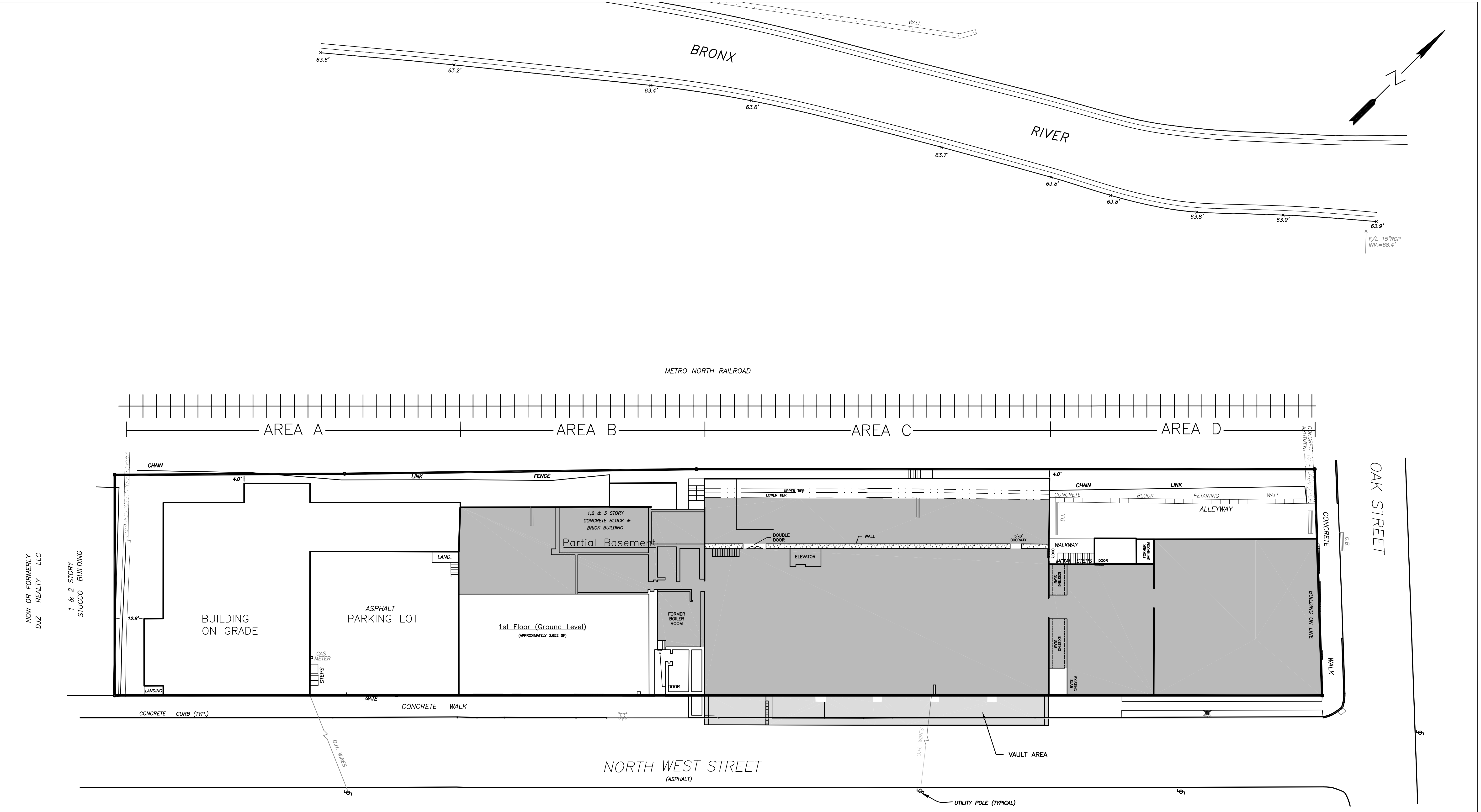
SITE LOCATION

Prepared by:

LEGGETTE, BRASHEARS & GRAHAM, INC.

Professional Ground-Water and Environmental Services
110 Corporate Drive, Suite 112
White Plains, NY 10604
(914) 694-5711 www.lbgweb.com

			DATE: 1/6/09
FILE: B:LBG_NY_red_devil	*DRAWN BY: BK*	*CHECKED BY: JAM*	*FIGURE: 1*



LEGEND

▬ PROPERTY BOUNDARY

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SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

SITE PLAN

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
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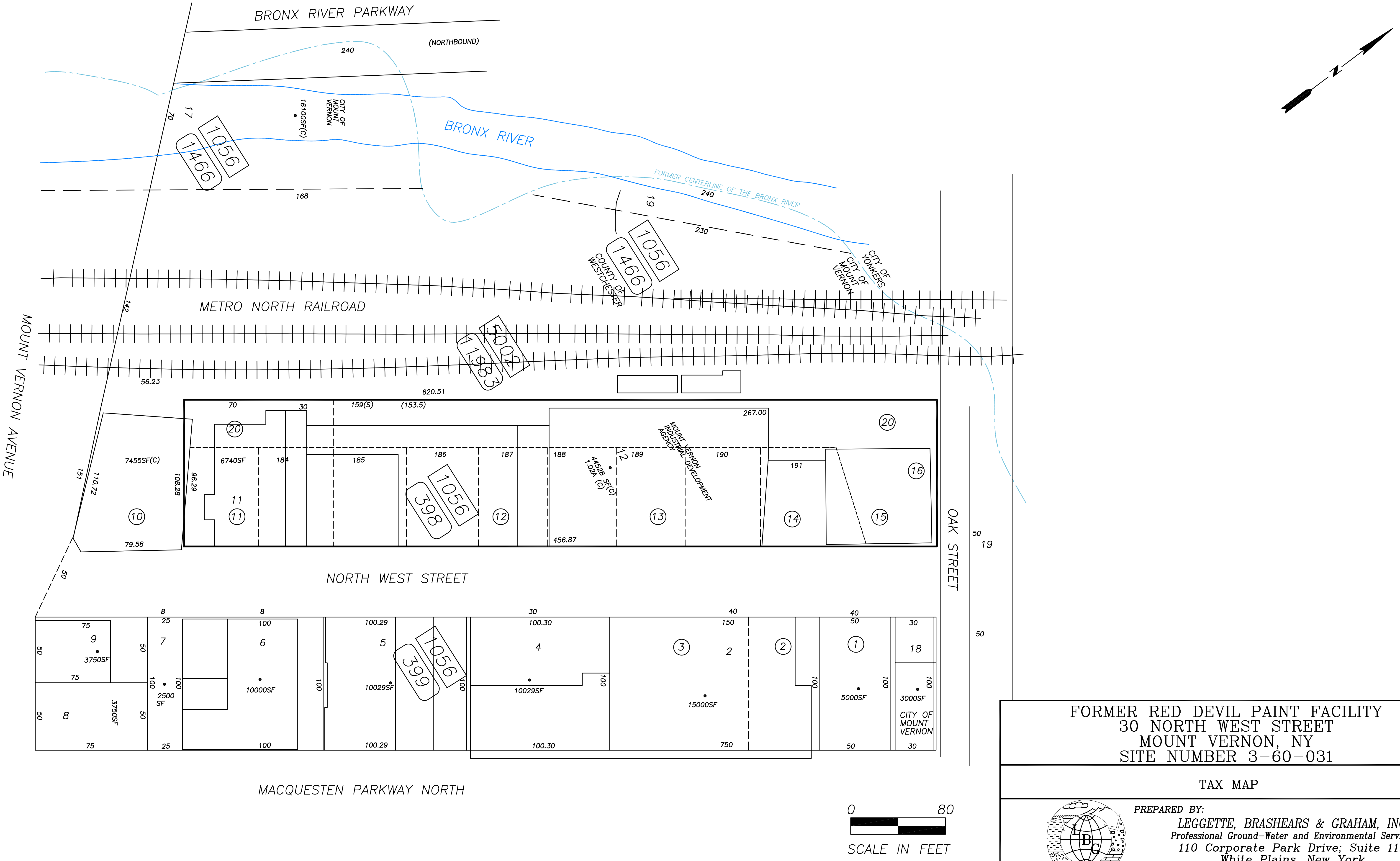
DRAWN: JM **CHECKED:** SG **DATE:** 12/30/08 **FIGURE:** 2



FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NY
SITE NUMBER 3-60-031

TAX MAP

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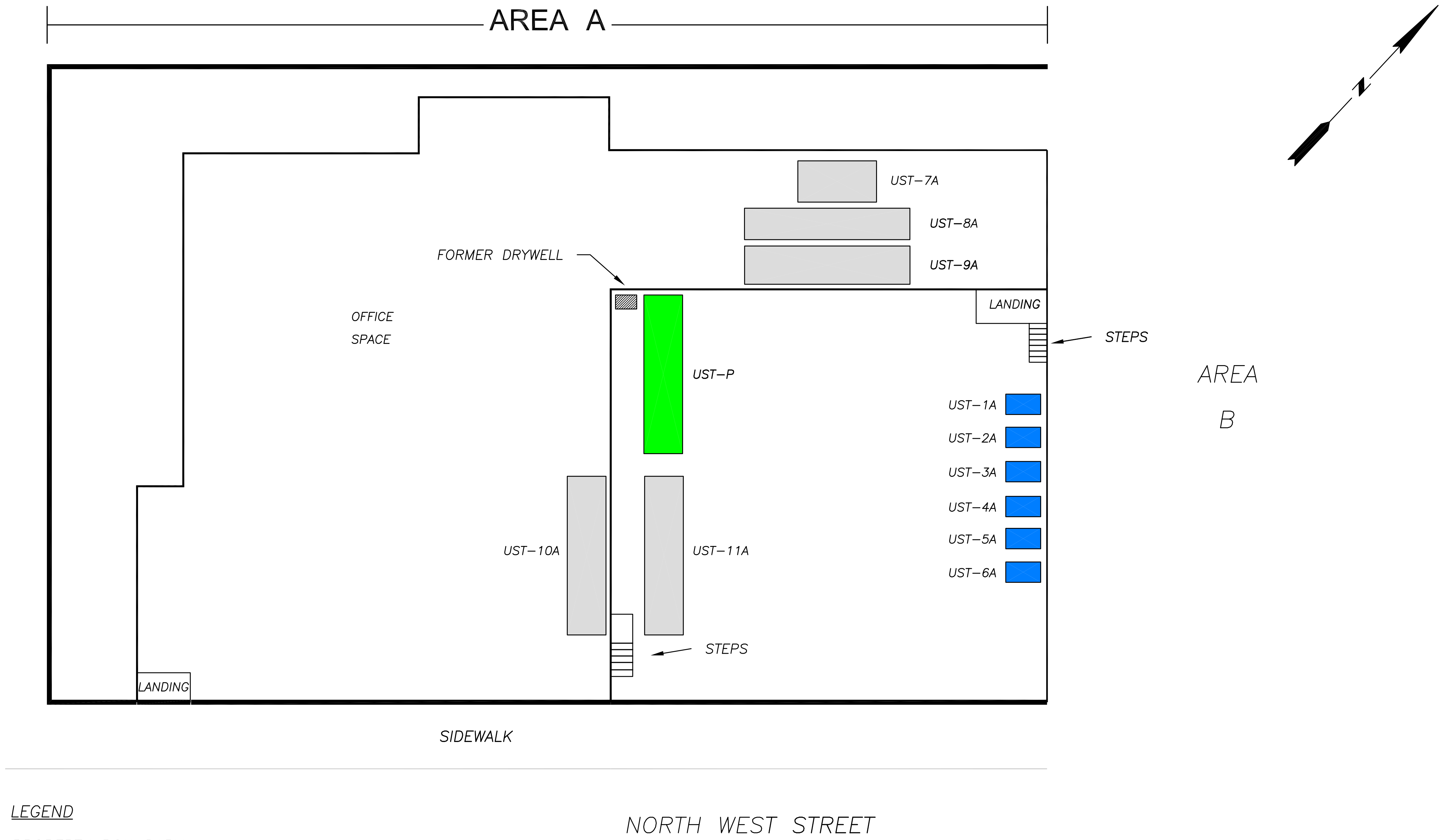
DATE: 11/04/05

FILE: reddevil\fig3 *DRAWN BY: JAM* *CHECKED BY: SG* *FIGURE: 3*



LEGEND

▬	PROPERTY BOUNDARY
▭	UST REMOVED BEFORE ERM AND LBG
🟦	UST REMOVED BY ERM
🟩	UST REMOVED BY LBG

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SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MT. VERNON, NY
SITE NUMBER 3-60-03

AREA A – UST LOCATION MAP

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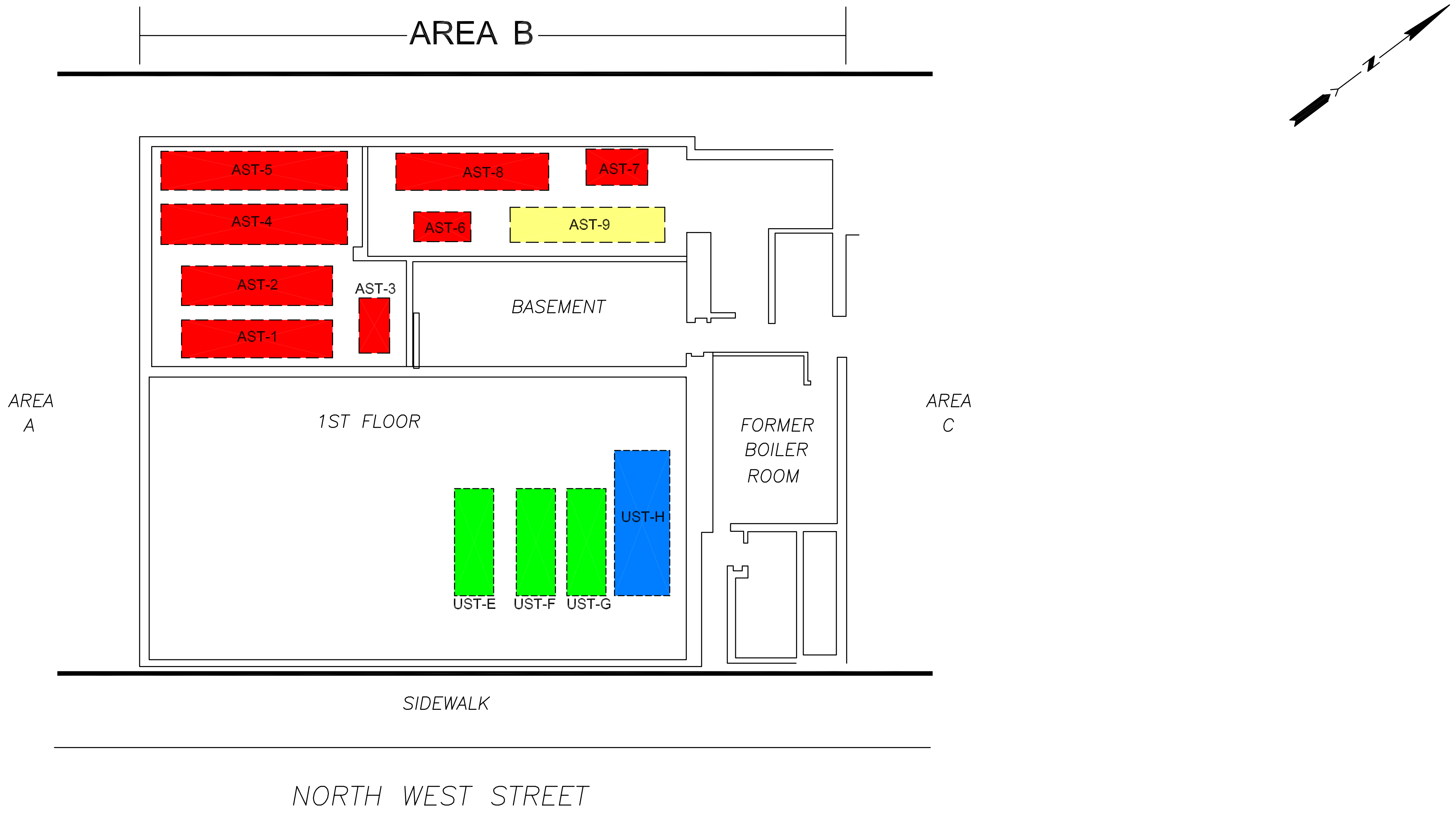
			DATE: 11/14/08
FILE: Area A-UST locations	DRAWN BY: JAM	CHECKED BY: SG	FIGURE: 4



LEGEND

━	PROPERTY BOUNDARY
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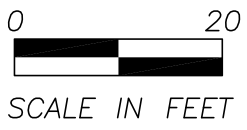
🟨	AST REMOVED BY LBG
🟩	UST REMOVED BY LBG
🟦	UST REMOVED BY ERM



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FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NY
SITE NUMBER 3-60-031

AREA B –
UST AND AST LOCATION MAP

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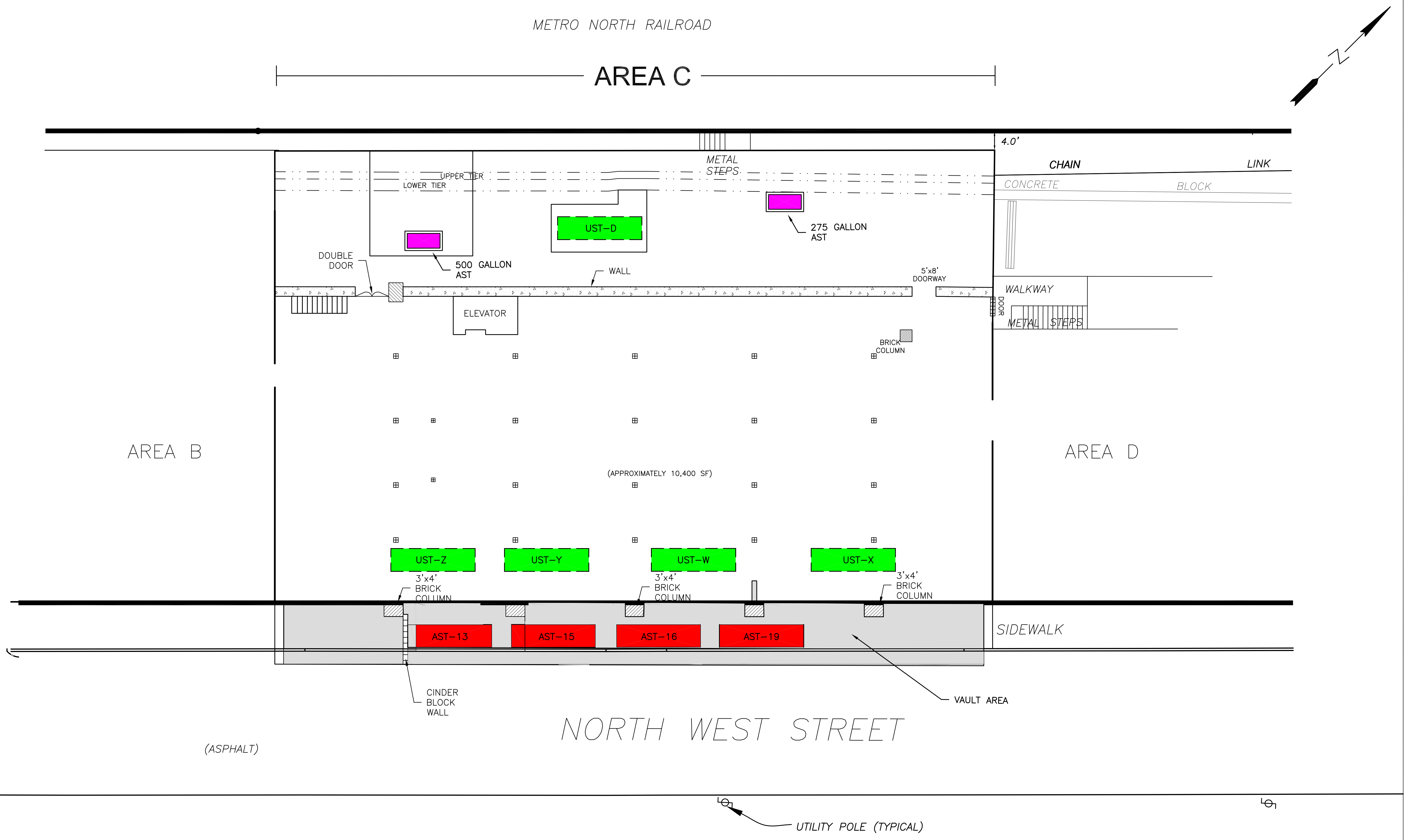
newArea b-UST&AST
DRAWN BY: JAM
CHECKED BY: SG
DATE: 11/24/08
FIGURE: 5



LEGEND

───	PROPERTY BOUNDARY
⊞	BASEMENT PILLAR SUPPORT
🟩	UST REMOVED BY LBG
🟥	AST REMOVED BY ERM
🟪	EXISTING AST WITH SECONDARY CONTAINMENT (REMEDIAL DERIVED WASTE STORAGE

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FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

AREA C – UST & AST LOCATION MAP

DATE	REVISED

PREPARED BY:

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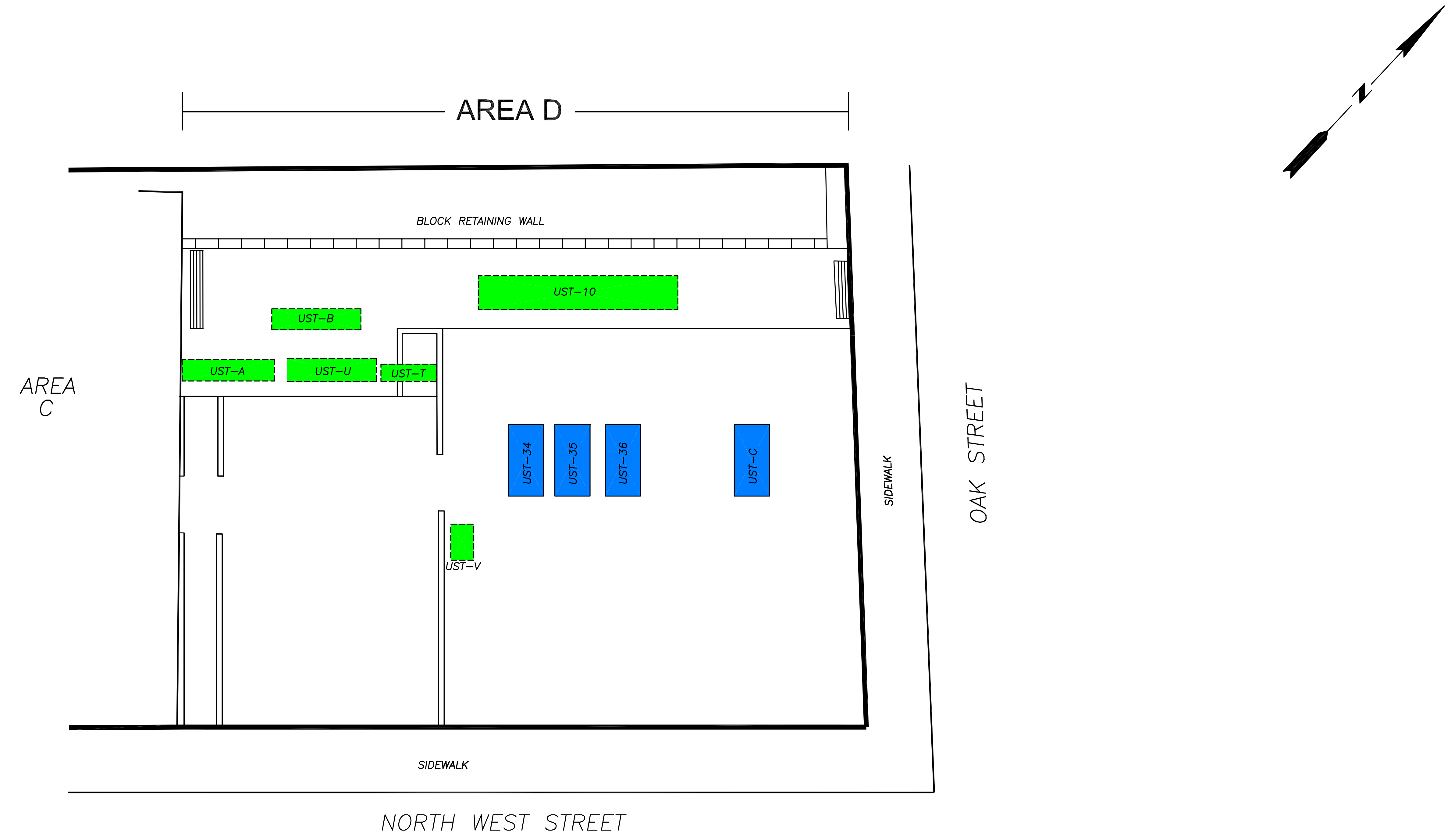
DRAWN: JM | CHECKED: SG | DATE: 12/31/08 | FIGURE: 6



LEGEND

▬ PROPERTY BOUNDARY

🟩 UST REMOVED BY LBG

🟦 UST REMOVED BY ERM

▤ CATCH BASIN

0 20
SCALE IN FEET

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30 NORTH WEST STREET
MT. VERNON, NY
SITE NUMBER 3-60-03

AREA D – UST LOCATION MAP

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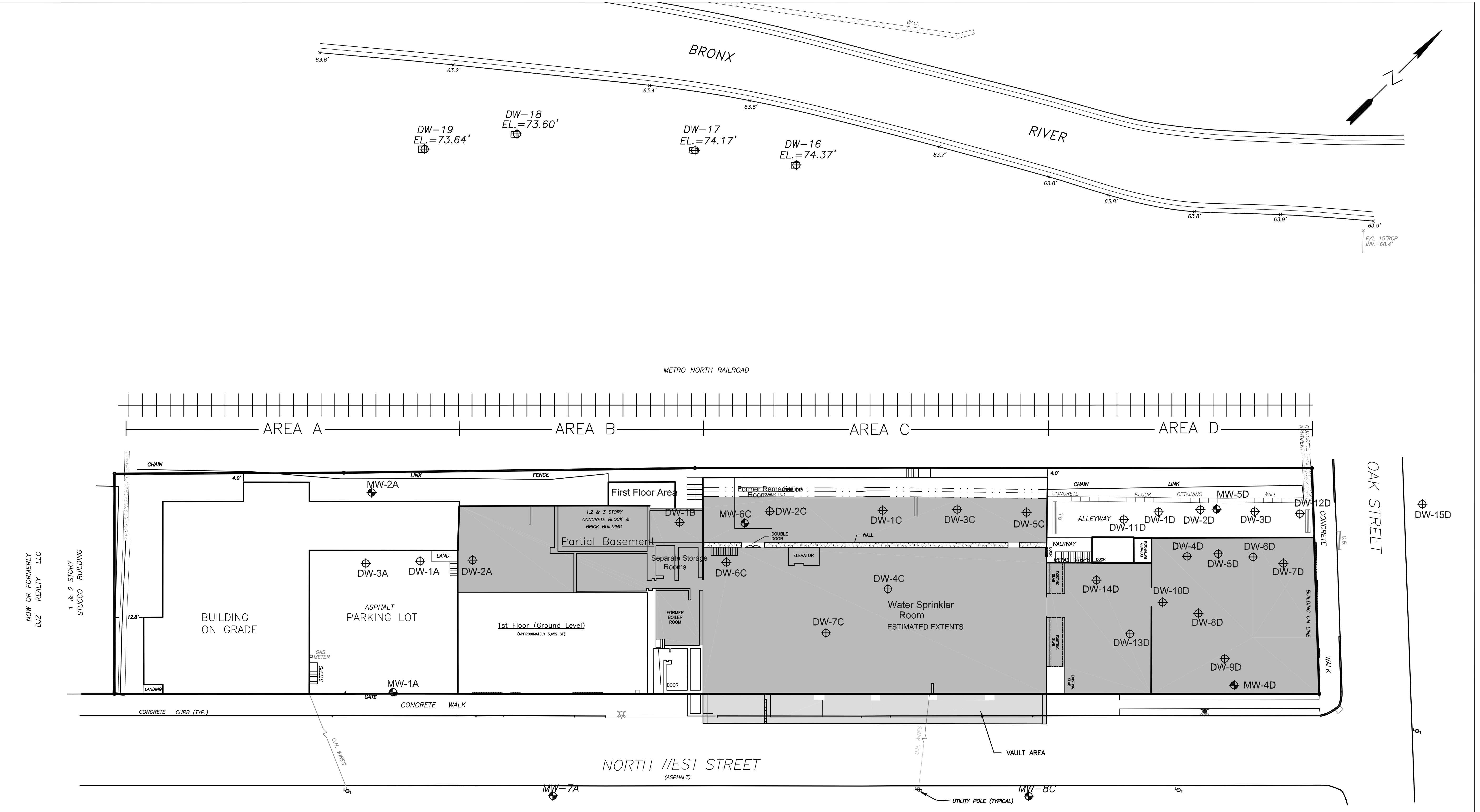
FILE: Area D-UST locations	DRAWN BY: JAM	CHECKED BY: SG	DATE: 11/14/08 FIGURE: 7



LEGEND

▬	PROPERTY BOUNDARY
⊕	GROUND WATER MONITOR WELL LOCATION (INSTALLED PRIOR TO LBG)
⊕	PRODUCT DELINEATION WELL LOCATION (INSTALLED PRIOR TO LBG)

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SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

WELL LOCATION MAP – 2005

DATE	REVISED

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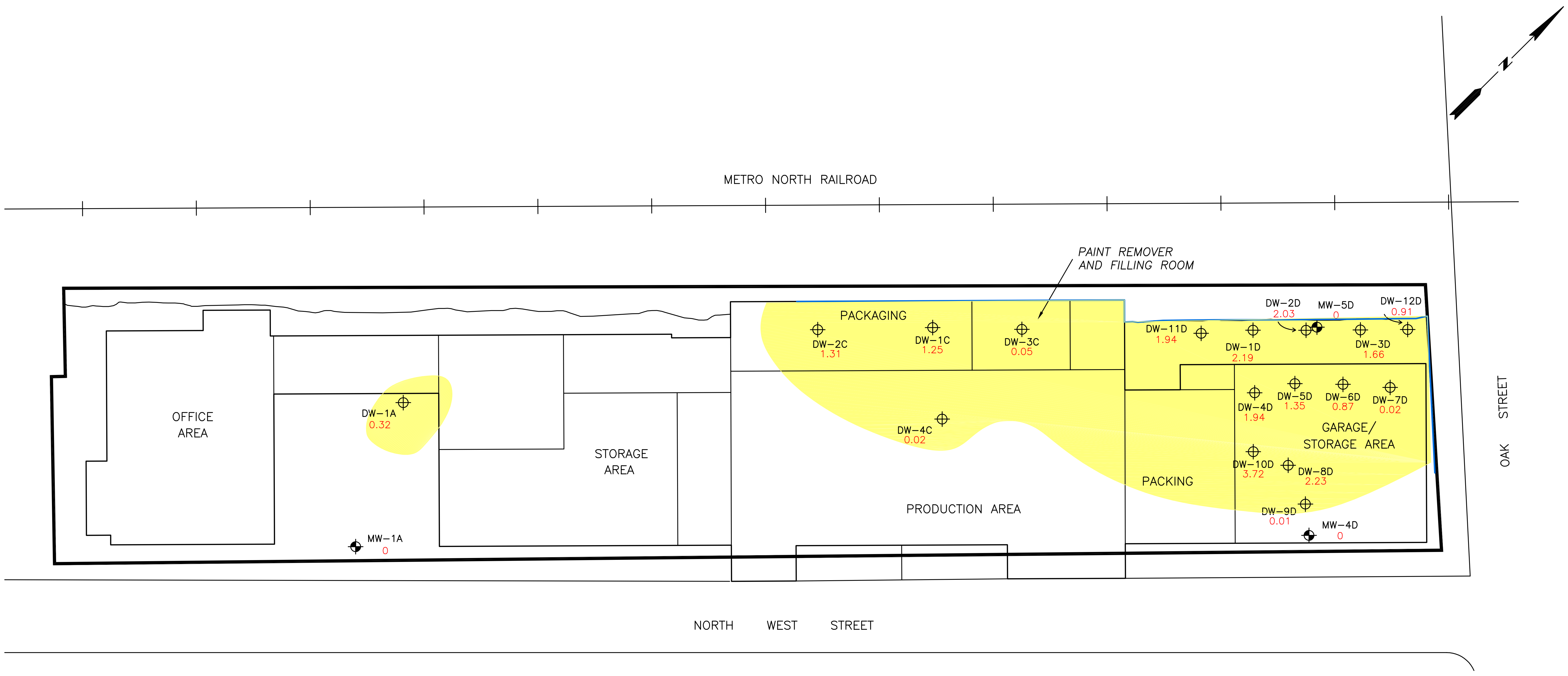
DRAWN: JM | CHECKED: SG | DATE: 12/30/08 | FIGURE: 8



LEGEND

▬	PROPERTY BOUNDARY
⊕	MONITOR WELL
⊕	NAPL DELINEATION WELL
0.05	FREE–PHASE PRODUCT THICKNESS
●	EXTENT OF FREE–PHASE PRODUCT

0 40
SCALE IN FEET

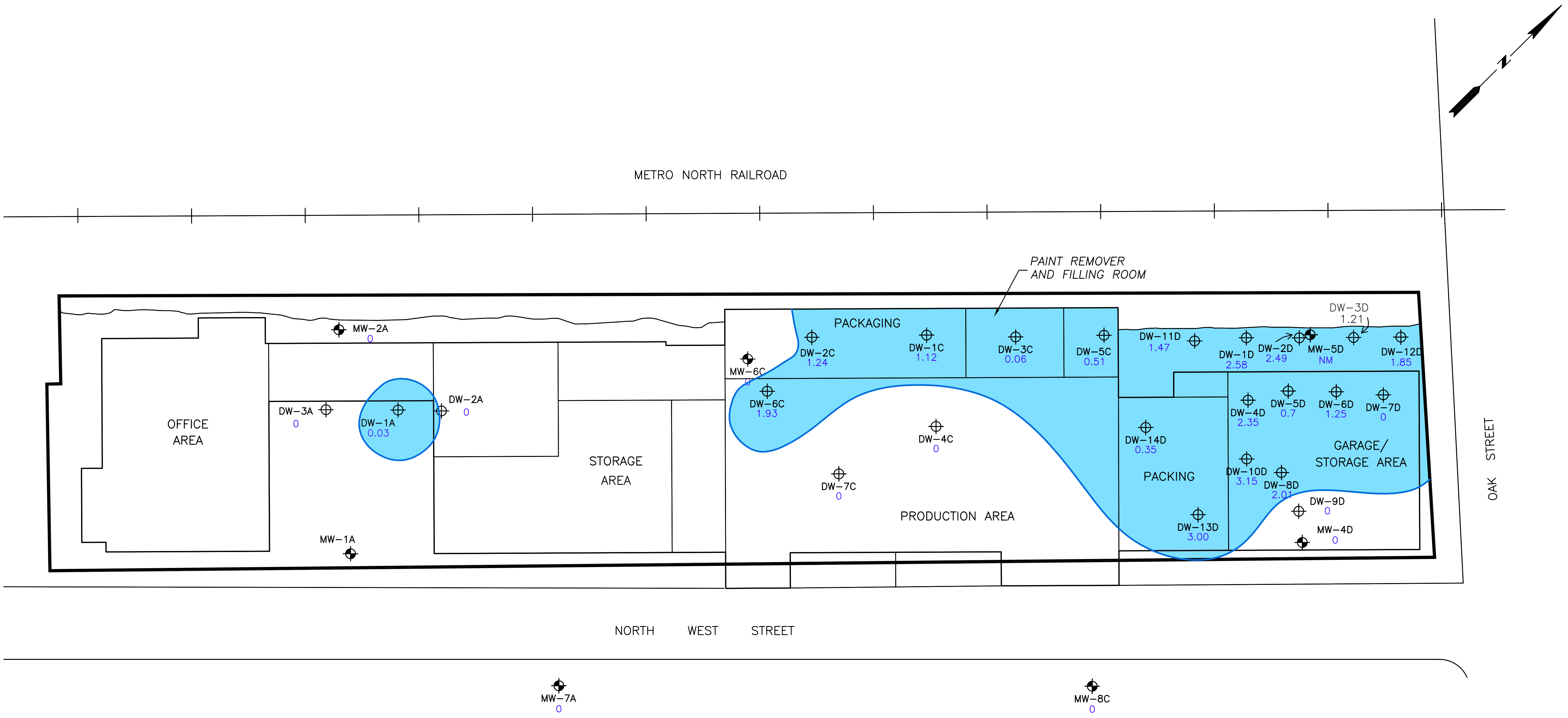
NOTES: BASED ON ERM FLUID LEVEL MEASUREMENTS – 1992
BASE MAP SOURCE IS ERM–NORTHEAST JOB # 488.004.6, PLATE 1

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NY
SITE NUMBER 3–60–031

APPROXIMATE EXTENT OF FREE PRODUCT AND
PRODUCT THICKNESS MEASUREMENTS (1992)

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground–Water and Environmental Services
110 Corporate Park Drive; Suite 112
White Plains, New York
(914) 694–5711

			DATE: 12/1/08
fig9–approx free product1992	DRAWN BY: JAM	CHECKED BY: SG	FIGURE: 9



LEGEND

▬	*PROPERTY BOUNDARY*
⊕	*MONITOR WELL*
⊕	*NAPL DELINEATION WELL*
0.05	*FREE–PHASE PRODUCT THICKNESS*
●	*EXTENT OF FREE–PHASE PRODUCT*

0 40

SCALE IN FEET

NOTES: BASED ON ERM FLUID LEVEL MEASUREMENTS – 1993
BASE MAP SOURCE IS ERM–NORTHEAST JOB # 488.004.6, PLATE 1

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NY
SITE NUMBER 3–60–031

APPROXIMATE EXTENT OF FREE PRODUCT AND PRODUCT THICKNESS MEASUREMENTS (1993)

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground–Water and Environmental Services
110 Corporate Park Drive; Suite 112
White Plains, New York
(914) 694–5711

DATE: 11/02/05
FILE: red devil\fig10
DRAWN BY: JAM
CHECKED BY: SG
FIGURE: 10

LEGEND

▬	PROPERTY BOUNDARY
■	FLOOR DRAIN–CONCRETE LINED
☐	SUMP–SOIL BOTTOM
- - - - -	FLOOR DRAIN PIPING
⊢ - - - - -	PIPE TERMINATION POINT
▥	SUMP CONCRETE LINED
⊛	SUBSURFACE ANOMALY (SUSPECTED TANK)

0 40

SCALE IN FEET

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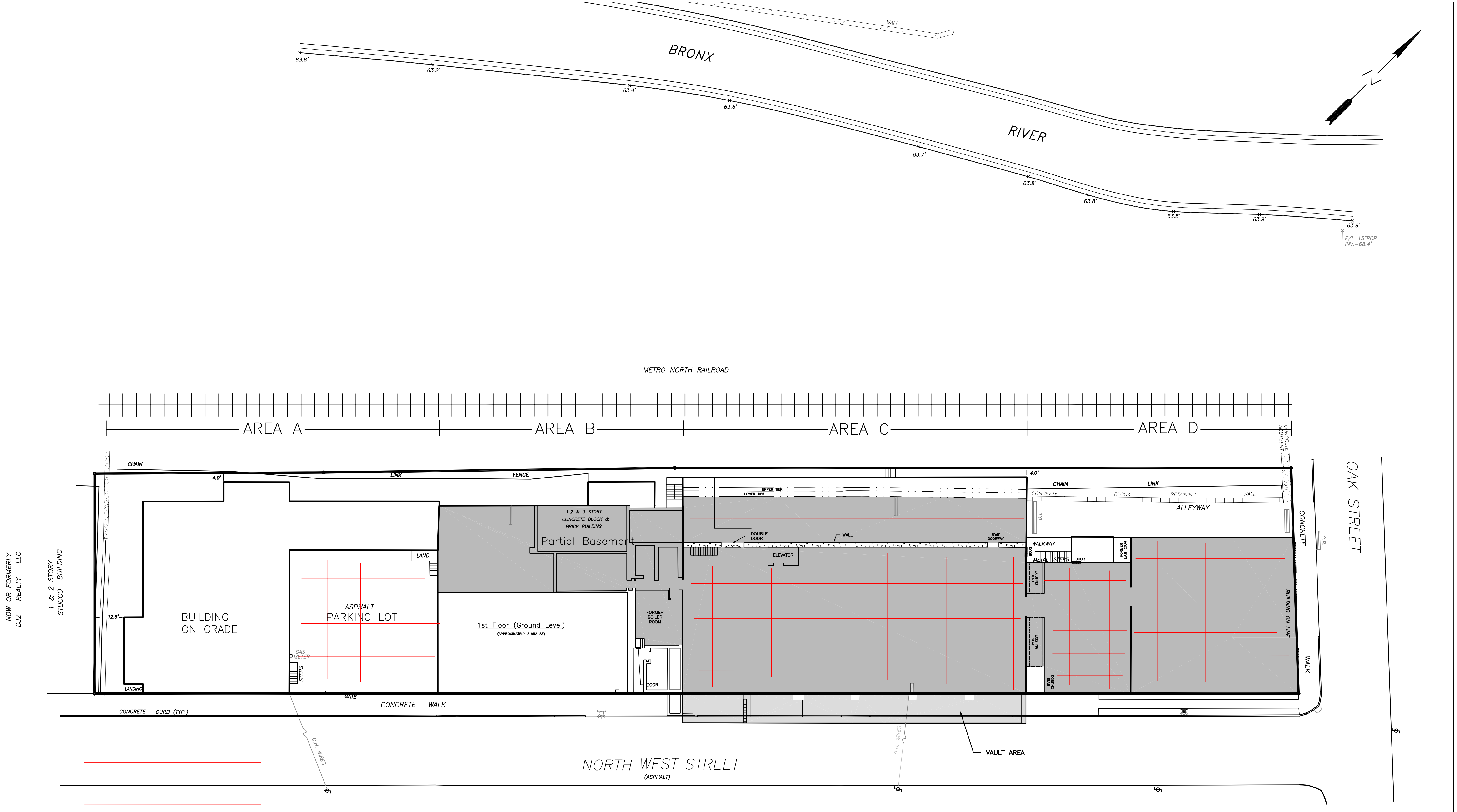
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

SUBSURFACE CONDUCTIVE TRACING MAP

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM	CHECKED: SG	DATE: 1/16/09	FIGURE: 11



LEGEND

━━ PROPERTY BOUNDARY

── GROUND PENETRATING RADAR BISECT

NOTE: NO SUBSURFACE ANOMALIES DETECTED WITH GPR.
SIGNIFICANT INTERFERENCE OBSERVED DUE TO STEEL REBAR, CONCRETE AND ROCKS.

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0 40
SCALE IN FEET

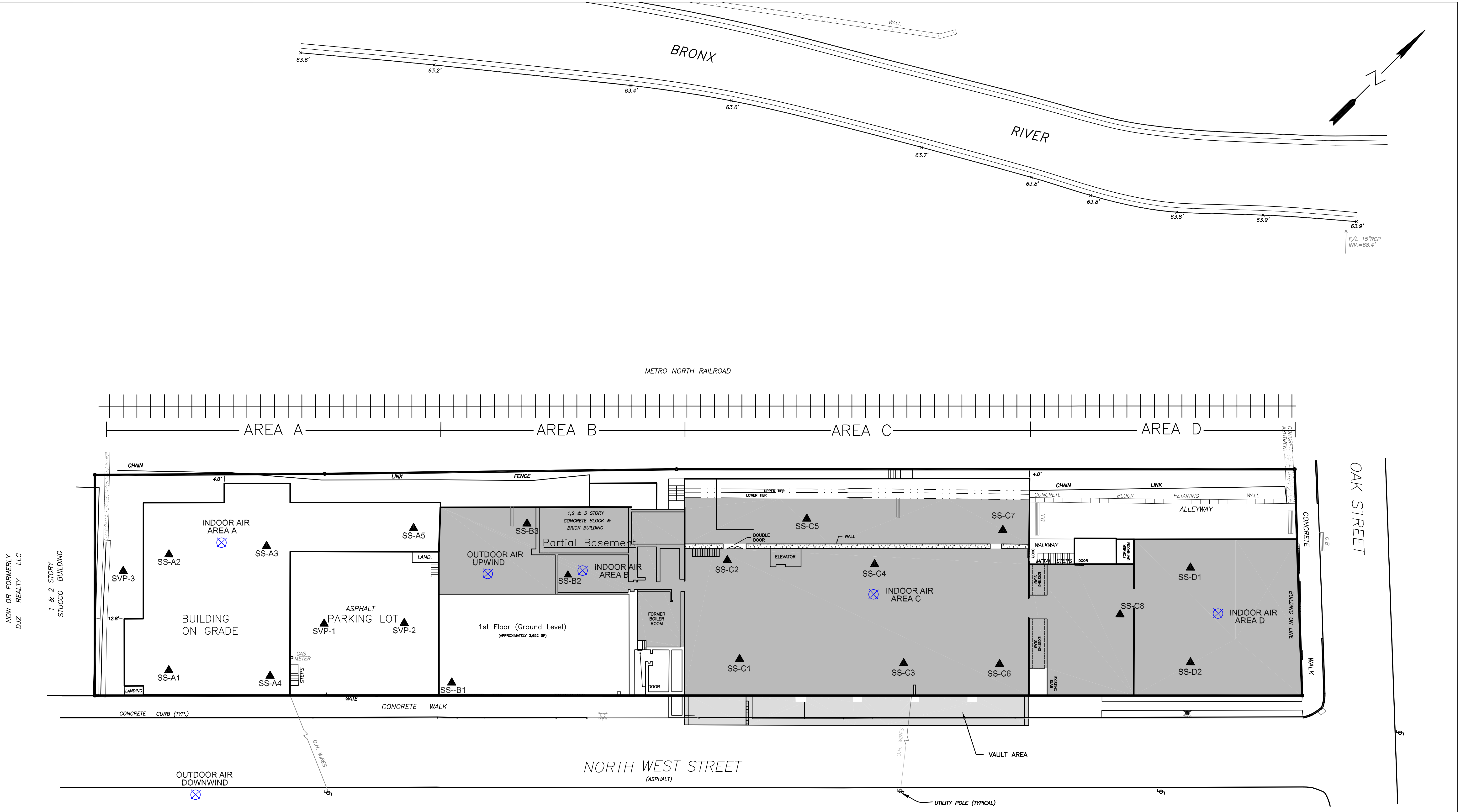
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

GROUND PENETRATING RADAR MAP
BISECTS AND POTENTIAL ANOMALIES

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM	CHECKED: SG	DATE: 12/30/08	FIGURE: 12



LEGEND

━ PROPERTY BOUNDARY

▲ SUB–SLAB/SOIL VAPOR SAMPLING POINT

⊗ INDOOR/OUTDOOR AMBIENT AIR SAMPLING LOCATION

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0 40
SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

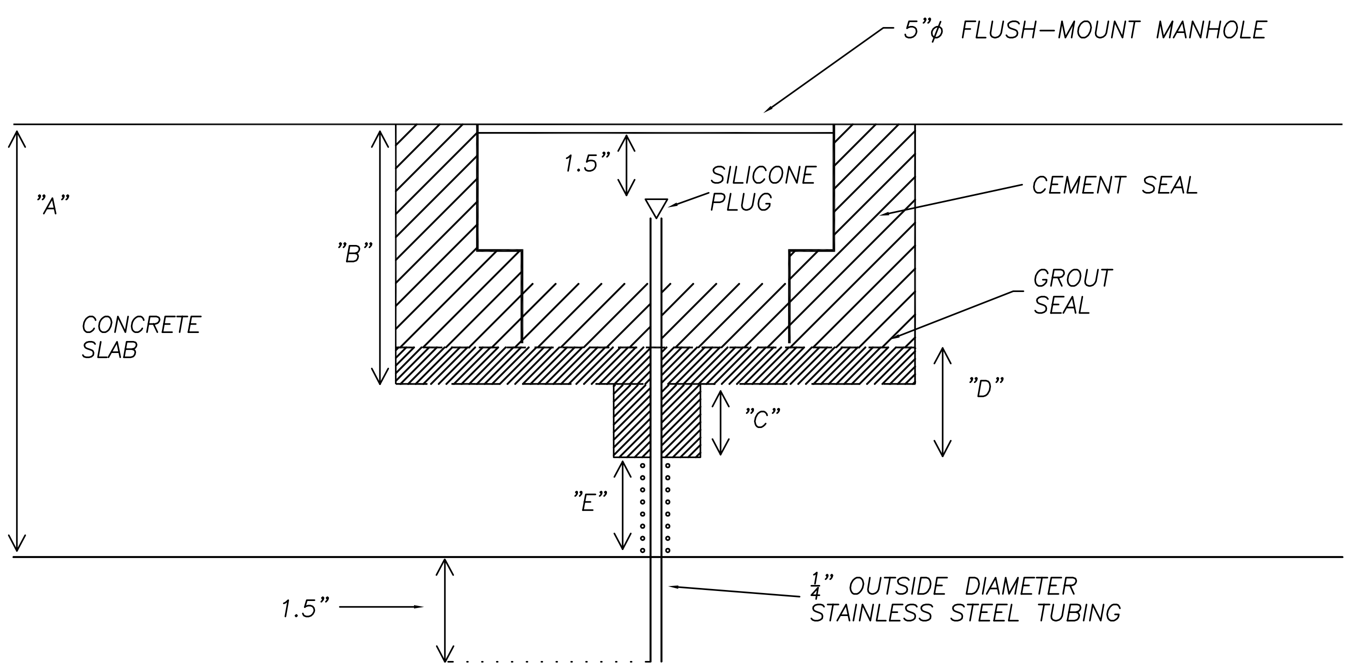
SOIL VAPOR INTRUSION SAMPLING MAP
OCTOBER 2006, MARCH 2007 AND OCTOBER 2009

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM
CHECKED: SG
DATE: 1/16/09
FIGURE: 13

AUGUST 2006



LOCATION	A	B	C	D	E
SS–A1	9"	4"	1.5"	3/4"	3 1/2"
SS–A2	9"	4"	1.5"	3/4"	3 1/2"
SS–A3	9"	4"	2"	3/4"	3"
SS–A4	9"	5"	2.5"	3/4"	1 1/2"
SS–A5	10"	4"	3"	3/4"	3"
SS–B1	9.5"	4"	2"	3/4"	3 1/2"
SS–B2	10"	2 3/4"	3"	3/4"	4 1/4"
SS–B3	12"	3"	3"	3/4"	6"
SS–C1	10"	2 3/4"	3"	3/4"	4 1/4"
SS–C2	10"	3"	3"	3 3/4"	4"
SS–C3	12"	2 1/2"	3"	3/4"	6 1/2"
SS–C4	9 1/2"	3 1/2"	2"	3/4"	4"
SS–C5	9"	3"	3"	3/4"	3"
SS–C6	12"	3"	4"	3/4"	5"
SS–C7	11 1/2"	4"	3"	3/4"	4.5"
SS–C8	5 1/2"	5 1/2"	–	GROUT POLY SAND	–
SS–D1	6"	3"	NA	3/4"	3"
SS–D2	6"	3"	NA	3/4"	3"

LEGEND

A – CONCRETE SLAB THICKNESS

B – THICKNESS OF 6" CORE

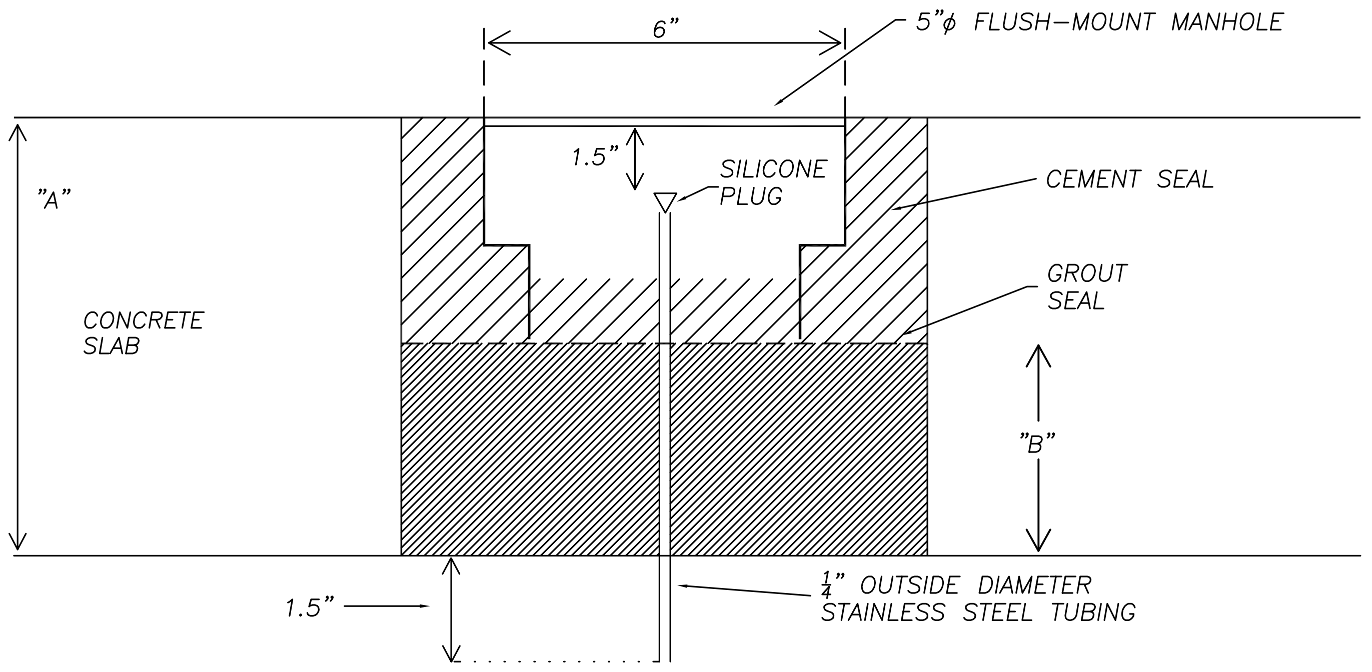
C – THICKNESS OF 1" CORE

D – GROUT SEAL THICKNESS

E – DISTANCE FROM BOTTOM OF 1" CORE TO BOTTOM OF SLAB

NOT TO SCALE

MARCH 2008



LOCATION	A	B
SS–RC–1	4–6"	1.5"
SS–RC–2	4–6"	1.5"
SS–RC–3	4–6"	1.5"
SS–RC–4	4–6"	1.5"
SS–RC–6	4–6"	1.5"
SS–RC–8	4–6"	1.5"
SS–RD–1	4–6"	1.5"

LEGEND

A – CONCRETE SLAB THICKNESS

B – GROUT SEAL THICKNESS

NOT TO SCALE

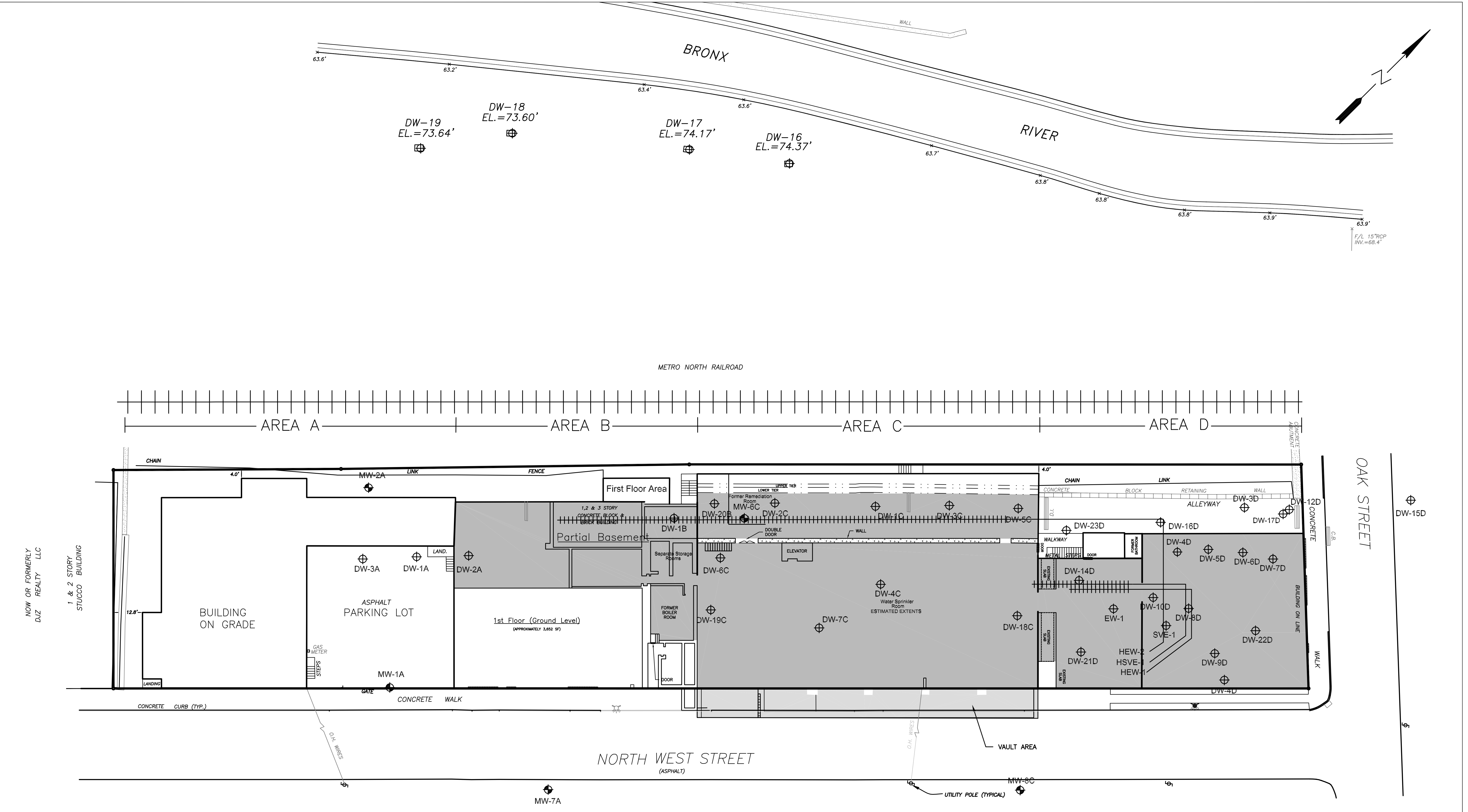
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MT. VERNON, NY
SITE NUMBER 3–60–03

SUB–SLAB SOIL VAPOR SAMPLING POINT
CONSTRUCTION DETAILS (2006 & 2008)

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground–Water and Environmental Services
110 Corporate Park Drive; Suite 112
White Plains, New York
(914) 694–5711

DATE: 1/9/09

FILE: reddevil\fig 4
DRAWN BY: JAM
CHECKED BY: BH
FIGURE: 14



LEGEND

PROPERTY BOUNDARY

⊕ GROUND WATER MONITOR WELL LOCATION

⊕ PRODUCT DELINEATION WELL LOCATION

┼┼┼┼┼┼┼┼┼┼┼ HORIZONTAL WELL

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0 40
SCALE IN FEET

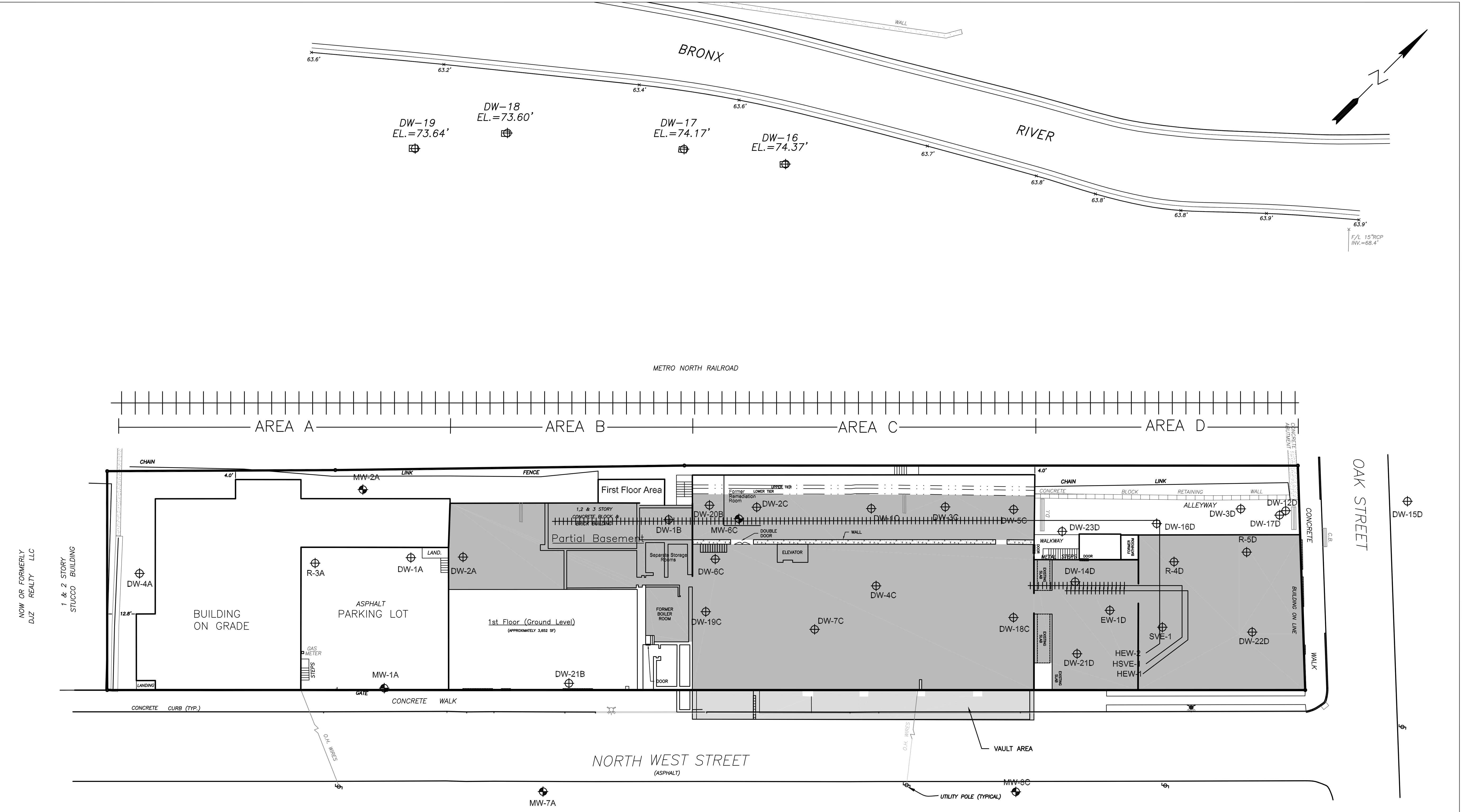
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

WELL LOCATION MAP – 2007

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM | CHECKED: SG | DATE: 12/30/08 | FIGURE: 15



LEGEND

PROPERTY BOUNDARY

⊕ GROUND WATER MONITOR WELL LOCATION

⊕ PRODUCT DELINEATION WELL LOCATION

┼┼┼┼┼┼┼┼ HORIZONTAL WELL

NOTES: BASE MAP SOURCE IS ERM-NORTHEAST
JOB # 488.004.6, PLATE 1
R-3A, R-4D AND R-5D ARE REPLACEMENT WELLS

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0 40
SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

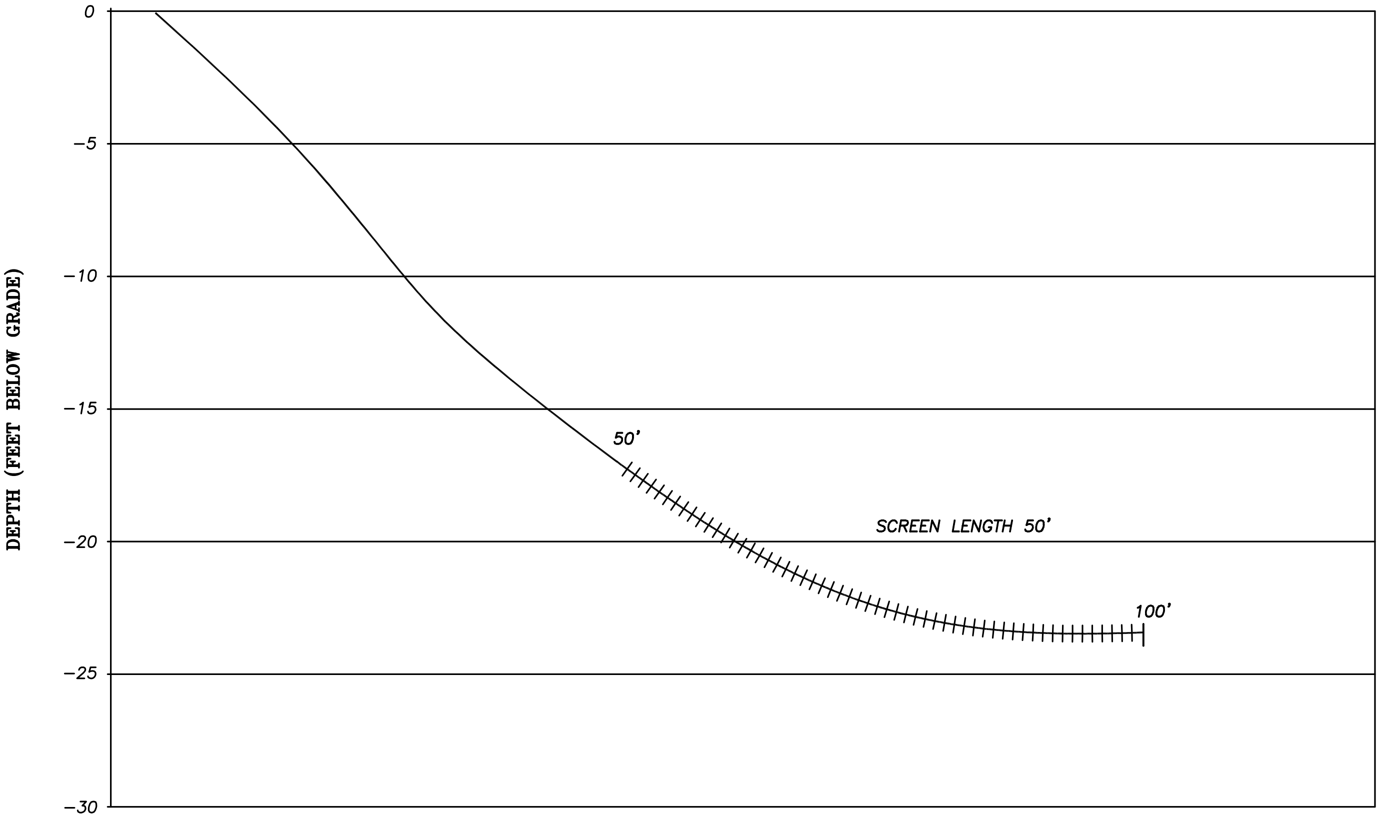
WELL LOCATION MAP – 2008

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM | CHECKED: SG | DATE: 12/30/08 | FIGURE: 16

HORIZONTAL EXTRACTION WELL HEW-1 PROFILE



WELL HEW-1

TOTAL LENGTH – 100 LINEAR FEET

SCREEN INTERVAL – 50–100 FEET

RISER INTERVAL – 0–50 FEET

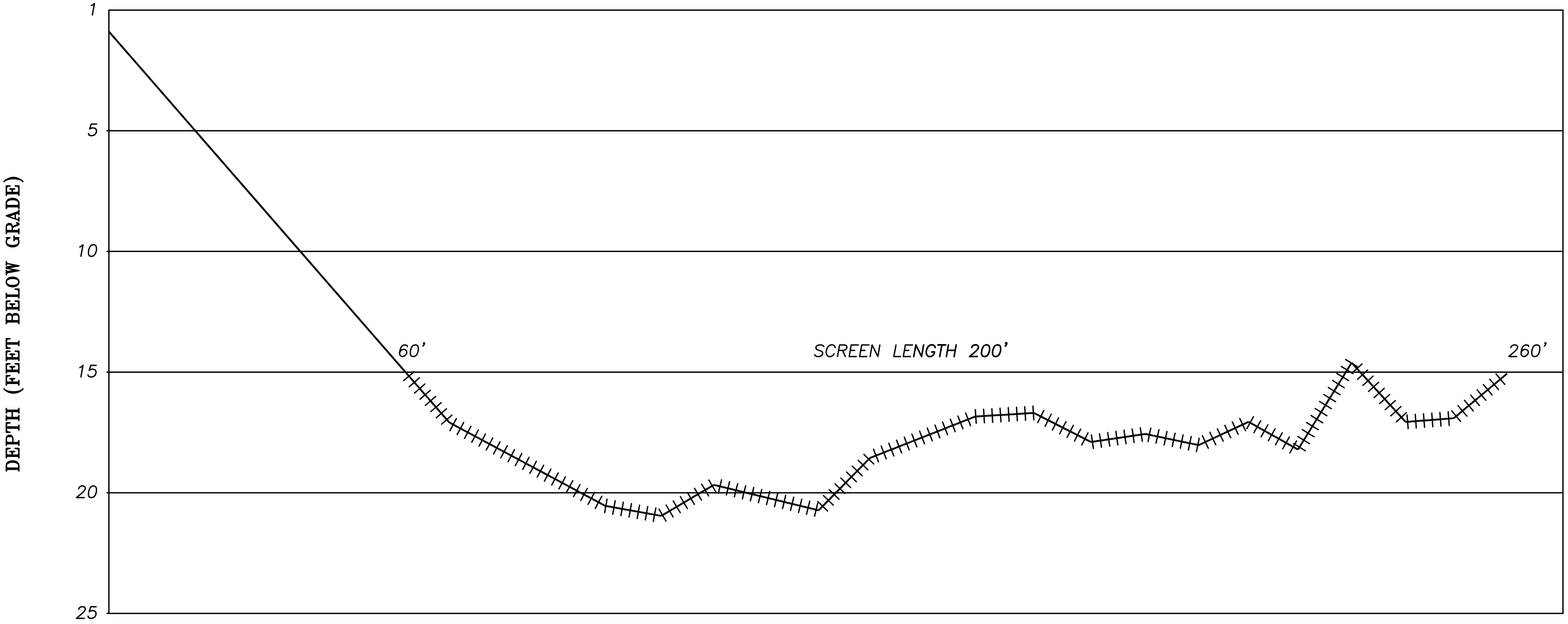
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MT. VERNON, NY
SITE NUMBER 3-60-03

HORIZONTAL EXTRACTION WELL HEW-1 PROFILE

PREPARED BY: *LEGGETTE, BRASHEARS & GRAHAM, INC.*
Professional Ground-Water and Environmental Services
110 Corporate Park Drive, Suite 112
White Plains, NY 10604
(914) 694-5711

			DATE: *11/12/08*
FILE: *HEW-1well profile*	***DRAWN BY:*** *JAM*	***CHECKED BY:*** *SG*	***FIGURE:*** *17*

HORIZONTAL EXTRACTION WELL HEW–2 PROFILE



LEGEND

WELL HEW–2

TOTAL LENGTH – 260 LINEAR FEET

SCREEN INTERVAL – 60–260 FEET

RISER INTERVAL – 0–60 FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MT. VERNON, NY
SITE NUMBER 3–60–03

HORIZONTAL EXTRACTION WELL HEW–2 PROFILE

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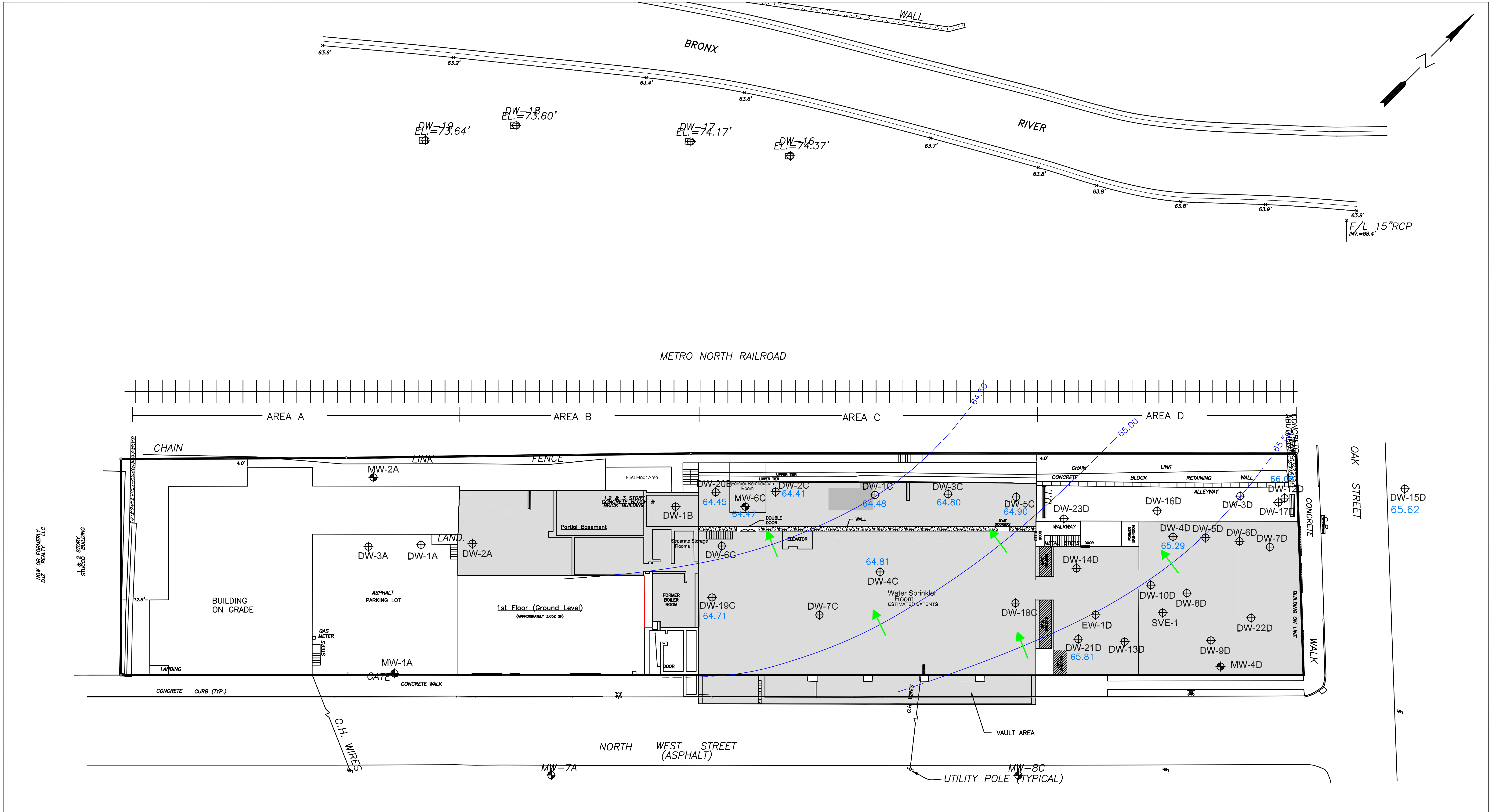
White Plains, NY 10604
(914) 694-5711

DATE: 11/12/08

FILE: HEW–2well profile | ***DRAWN BY: JAM*** | ***CHECKED BY: SG*** | ***FIGURE: 18***



LEGEND

▬	PROPERTY BOUNDARY
⊕	GROUND-WATER MONITORING WELL
⊕	NAPL DELINEATION WELL
↖	GROUND WATER ELEVATION CONTOURS WITH FLOW DIRECTION (DASHED WHERE INFERRED)

0 40
SCALE IN FEET

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FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

GROUND WATER ELEVATION CONTOUR MAP
APRIL 9, 2007 –BASELINE/STATIC

DATE	REVISED

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
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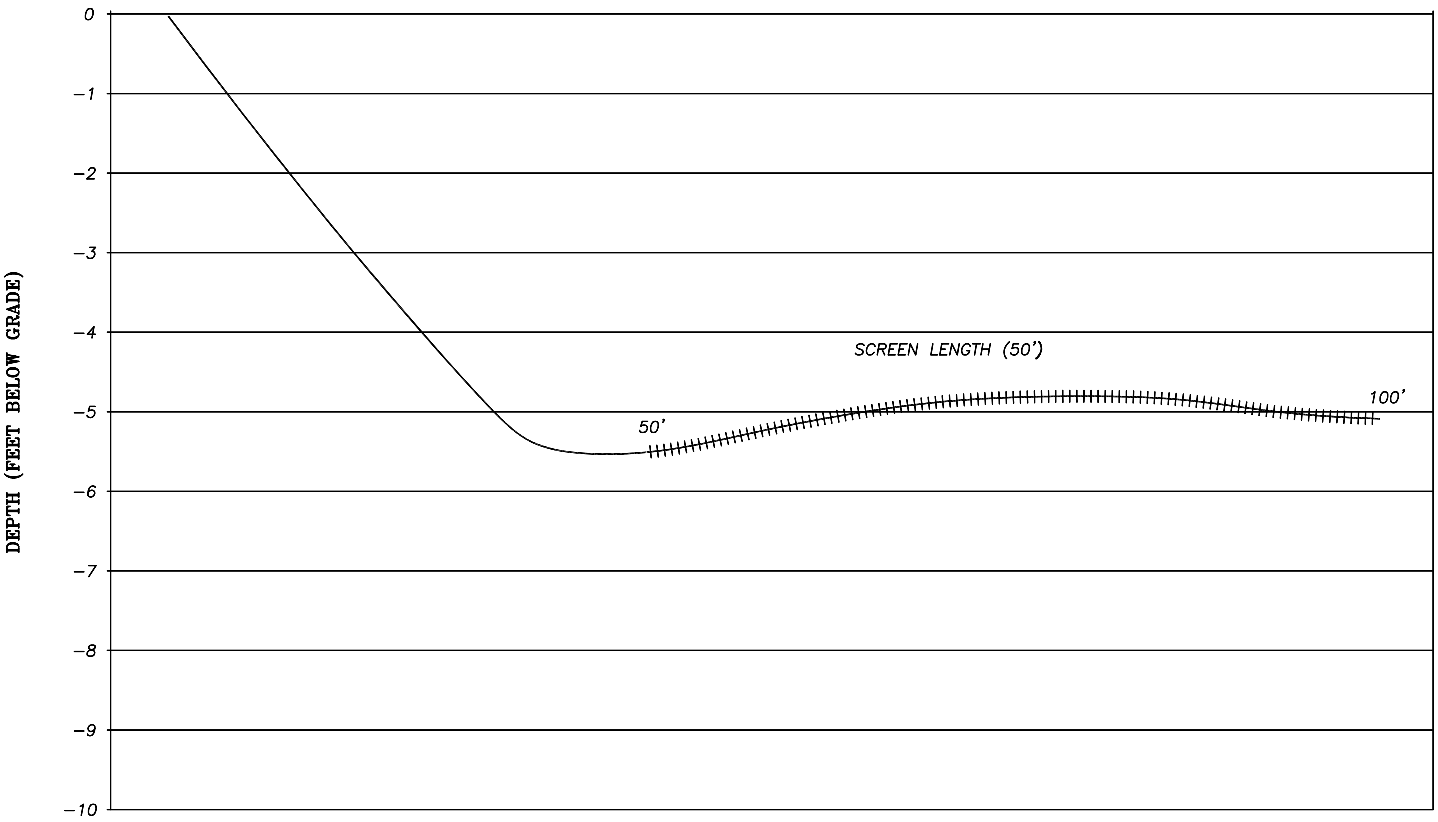
DRAWN: JM	CHECKED: SG	DATE: 12/20/08	FIGURE: 19

HORIZONTAL SOIL VAPOR EXTRACTION WELL HSVE-1 PROFILE



WELL HSVE-1

TOTAL LENGTH – 100 LINEAR FEET

SCREEN INTERVAL – 50–100 FEET

RISER INTERVAL – 0–50 FEET

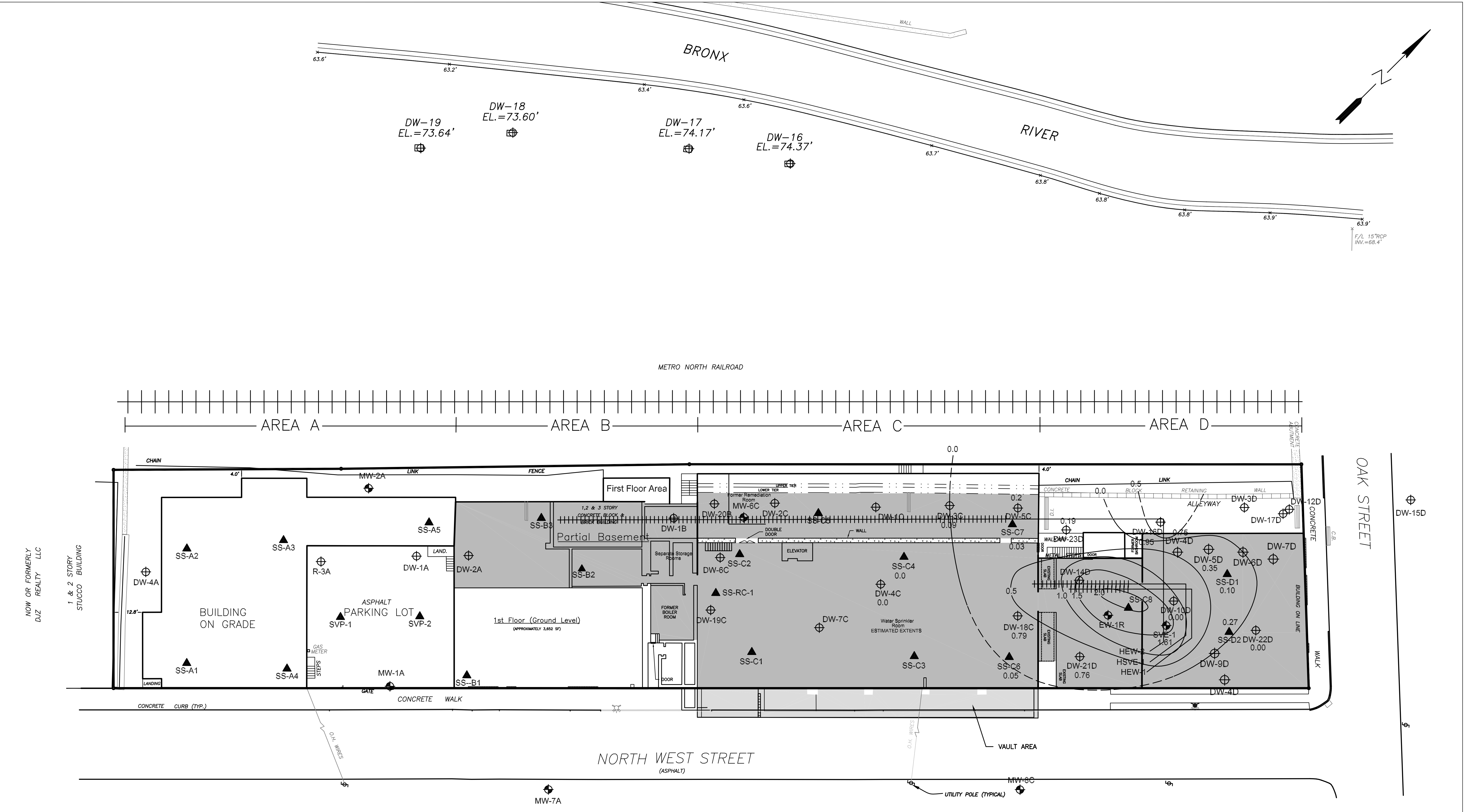
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MT. VERNON, NY
SITE NUMBER 3-60-03

HORIZONTAL SOIL VAPOR EXTRACTION WELL HSVE-1 PROFILE

PREPARED BY: *LEGGETTE, BRASHEARS & GRAHAM, INC.*
Professional Ground-Water and Environmental Services
110 Corporate Park Drive, Suite 112
White Plains, NY 10604
(914) 694-5711

DATE: 1/16/09

FILE: HSVE-1well profile	**DRAWN BY:** JAM	**CHECKED BY:** SG	**FIGURE:** 20



LEGEND

PROPERTY BOUNDARY

GROUND-WATER MONITORING WELL

NAPL DELINEATION WELL

▲ SUB-SLAB/SOIL VAPOR SAMPLING POINT

HORIZONTAL WELL (SCREENED INTERVAL DASHED)

NOTE: 2" OF Hg: VACUUM AT 392 SCFM

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0 40
SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

HSVE-1 PILOT TEST ISOPLETH MAP
MAY 8, 2007

DATE	REVISED

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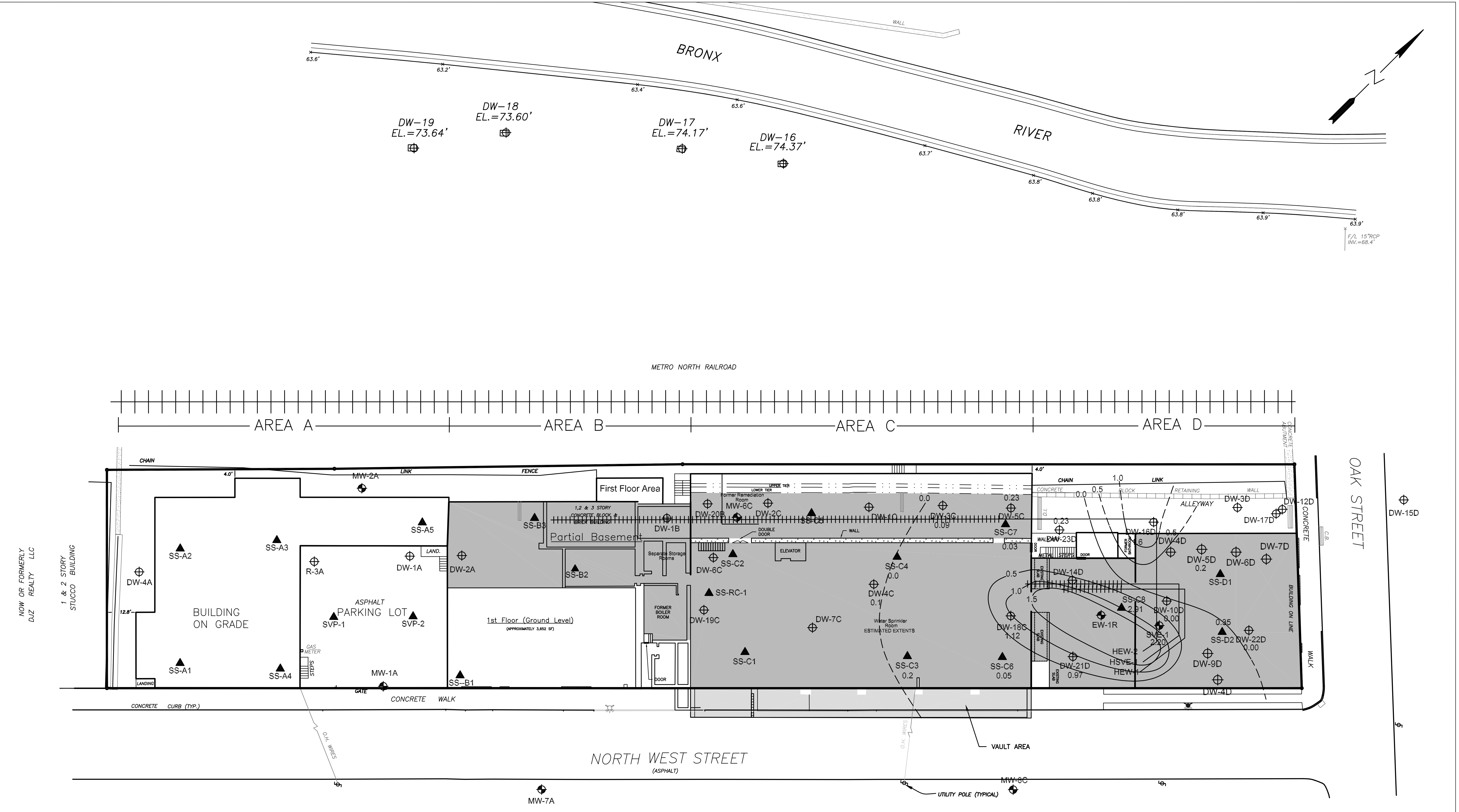
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM CHECKED: SG DATE: 1/20/09 FIGURE: 21



LEGEND

▬	PROPERTY BOUNDARY
⊕	GROUND-WATER MONITORING WELL
⊕	NAPL DELINEATION WELL
▲	SUB-SLAB/SOIL VAPOR SAMPLING POINT
┼┼┼┼┼┼┼	HORIZONTAL WELL (SCREENED INTERVAL DASHED)

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NOTE: 3" OF Hg: VACUUM AT 482 SCFM

0 40
SCALEIN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

HSVE-1 PILOT TEST ISOPLETH MAP
MAY 8, 2007

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
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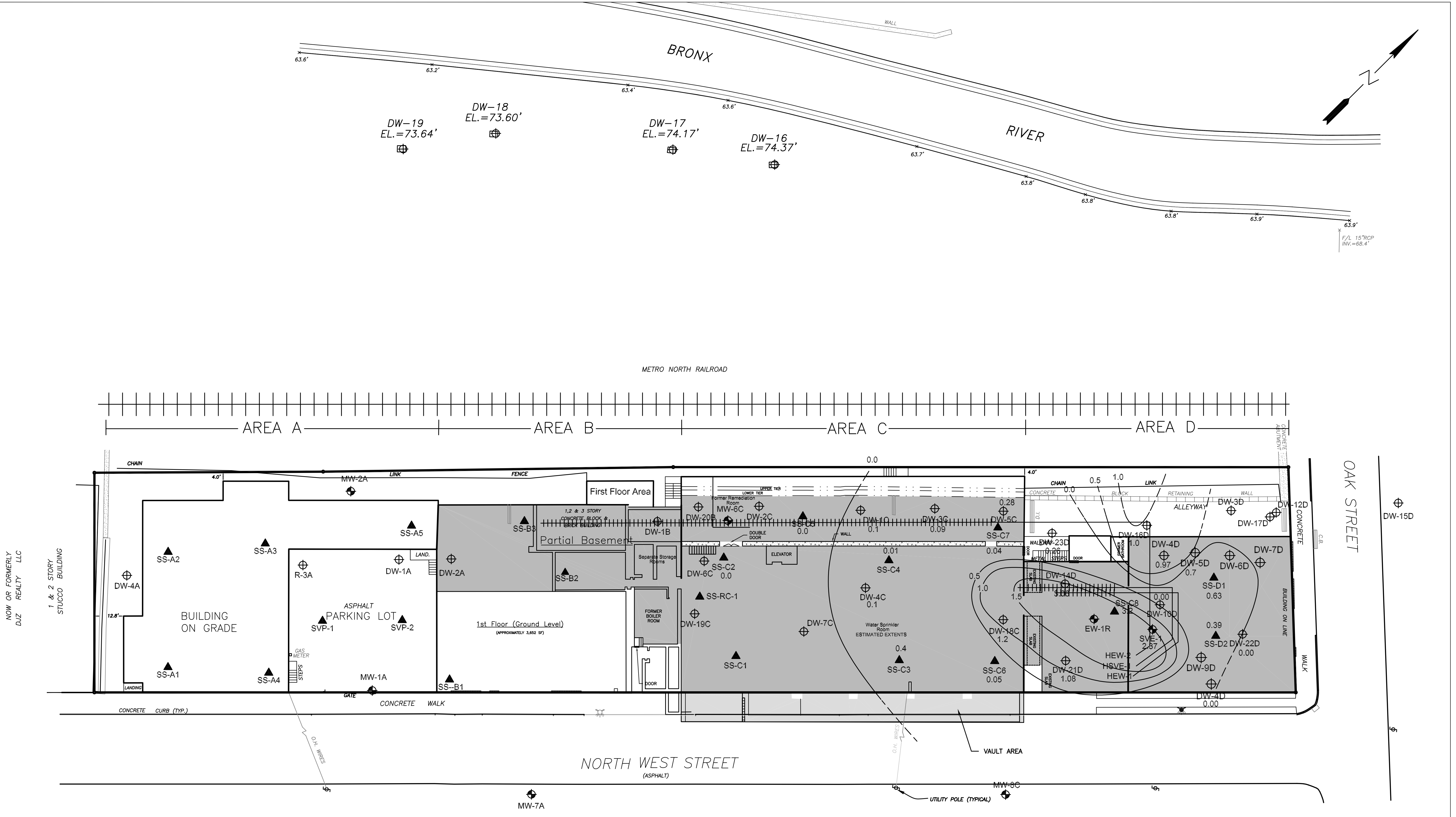
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM	CHECKED: SG	DATE: 1/20/09	FIGURE: 22



LEGEND

━━	PROPERTY BOUNDARY
⊕	GROUND-WATER MONITORING WELL
⊕	NAPL DELINEATION WELL
▲	SUB-SLAB/SOIL VAPOR SAMPLING POINT
┼┼┼┼┼┼┼┼	HORIZONTAL WELL (SCREENED INTERVAL DASHED)

NOTE: 4" OF Hg: VACUUM AT 580 SCFM

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0 40
SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

HSVE-1 PILOT TEST ISOPLETH MAP
MAY 8, 2007

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
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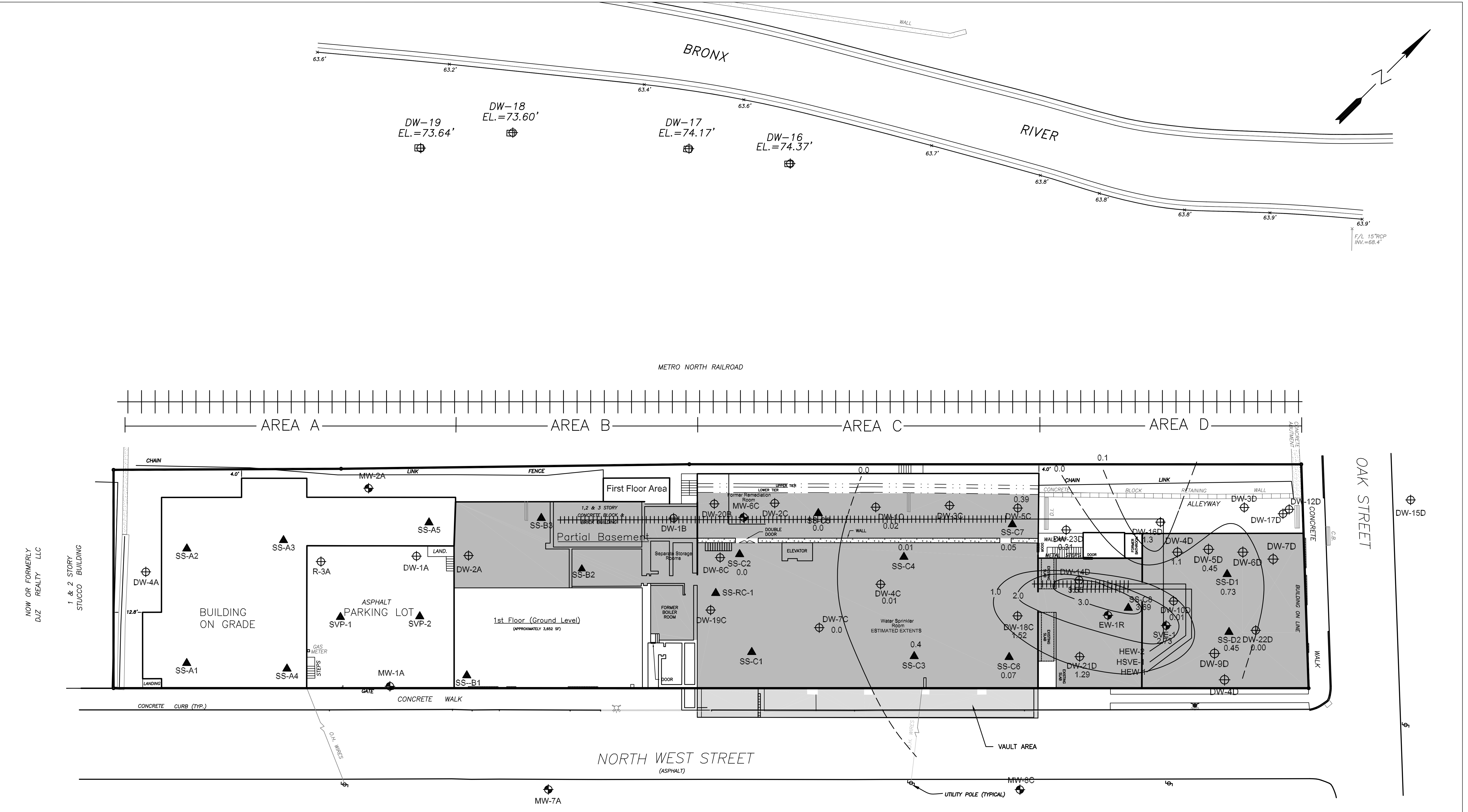
White Plains, NY 10604
(914) 694-5711

DRAWN: JM CHECKED: SG DATE: 1/20/09 FIGURE: 23



NOTE: 5" OF Hg: VACUUM AT 638 SCFM

LEGEND

PROPERTY BOUNDARY
GROUND-WATER MONITORING WELL
NAPL DELINEATION WELL
▲ SUB-SLAB/SOIL VAPOR SAMPLING POINT
HORIZONTAL WELL (SCREENED INTERVAL DASHED)

NOTE: IT IS A VIOLATION OF ARTICLE 130 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER THIS DOCUMENT IN ANY WAY WITHOUT THE EXPRESS WRITTEN VERIFICATION OR ADOPTION BY A NEW YORK STATE LICENSED LAND SURVEYOR OR ENGINEER IN ACCORDANCE WITH SECTION 7209 (2), ARTICLE 130, NEW YORK STATE EDUCATION LAW.

0 40
SCALE IN FEET

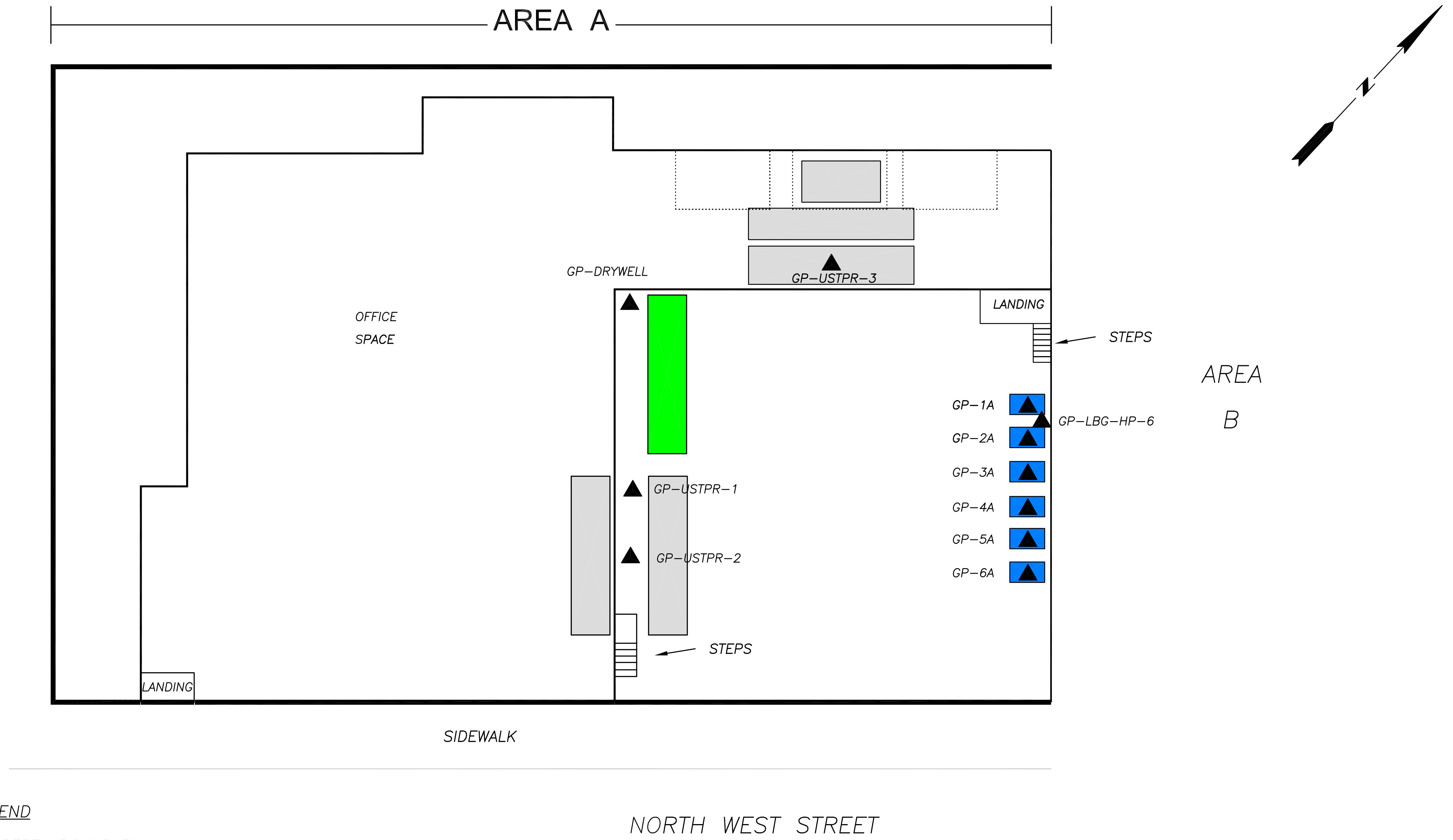
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

HSVE-1 PILOT TEST ISOPLETH MAP
MAY 8, 2007

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM | CHECKED: SG | DATE: 1/20/09 | FIGURE: 24



LEGEND

▬ PROPERTY BOUNDARY

▨ UST REMOVED BEFORE ERM AND LBG

🟦 UST REMOVED PRIOR TO LBG BY ERM

🟩 UST REMOVED BY LBG

▲ GEOPROBE SAMPLING LOCATION

⬚ STORAGE (UTILITY AND ELECTRIC)

0 20
SCALE IN FEET

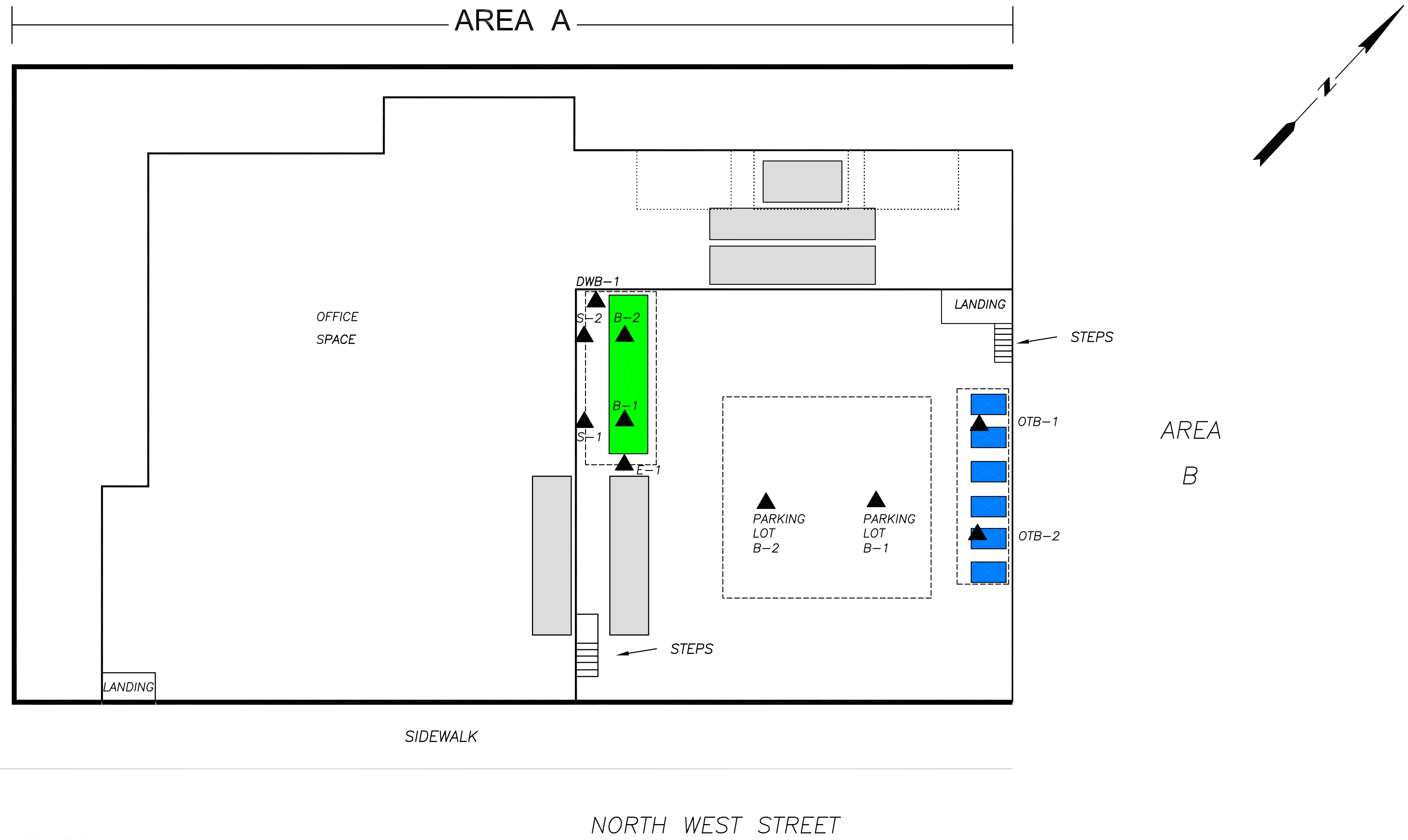
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MT. VERNON, NY
SITE NUMBER 3–60–03

UST CLOSURE CONFIRMATION GEOPROBE BORING
LOCATION MAP – AREA A, 2007

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground–Water and Environmental Services
110 Corporate Park Drive; Suite 112
White Plains, New York
(914) 694–5711

			DATE: 1/16/09
FILE: fig33–Area A	DRAWN BY: JM	CHECKED BY: SG	FIGURE: 25

UST	SIZE	SAMPLE I.D.
P	5,000 GALLON STEEL	B–1 B–2 S–1 S–2 E–1 DWB–1
N/A	N/A	OTB–1 OTB–2 PARKING LOT B–1 PARKING LOT B–2



LEGEND

━	PROPERTY BOUNDARY
⬜	UST REMOVED BEFORE ERM AND LBG
🟦	UST REMOVED PRIOR TO LBG BY ERM
🟩	UST REMOVED BY LBG
⬚	APPROXIMATE EXTENT OF EXCAVATION
▲	ENDPOINT SAMPLE LOCATION
⬚	STORAGE (UTILITY AND ELECTRIC)

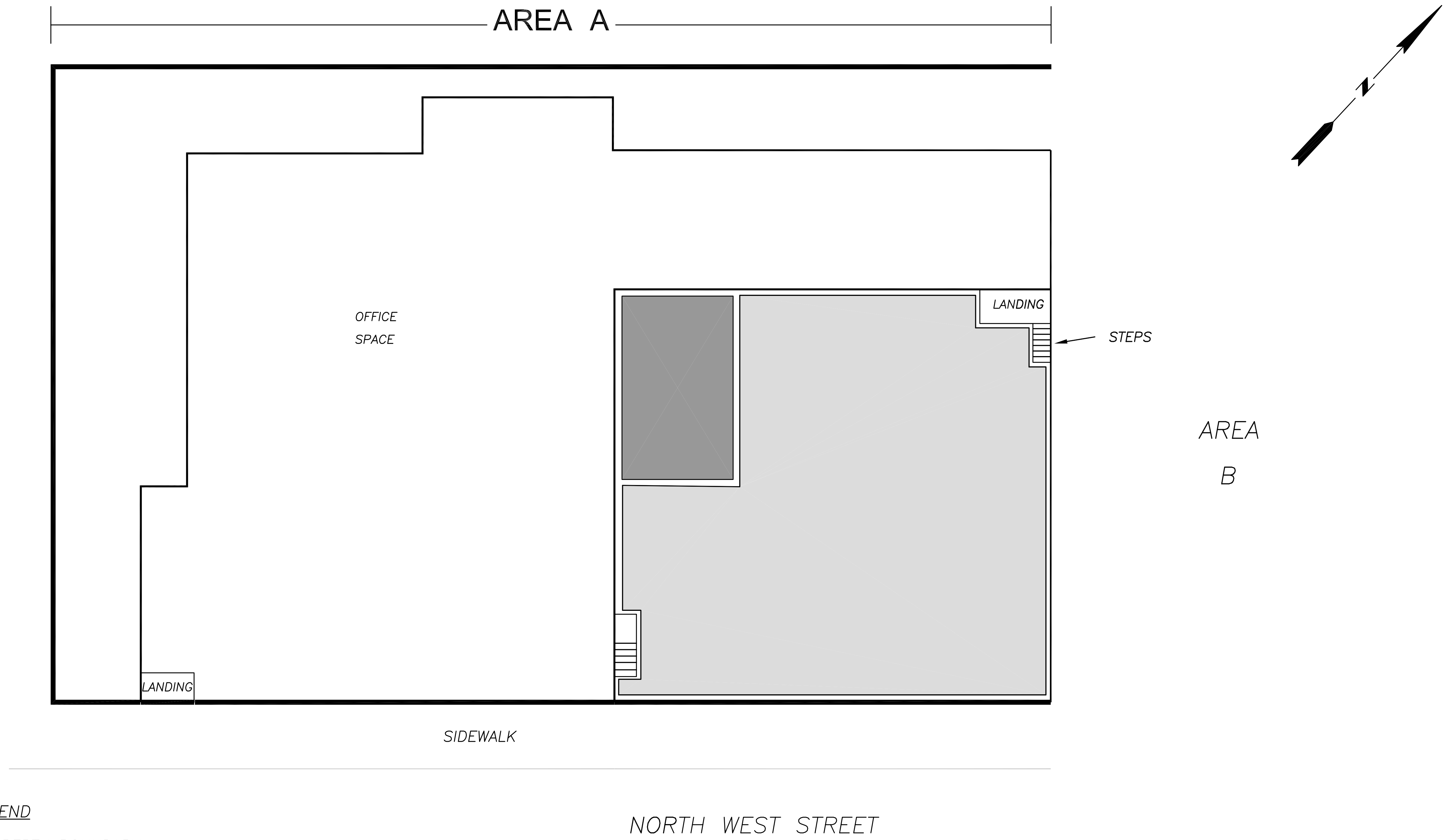
0 20
SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MT. VERNON, NY
SITE NUMBER 3–60–03

EXCAVATION EXTENT AND ENDPOINT SAMPLE
LOCATION MAP – AREA A, 2008

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Services
110 Corporate Park Drive; Suite 112
White Plains, New York
(914) 694–5711

FILE: fig34–Area A	DRAWN BY: JM	CHECKED BY: SG	DATE: 1/16/09 FIGURE: 26



LEGEND

▬ PROPERTY BOUNDARY

▨ EXCAVATION APPROXIMATELY 10' DEPTH

▢ EXCAVATION APPROXIMATELY 11'–12' DEPTH

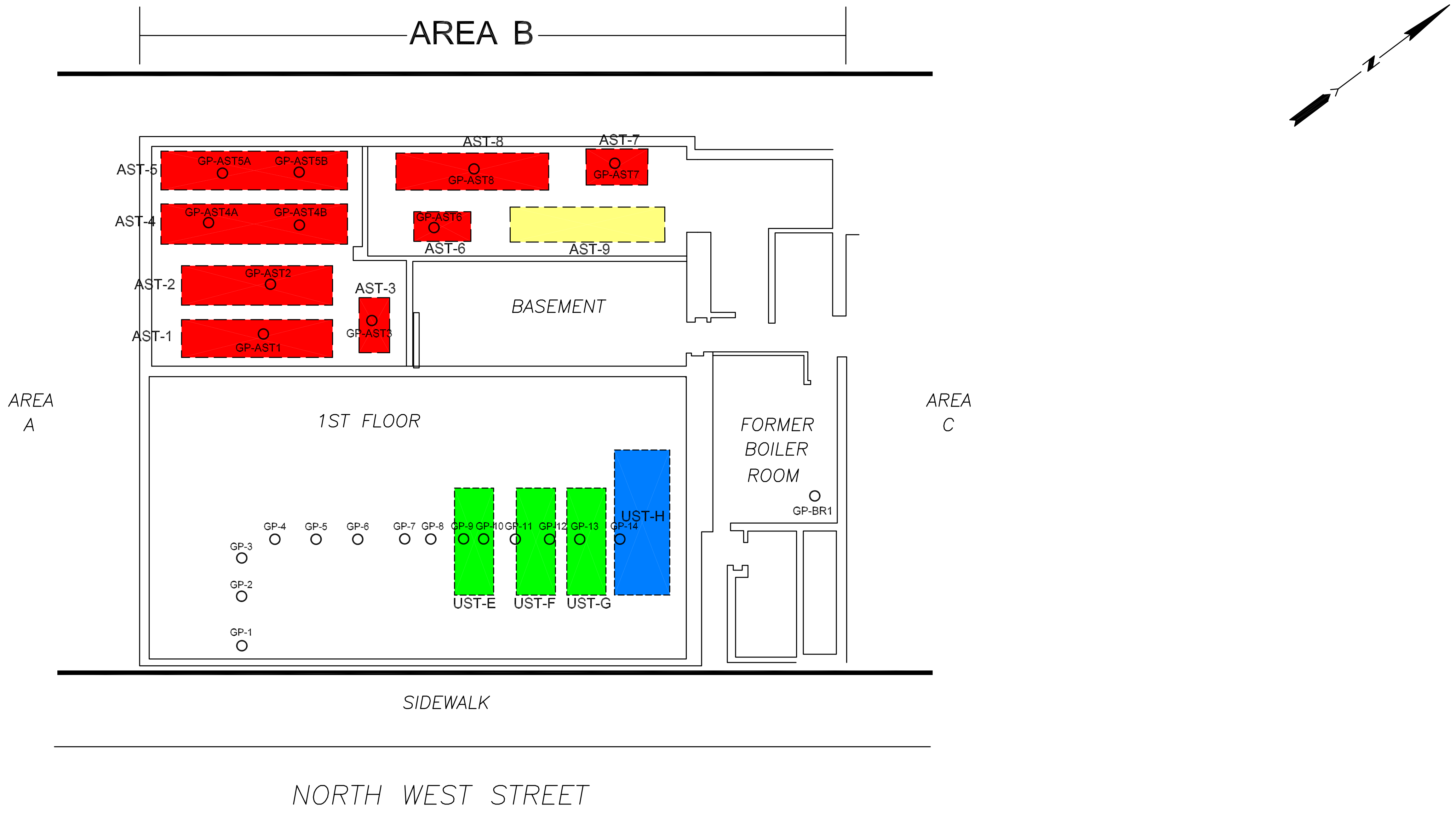
0 20
SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MT. VERNON, NY
SITE NUMBER 3–60–03

EXTENT OF EXPLORATORY EXCAVATIONS
AREA A – 2008

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Services
110 Corporate Park Drive; Suite 112
White Plains, New York
(914) 694–5711

FILE: fig35–Area A	DRAWN BY: JM	CHECKED BY: SG	DATE: 1/16/09 FIGURE: 27



LEGEND

▬	PROPERTY BOUNDARY
🟥	AST REMOVED BY ERM
🟨	AST REMOVED BY LBG
🟩	UST REMOVED BY LBG
🟦	UST REMOVED BY ERM
○	GEOPROBE BORING LOCATION WITH DESIGNATION

0 20
SCALE IN FEET

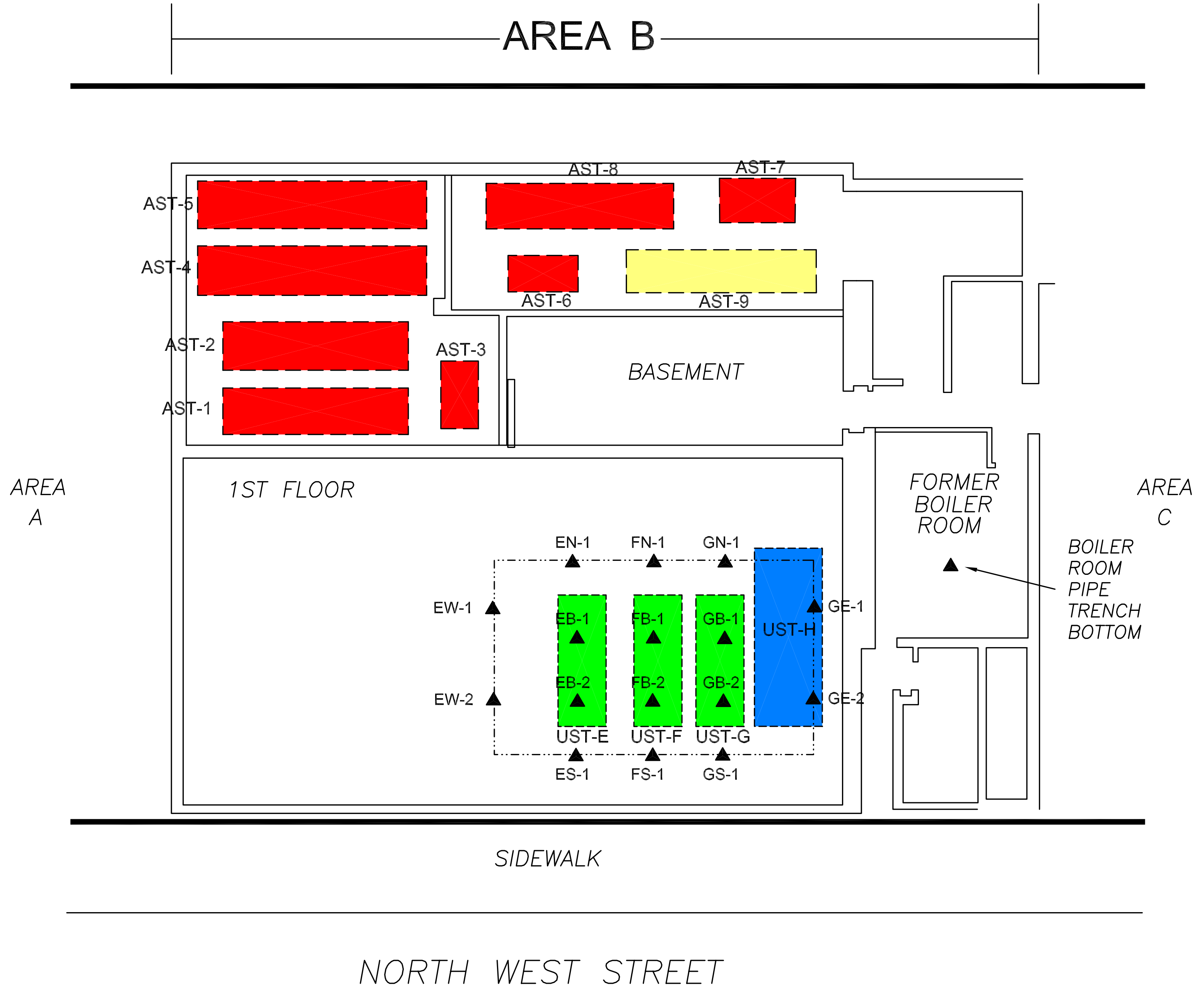
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NY
SITE NUMBER 3-60-031

UST AND AST CLOSURE CONFIRMATION GEOPROBE BORING
LOCATION MAP – AREA B, 2006

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Services
110 Corporate Park Drive; Suite 112
White Plains, New York
(914) 694-5711

DATE: 1/21/09

FIG 36-AREA B
DRAWN BY: JAM
CHECKED BY: SG
FIGURE: 28



UST	SIZE	SAMPLE I.D.	DEPTH (FT BG)
E	3,000 GALLON STEEL	EW−1 EW−2 EN−1 ES−1 EB−1 EB−2	5 5 5 5 7 7
F	3,000 GALLON STEEL	FN−1 FS−1 FB−1 FB−2	5 5 7 7
G	3,000 GALLON STEEL	GN−1 GS−1 GE−1 GE−2 GB−1 GB−2	4 4 4 4 9 9
N/A	N/A	BOILER ROOM PIPE TRENCH BOTTOM	3

LEGEND

━	PROPERTY BOUNDARY
🟥	AST REMOVED BY ERM
🟨	AST REMOVED BY LBG
🟩	UST REMOVED BY LBG
🟦	UST REMOVED BY ERM
▲ ES-1	ENDPOINT SAMPLE LOCATION WITH DESIGNATION
N/A	NOT APPLICABLE

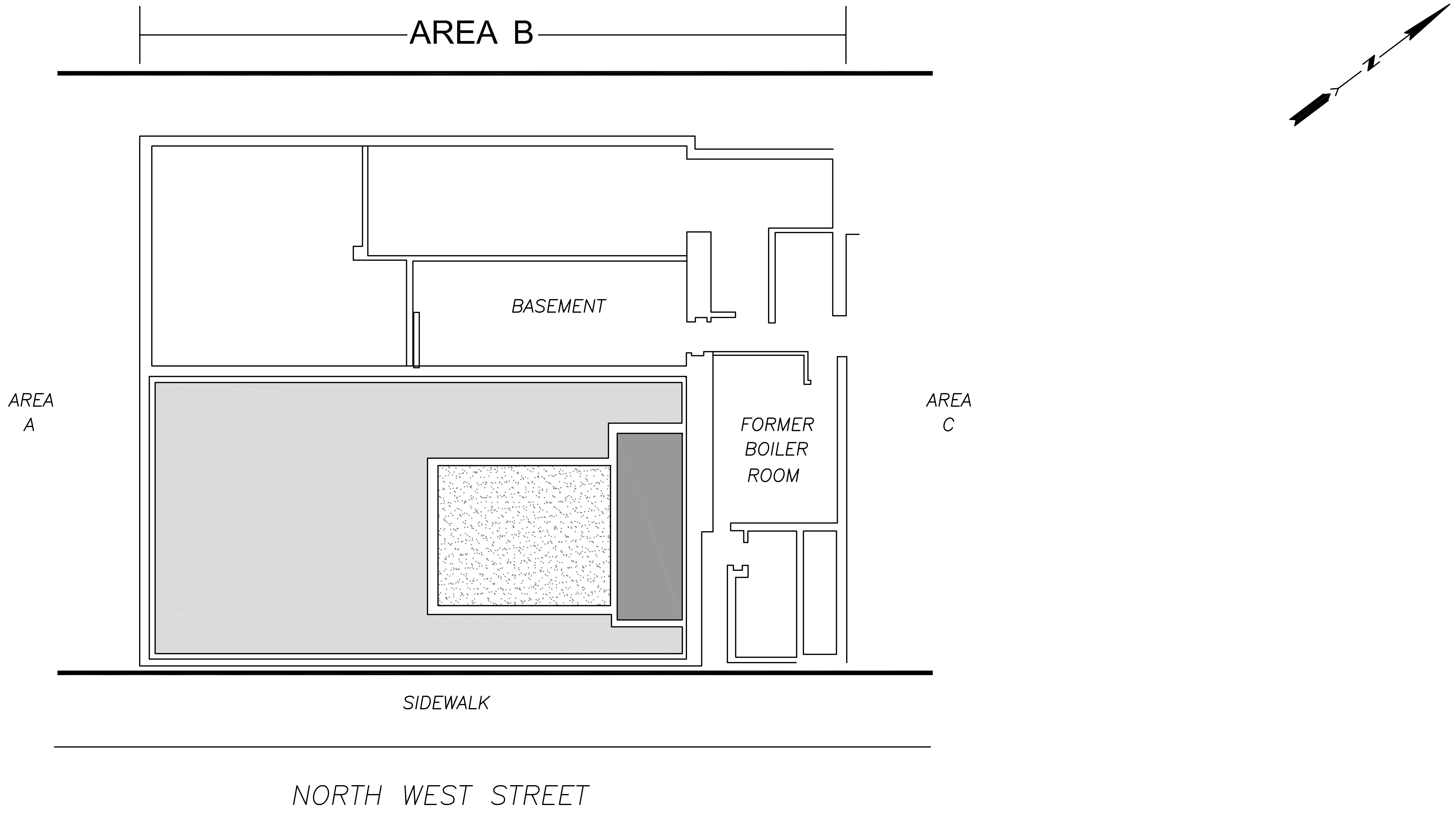
0 20
SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NY
SITE NUMBER 3−60−031

EXCAVATION EXTENT AND ENDPOINT SAMPLE LOCATION MAP
AREA B, 2007

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground−Water and Environmental Services
110 Corporate Park Drive; Suite 112
White Plains, New York
(914) 694−5711

DATE: 1/21/09
FIG 37−AREA B
DRAWN BY: JAM
CHECKED BY: SG
FIGURE: 29



LEGEND

▬ PROPERTY BOUNDARY

▨ EXCAVATION APPROXIMATELY 7–9' DEPTH

▨ EXCAVATION APPROXIMATELY 10' DEPTH

▨ EXPLORATORY EXCAVATION APPROXIMATELY 12' DEPTH
(Only Top 16-inches Was Disposed)

0 20
SCALE IN FEET

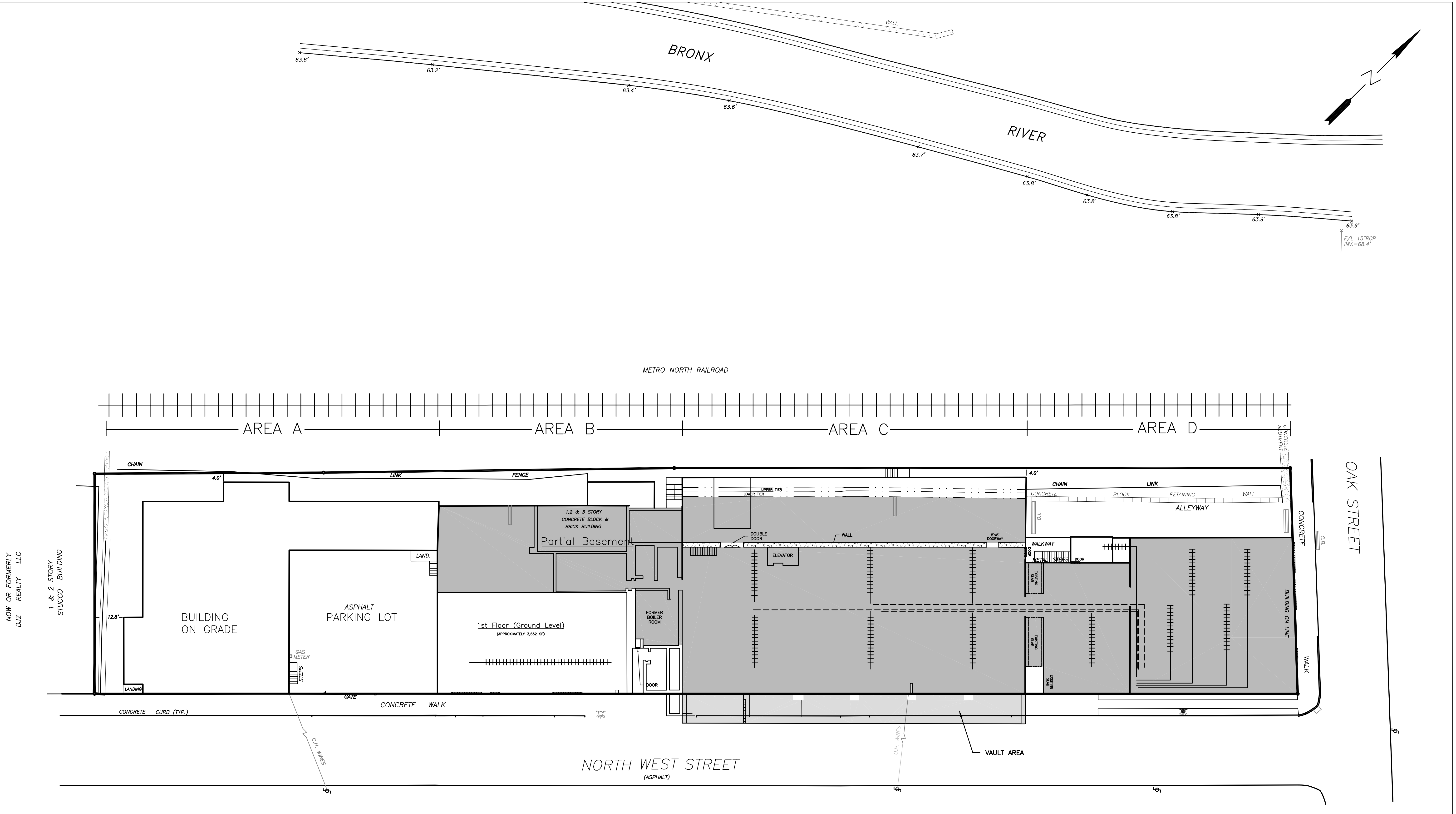
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NY
SITE NUMBER 3–60–031

EXTENT OF EXPLORATORY EXCAVATIONS
AREA B, 2007

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground–Water and Environmental Services
110 Corporate Park Drive; Suite 112
White Plains, New York
(914) 694–5711

DATE: 1/21/09

FIG 38–AREA B | DRAWN BY: JAM | CHECKED BY: SG | FIGURE: 30



LEGEND

▬	PROPERTY BOUNDARY
─┼┼┼┼┼─	SUB-SLAB DEPRESSURIZATION PIPE

NOTE: IT IS A VIOLATION OF ARTICLE 130 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER THIS DOCUMENT IN ANY WAY WITHOUT THE EXPRESS WRITTEN VERIFICATION OR ADOPTION BY A NEW YORK STATE LICENSED LAND SURVEYOR OR ENGINEER IN ACCORDANCE WITH SECTION 7209 (2), ARTICLE 130, NEW YORK STATE EDUCATION LAW.

0 40

SCALE IN FEET

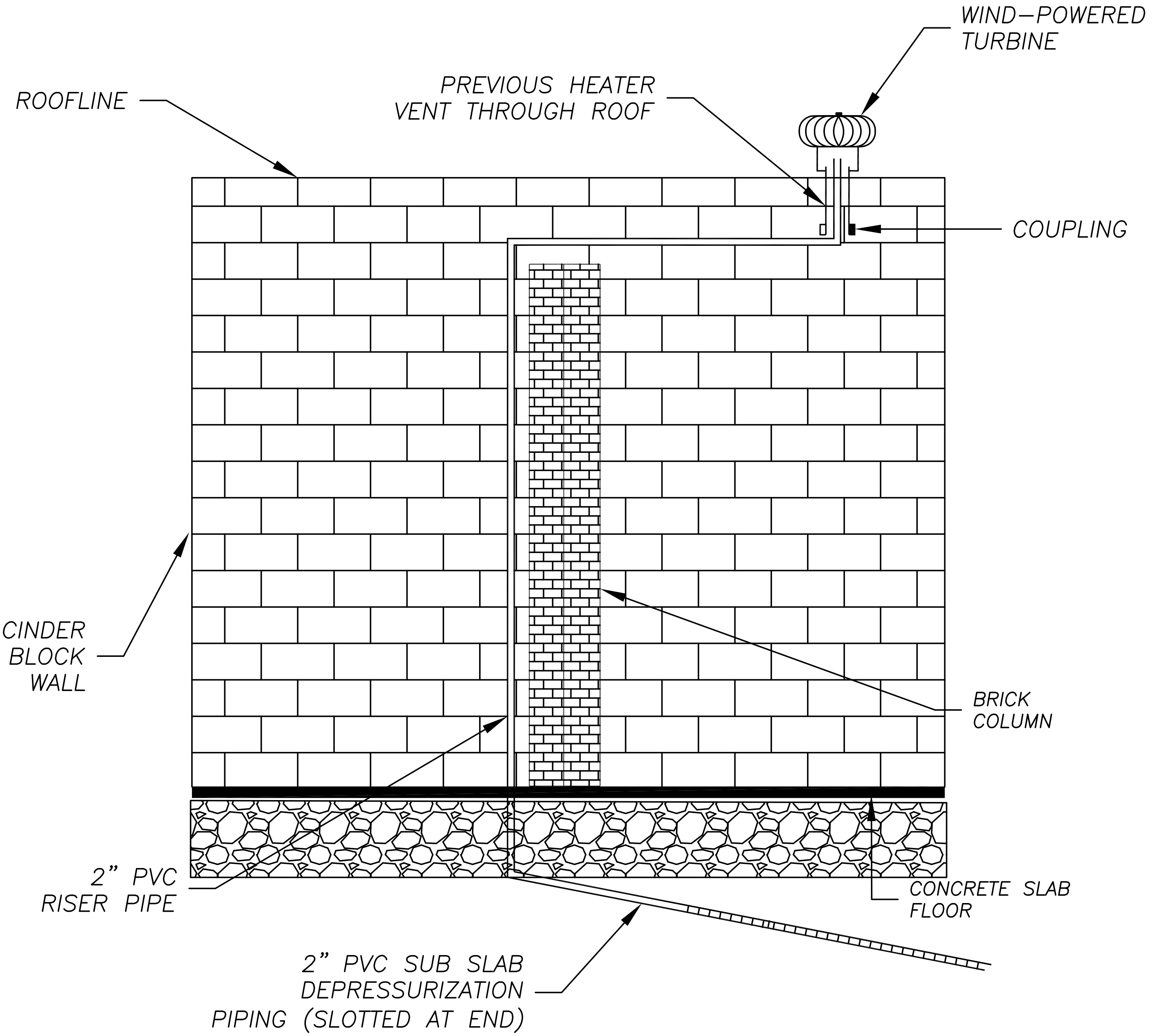
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

SUB-SLAB DEPRESSURIZATION PIPING LOCATIONS

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN:	JM	CHECKED:	SG	DATE:	12/30/08	FIGURE:	31



NOT TO SCALE

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NY
SITE NUMBER 3-60-031

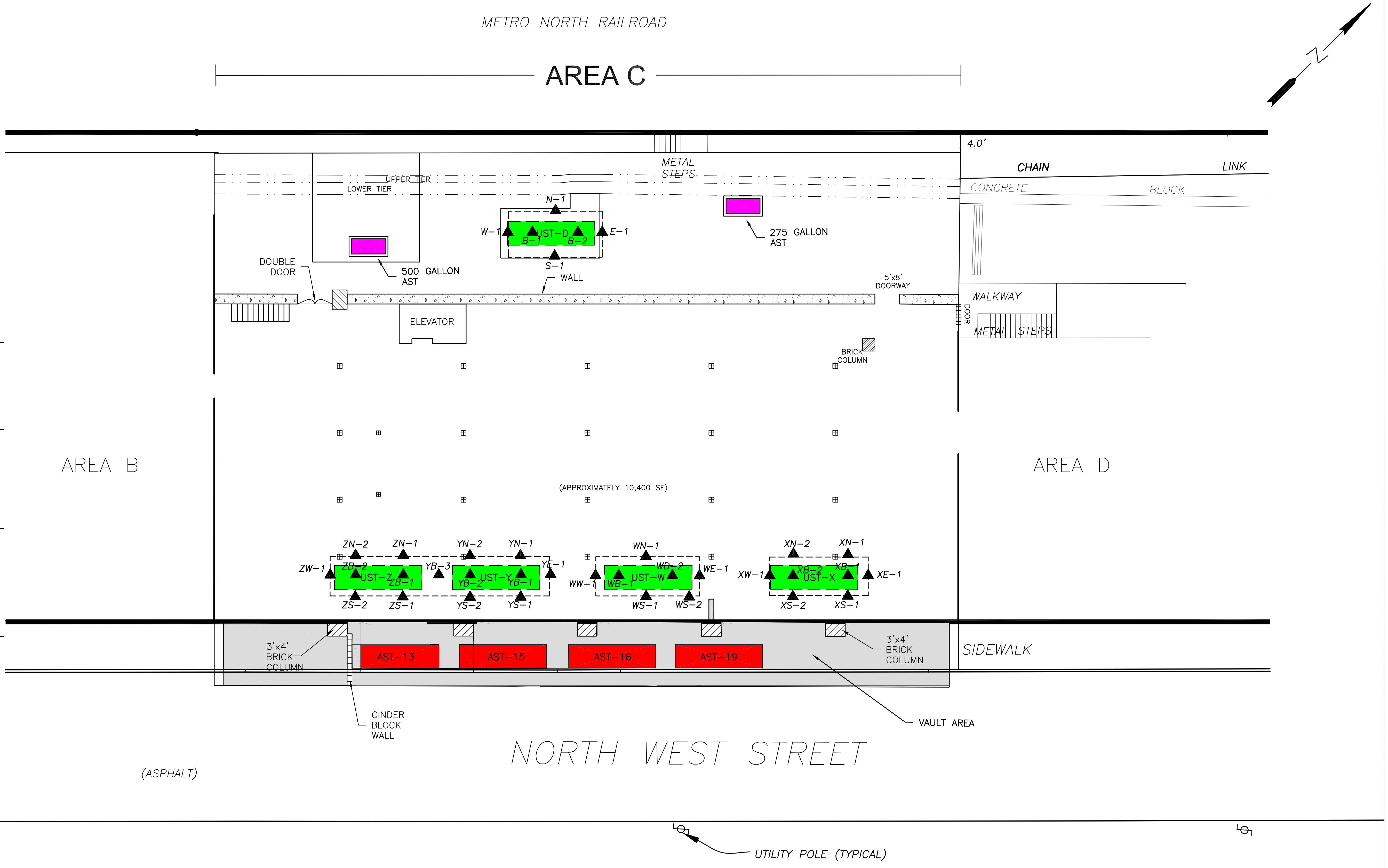
SUB-SLAB PASSIVE VENT
SYSTEM CONSTRUCTION DETAILS

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Services
110 Corporate Park Drive, Suite 112
White Plains, NY 10604
(914) 694-5711

FILE: Area B Passive Vent	*DRAWN BY: JM*	*CHECKED BY: SG*	*DATE: 12/8/08* *FIGURE: 32*

UST	SIZE	SAMPLE I.D.	DEPTH (FT BG)
W	4,000 GALLON STEEL	WN−1	5
		WW−1	5
		WS−1	5
		WS−2	5
		WE−1	5
		WB−1	7
		WB−2	7
X	4,000 GALLON STEEL	XN−1	4
		XN−2	4
		XW−1	4
		XS−1	4
		XS−2	4
		XE−1	4
		XB−1	6
		XB−2	6

UST	SIZE	SAMPLE I.D.	DEPTH (FT BG)
D	4,000 GALLON STEEL	N−1	5.5
		E−1	5.5
		S−1	5.5
		W−1	5.5
		B−1	7.5
		B−2	7.5
Z	4,000 GALLON STEEL	ZN−1	4
		ZN−2	4
		ZW−1	4
		ZS−1	4
		ZS−2	4
		ZB−1	7
		ZB−2	7
Y	4,000 GALLON STEEL	YN−1	4
		YN−2	4
		YS−1	4
		YS−2	4
		YE−1	4
		YB−1	7
		YB−2	7
		YB−3	7



LEGEND

PROPERTY BOUNDARY

⊞ BASEMENT PILLAR SUPPORT

🟩 UST REMOVED BY LBG

🟥 AST REMOVED BY ERM

▭ EXISTING AST WITH SECONDARY CONTAINMENT (REMEDIAL DERIVED WASTE STORAGE

▲ ENDPOINT SOIL SAMPLE LOCATION

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0 20
SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

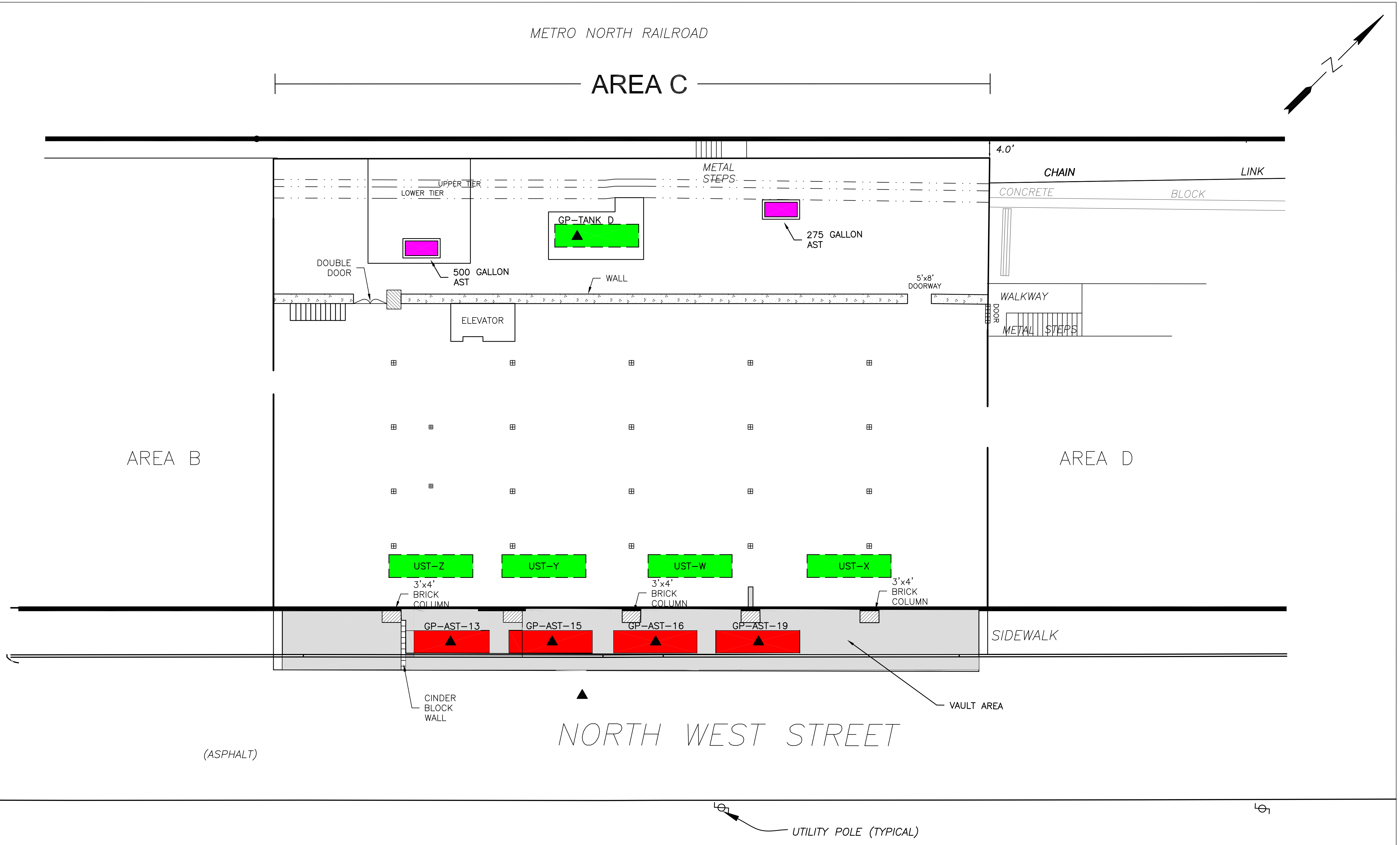
EXCAVATION EXTENT AND ENDPOINT SAMPLE LOCATION MAP − AREA C, 2007

DATE	REVISED

PREPARED BY:

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM
CHECKED: SG
DATE: 1/21/09
FIGURE: 33



LEGEND

—	PROPERTY BOUNDARY
⊞	BASEMENT PILLAR SUPPORT
🟩	UST REMOVED BY LBG
🟥	AST REMOVED BY ERM
🟪	EXISTING AST WITH SECONDARY CONTAINMENT (REMEDIAL DERIVED WASTE STORAGE

NOTE: IT IS A VIOLATION OF ARTICLE 130 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER THIS DOCUMENT IN ANY WAY WITHOUT THE EXPRESS WRITTEN VERIFICATION OR ADOPTION BY A NEW YORK STATE LICENSED LAND SURVEYOR OR ENGINEER IN ACCORDANCE WITH SECTION 7209 (2), ARTICLE 130, NEW YORK STATE EDUCATION LAW.

0 20
SCALE IN FEET

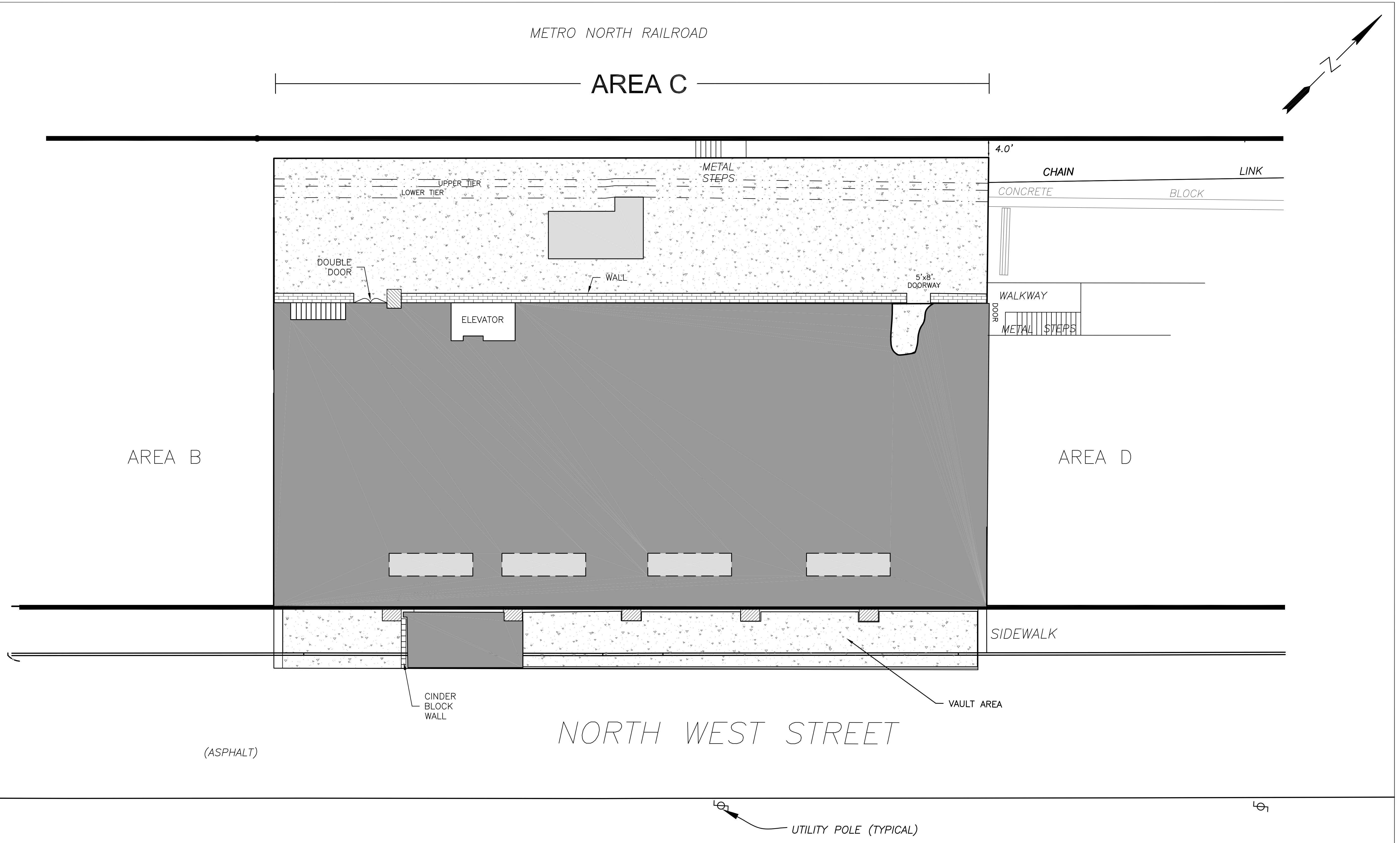
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

UST & AST CLOSURE CONFIRMATION GEOPROBE
BORING LOCATION MAP – AREA C 2006/2007

DATE	REVISED

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM | CHECKED: SG | DATE: 1/21/09 | FIGURE: 34



LEGEND

—	PROPERTY BOUNDARY
▨	CONCRETE LEFT IN PLACE
▭	EXCAVATION APPROXIMATELY 6-8' DEPTH
■	EXCAVATION APPROXIMATELY 16' DEPTH

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0 20
SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

EXTENT OF EXPLORATORY EXCAVATIONS
AREA C - 2007

DATE	REVISED

PREPARED BY:
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Professional Ground-Water and Environmental Engineering Services
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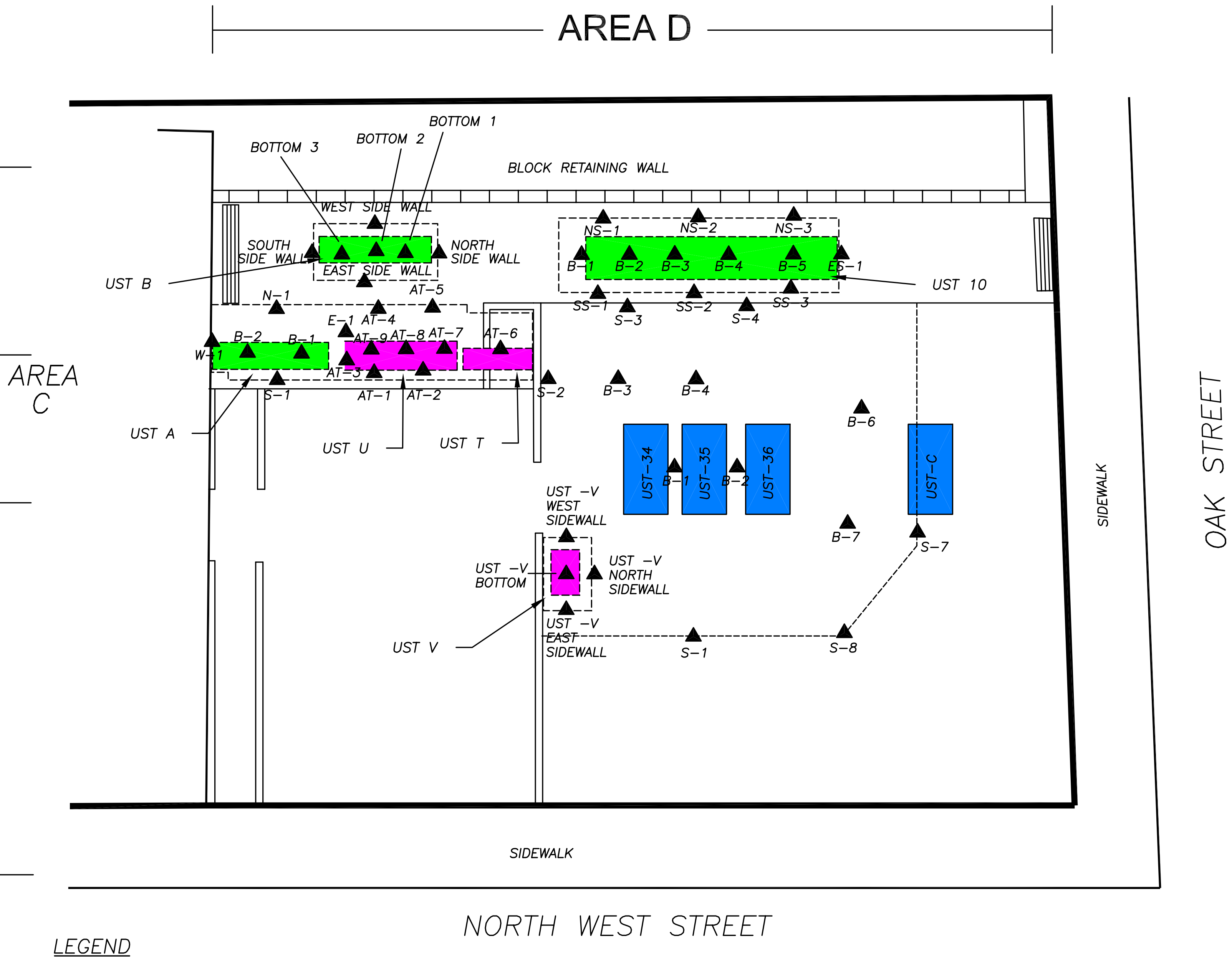
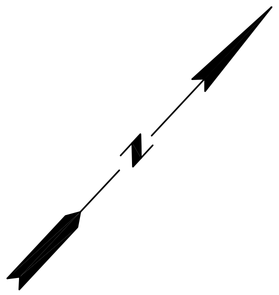
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM | CHECKED: SG | DATE: 1/21/09 | FIGURE: 35

UST	SIZE	SAMPLE I.D.	DEPTH (FT BG)
V	275 GALLON STEEL	NORTH SIDEWALL	5
		EAST SIDEWALL	5
		WEST SIDEWALL	5
		BOTTOM	10
U	3,000 GALLON STEEL	AT–1	5
		AT–3	5
		AT–4	5
		AT–8	13
		AT–9	13
T	500 GALLON STEEL	AT–2	5
		AT–5	5
		AT–6	13
		AT–7	13
34 35 36 C	4000 GAL STEEL 4000 GAL STEEL 4000 GAL STEEL 1500 GAL STEEL	B–1	13
		B–2	13
		B–3	13
		B–4	13
		B–6	13
		B–7	13
		S–1	6
		S–2	7
		S–3	7
		S–4	7
		S–5	7
		S–6	7
		S–7	7
		S–8	7





UST	SIZE	SAMPLE I.D.	DEPTH (FT BG)
10	10,000 GALLON STEEL	NS–1	5
		NS–2	5
		NS–3	6
		ES–1	6
		SS–1	5
		SS–2	5
		SS–3	6
		B–1	11
		B–2	11
		B–3	11
		B–4	11
		B–5	11
A	3,500 GALLON STEEL	N–1	7
		E–1	7
		S–1	7
		W–1	7
		B–1	10
		B–2	10
B	3,500 GALLON STEEL	NORTH SIDEWALL	5
		EAST SIDEWALL	5
		SOUTH SIDEWALL	5
		WEST SIDEWALL	5
		BOTTOM 1	8
		BOTTOM 2	8
		BOTTOM 3	8

LEGEND

▬	PROPERTY BOUNDARY
🟩	UST REMOVED BY LBG (PREVIOUSLY ABANDONED BY ERM)
🟦	UST REMOVED BY ERM
🟪	UST REMOVED BY LBG (PREVIOUSLY UNIDENTIFIED)
▤	CATCH BASIN
▲	ENDPOINT SOIL SAMPLE LOCATION

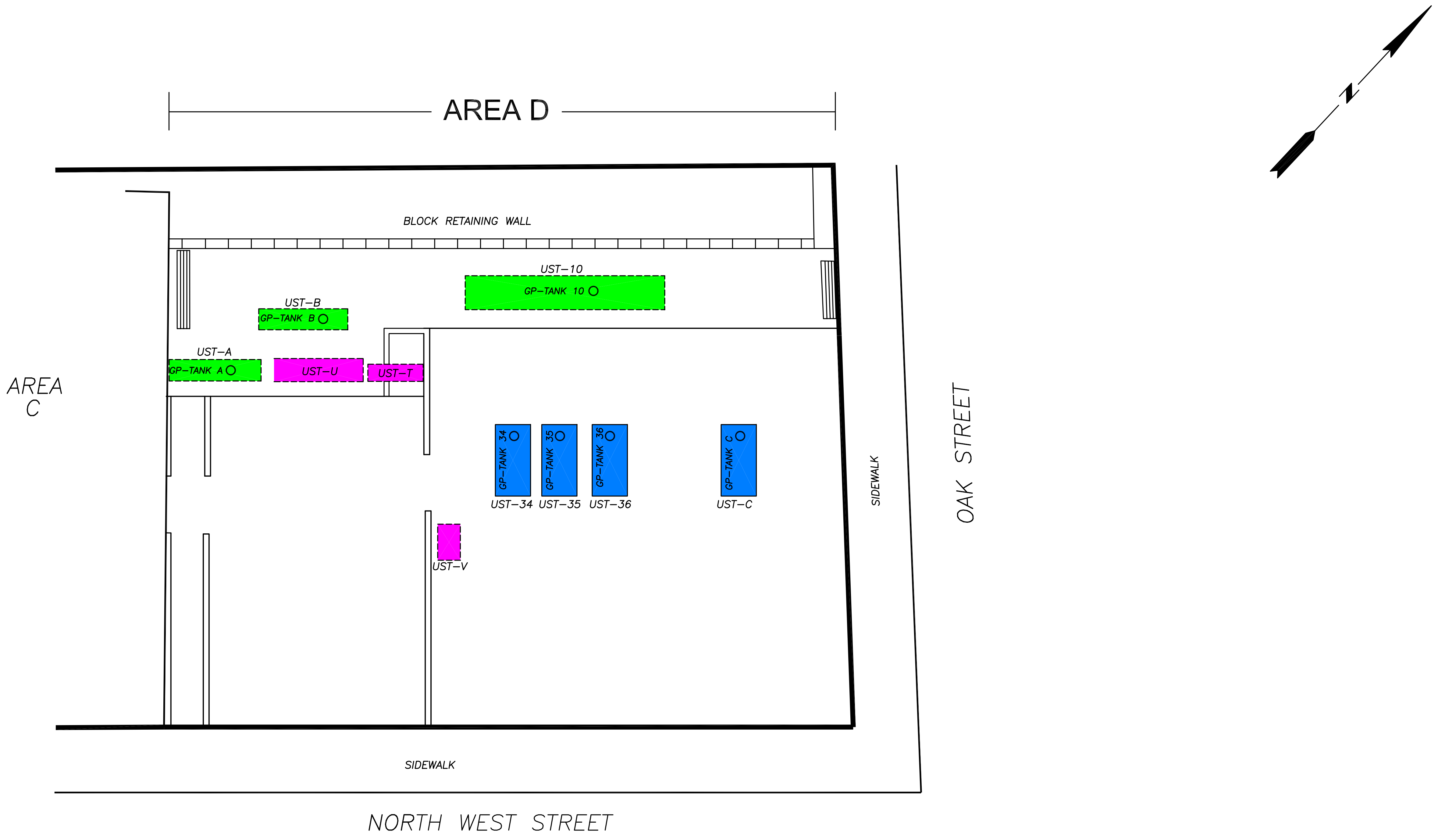
0 20
SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MT. VERNON, NY
SITE NUMBER 3–60–03

EXCAVATION EXTENT AND ENDPOINT SAMPLE LOCATION MAP
AREA D, 2006/2007/2008

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground–Water and Environmental Services
110 Corporate Park Drive; Suite 112
White Plains, New York
(914) 694–5711

DATE: 1/21/09
FILE: fIG43 – area D
DRAWN BY: JAM
CHECKED BY: SG
FIGURE: 36



LEGEND

▬	PROPERTY BOUNDARY
🟩	UST REMOVED BY LBG (PREVIOUSLY ABANDONED BY ERM)
🟦	UST REMOVED BY ERM
🟪	UST REMOVED BY LBG (PREVIOUSLY UNIDENTIFIED)
▤	CATCH BASIN
○	GEOPROBE BORING LOCATION WITH DESIGNATION

0 20
SCALE IN FEET

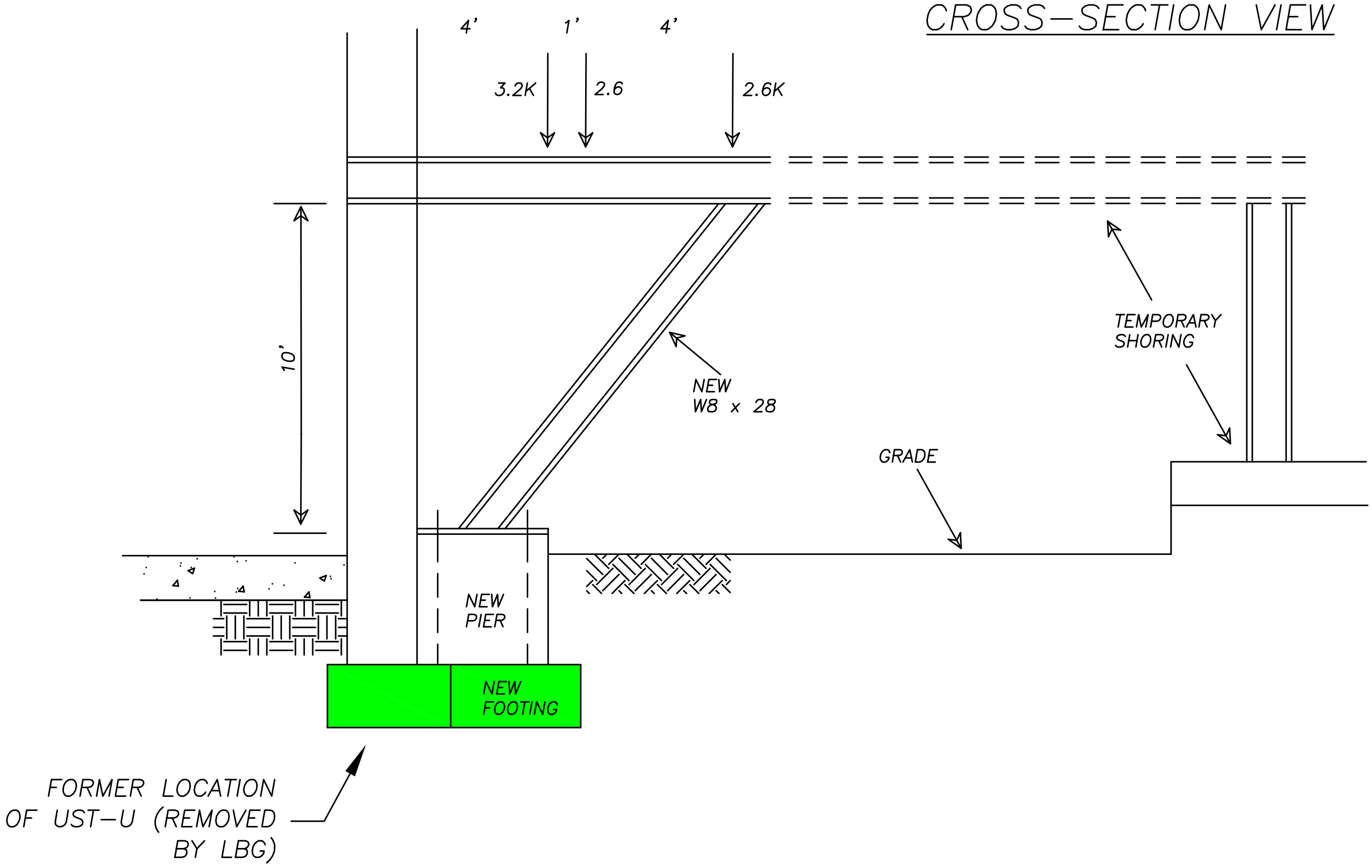
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MT. VERNON, NY
SITE NUMBER 3–60–03

UST CLOSURE CONFIRMATION GEOPROBE BORING
LOCATION MAP AREA D, 2006/2007

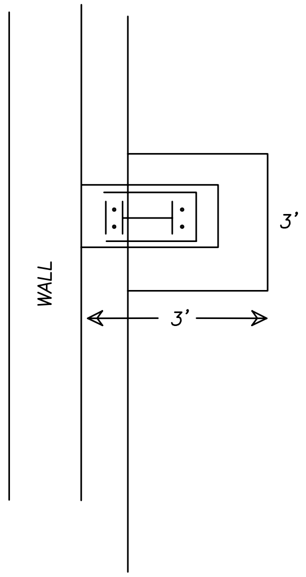
PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground–Water and Environmental Services
110 Corporate Park Drive; Suite 112
White Plains, New York
(914) 694–5711

DATE: 1/21/09
FILE: fgi42 – area D
DRAWN BY: JAM
CHECKED BY: SG
FIGURE: 37

CROSS–SECTION VIEW



PLAN VIEW



NOTE: MODIFICATIONS TO FIRE SUPPORT
WERE REQUIRED FOR REMOVAL AND
CLOSURE OF UST–T & UST–U

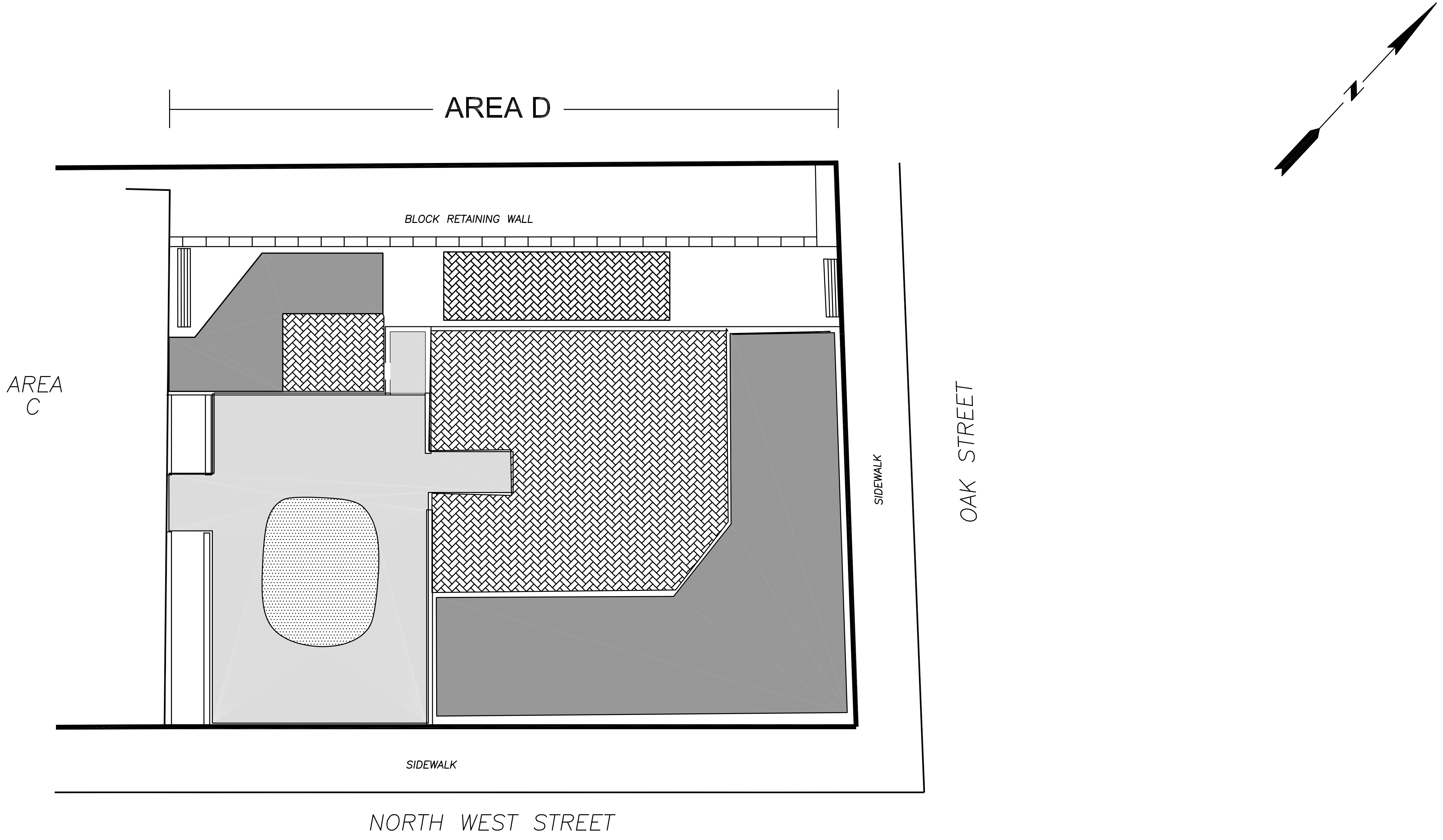
NOT TO SCALE

RED DEVIL PAINT
30 NORTH WEST STREET
MOUNT VERNON, NY
SITE NUMBER 3–60–031

AREA D FIRE ESCAPE STRUCTURAL SUPPORT
CONSTRUCTION PLANS

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground–Water and Environmental Services
110 Corporate Park Drive, Suite 112
White Plains, NY 10604
(914) 694–5711

			DATE: 12/8/08
FILE: fig F – oak street fire	DRAWN BY: JM	CHECKED BY: SG	FIGURE: 38



LEGEND

▬ PROPERTY BOUNDARY

░ EXCAVATION APPROXIMATELY 8' DEPTH

▓ EXCAVATION APPROXIMATELY 8–10' DEPTH

☰ CATCH BASIN

▨ EXCAVATION APPROXIMATELY 12–13' DEPTH

▒ EXCAVATION APPROXIMATELY 18' DEPTH

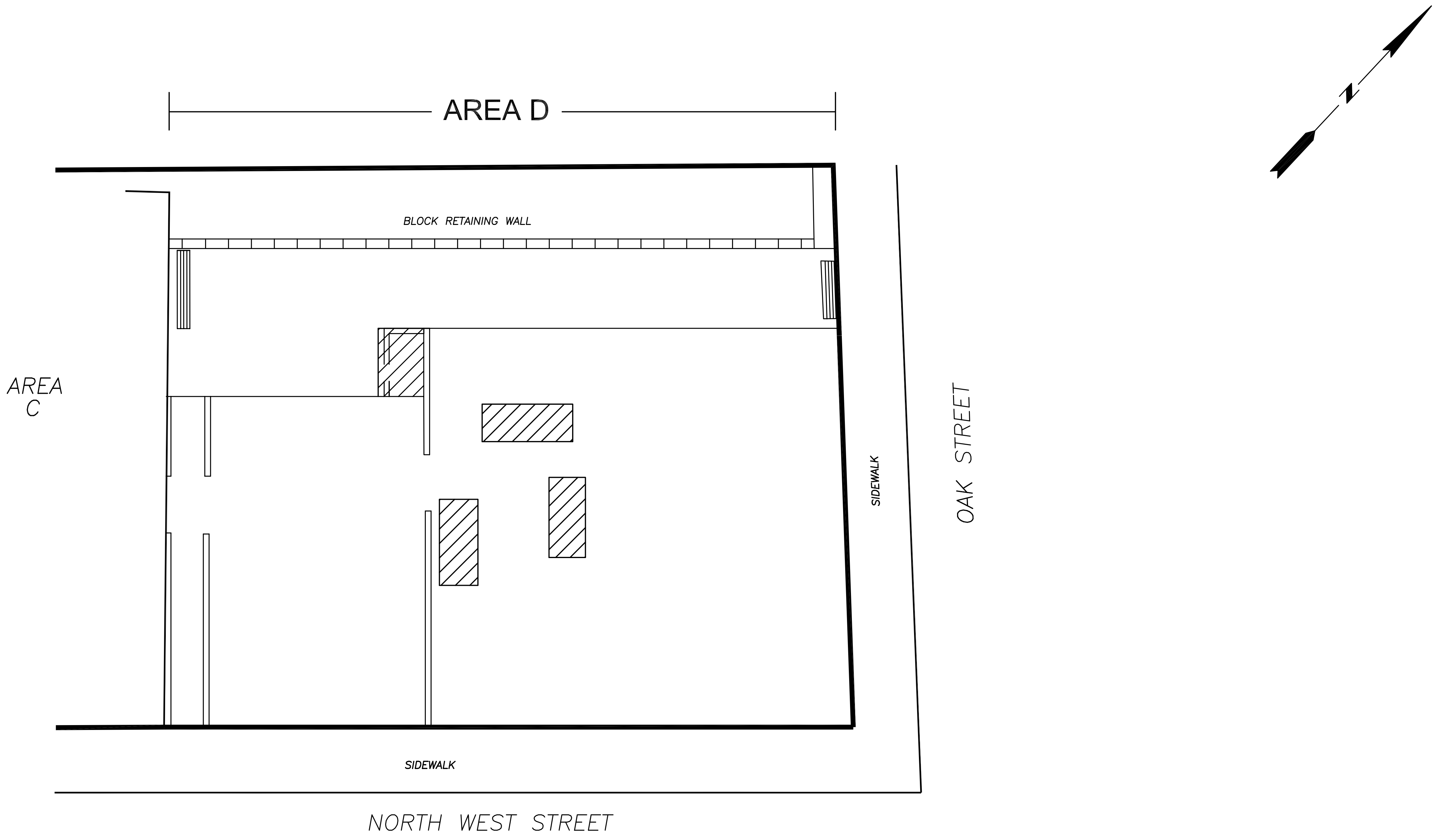
0 20
SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MT. VERNON, NY
SITE NUMBER 3–60–03

EXTENT OF EXPLORATORY EXCAVATIONS,
AREA D, 2006/2007/2008

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Services
110 Corporate Park Drive; Suite 112
White Plains, New York
(914) 694–5711

DATE: 1/21/09
FILE: fig44 – AREA D
DRAWN BY: JAM
CHECKED BY: SG
FIGURE: 39



LEGEND

━ PROPERTY BOUNDARY

▨ CHEMICAL OXIDATION APPLICATION TRENCH (APPROXIMATELY 6' DEEP)

▤ CATCH BASIN

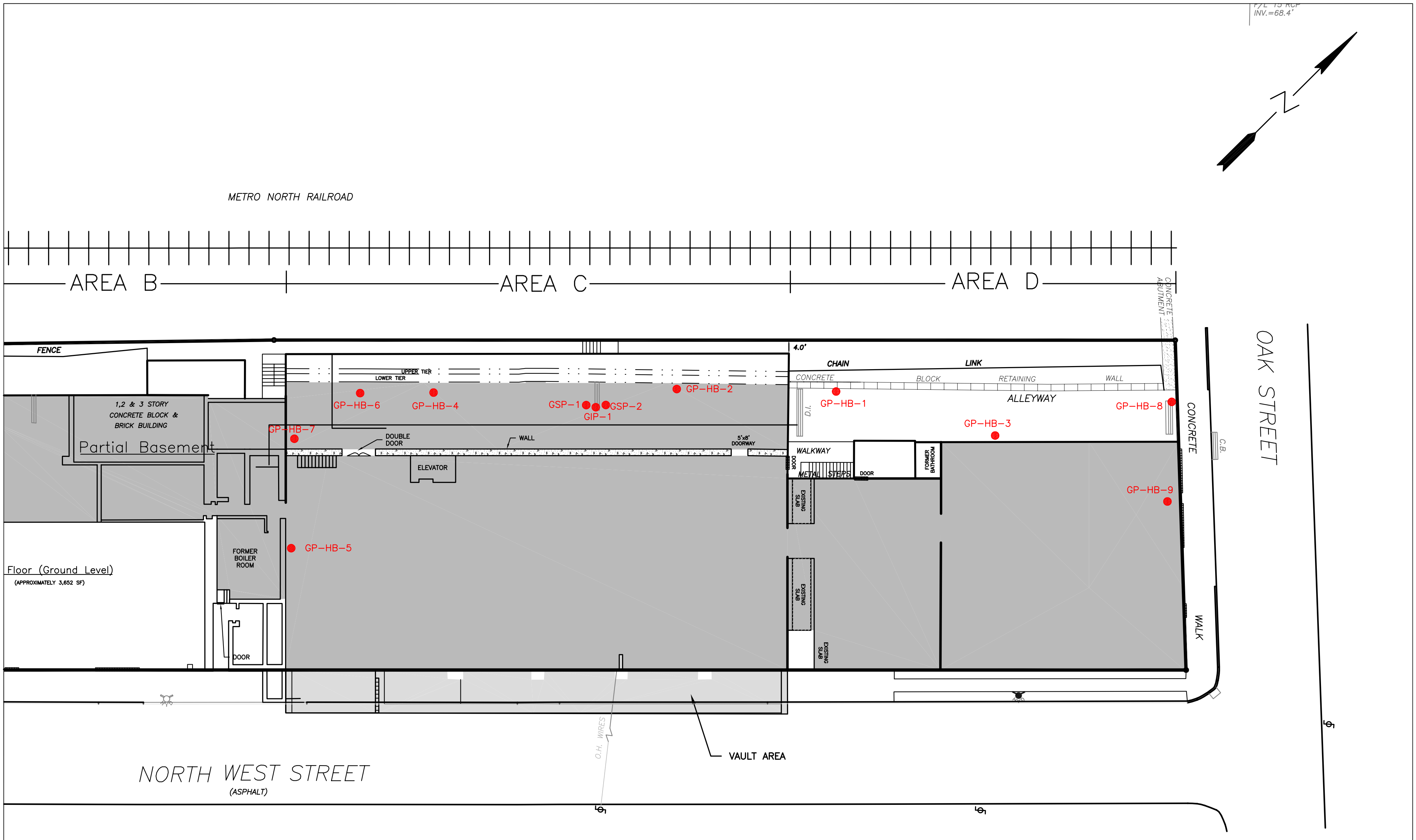
0 20
SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MT. VERNON, NY
SITE NUMBER 3-60-03

CHEMICAL OXIDATION APPLICATIONS – AREA D, 2008

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Services
110 Corporate Park Drive; Suite 112
White Plains, New York
(914) 694-5711

			DATE: 1/21/09
FILE: Fig B – chemical	DRAWN BY: JAM	CHECKED BY: SG	FIGURE: 40



LEGEND

PROPERTY BOUNDARY

● HYDRAULIC BARRIER GEOPROBE LOCATIONS

0 40
SCALE IN FEET

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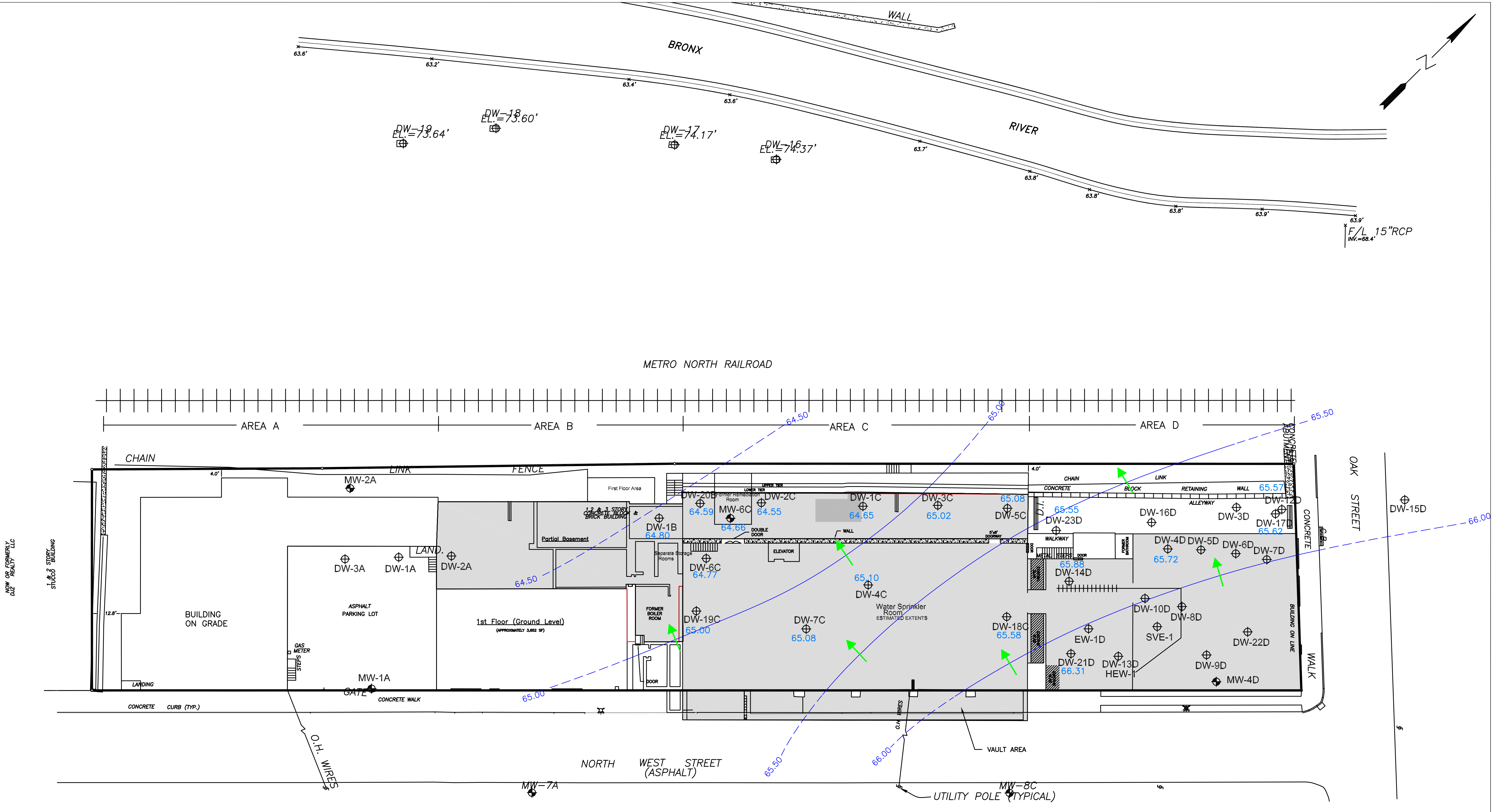
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

GEOPROBE AND GROUT INJECTION PILOT TEST
BORINGS FOR HYDRAULIC BARRIER FEASIBILITY

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM	CHECKED: SG	DATE: 1/16/09	FIGURE: 41



FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

GROUND WATER ELEVATION CONTOUR MAP
MAY 22, 2007 PRIOR TO STARTING HEW–1 PUMP TEST

LEGEND

- — – – — PROPERTY BOUNDARY
- ⊕ GROUND–WATER MONITORING WELL
- ⊕ NAPL DELINEATION WELL
- SS-85 SUB–SLAB/SOIL VAPOR SAMPLING POINT
- ↖ GROUND WATER ELEVATION CONTOURS WITH FLOW DIRECTION (DASHED WHERE INFERRED)

0 40
SCALE IN FEET

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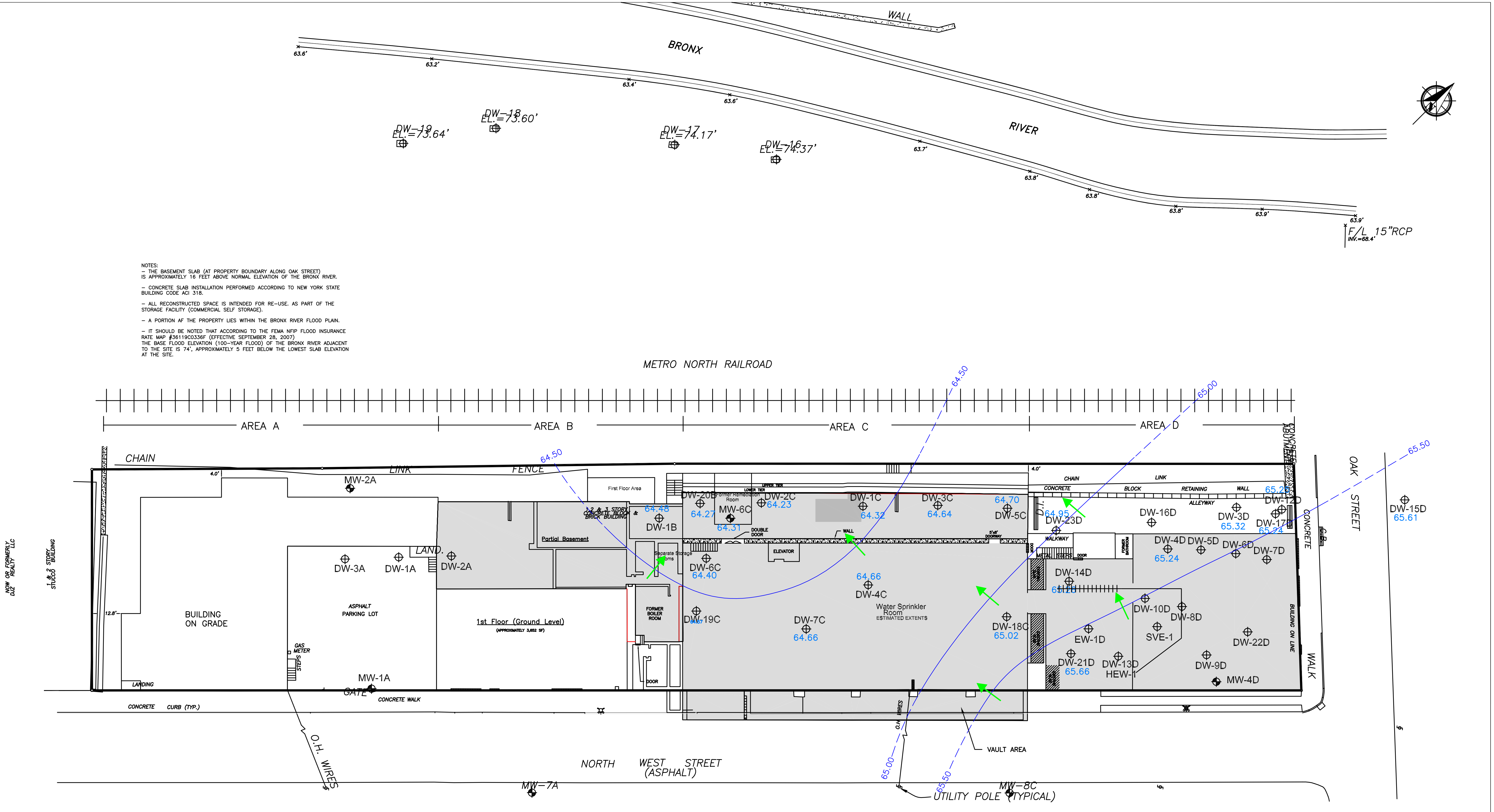
DATE	REVISED

PREPARED BY:

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM CHECKED: SB DATE: 1/16/09 FIGURE: 42



NOTES:

- THE BASEMENT SLAB (AT PROPERTY BOUNDARY ALONG OAK STREET) IS APPROXIMATELY 16 FEET ABOVE NORMAL ELEVATION OF THE BRONX RIVER.

- CONCRETE SLAB INSTALLATION PERFORMED ACCORDING TO NEW YORK STATE BUILDING CODE ACI 318.

- ALL RECONSTRUCTED SPACE IS INTENDED FOR RE-USE. AS PART OF THE STORAGE FACILITY (COMMERCIAL SELF STORAGE).

- A PORTION AF THE PROPERTY LIES WITHIN THE BRONX RIVER FLOOD PLAIN.

- IT SHOULD BE NOTED THAT ACCORDING TO THE FEMA NFIP FLOOD INSURANCE RATE MAP #36119C0336F (EFFECTIVE SEPTEMBER 28, 2007) THE BASE FLOOD ELEVATION (100-YEAR FLOOD) OF THE BRONX RIVER ADJACENT TO THE SITE IS 74', APPROXIMATELY 5 FEET BELOW THE LOWEST SLAB ELEVATION AT THE SITE.

LEGEND

⊕	GROUND-WATER MONITORING WELL
⊕	NAPL DELINEATION WELL
SS-65	SUB-SLAB/SOIL VAPOR SAMPLING POINT
↖	*GROUND WATER ELEVATION CONTOURS WITH FLOW DIRECTION (DASHED WHERE INFERRED)*

0 40

SCALE IN FEET

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FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

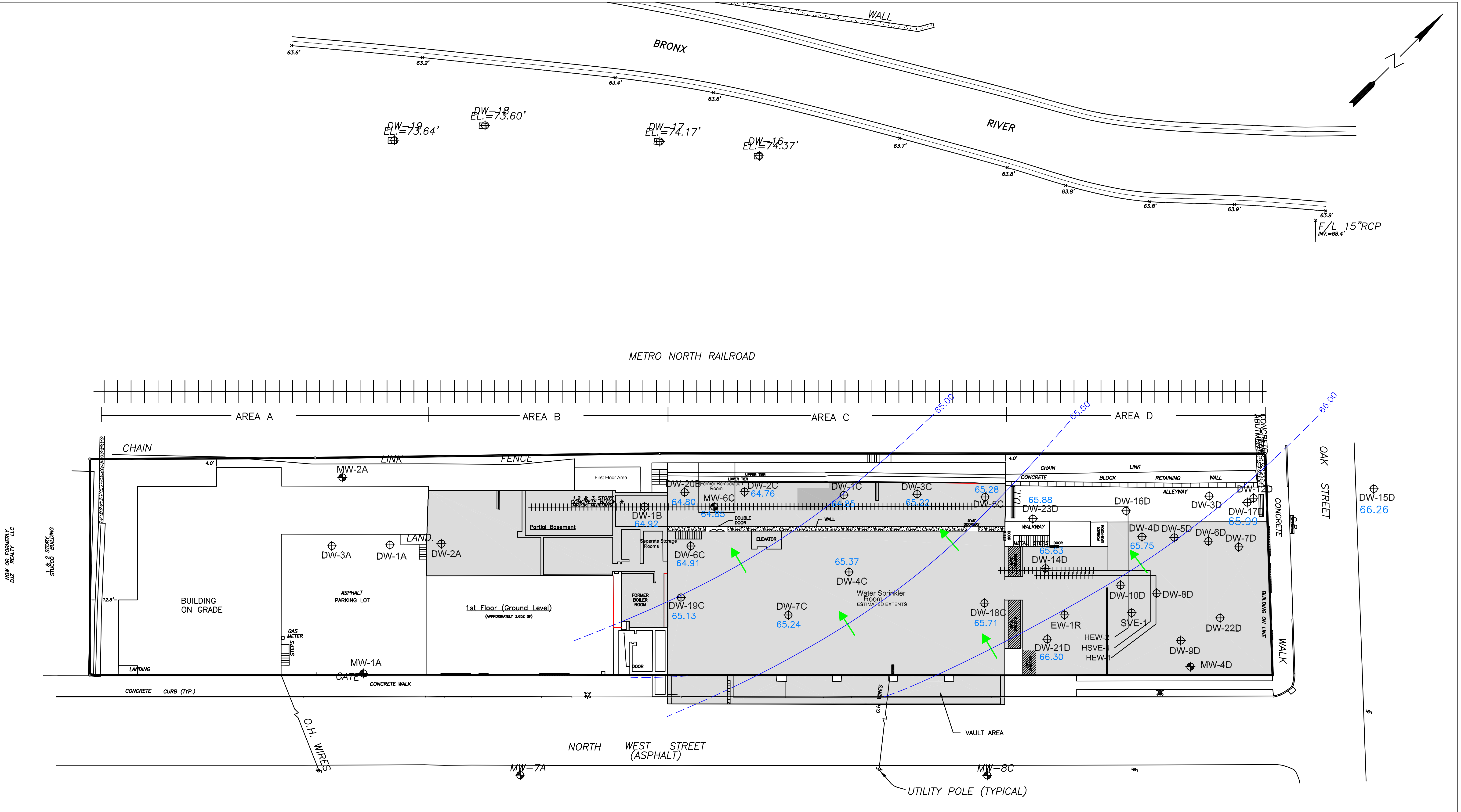
GROUND WATER ELEVATION CONTOUR MAP
JUNE 1, 2007 (240 HOURS OF PUMPING HEW-1 AT 0.25 GPM)

DATE	REVISED

PREPARED BY:

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN:	**JM**	**CHECKED:**	**SG**	**DATE:**	**1/16/09**	**FIGURE:**	**43**



LEGEND

▬	PROPERTY BOUNDARY
⊕	GROUND-WATER MONITORING WELL
⊕	NAPL DELINEATION WELL
↖	GROUND WATER ELEVATION CONTOURS WITH FLOW DIRECTION (DASHED WHERE INFERRED)

NOTE: IT IS A VIOLATION OF ARTICLE 130 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER THIS DOCUMENT IN ANY WAY WITHOUT THE EXPRESS WRITTEN VERIFICATION OR ADOPTION BY A NEW YORK STATE LICENSED LAND SURVEYOR OR ENGINEER IN ACCORDANCE WITH SECTION 7209 (2), ARTICLE 130, NEW YORK STATE EDUCATION LAW.

0 40
SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

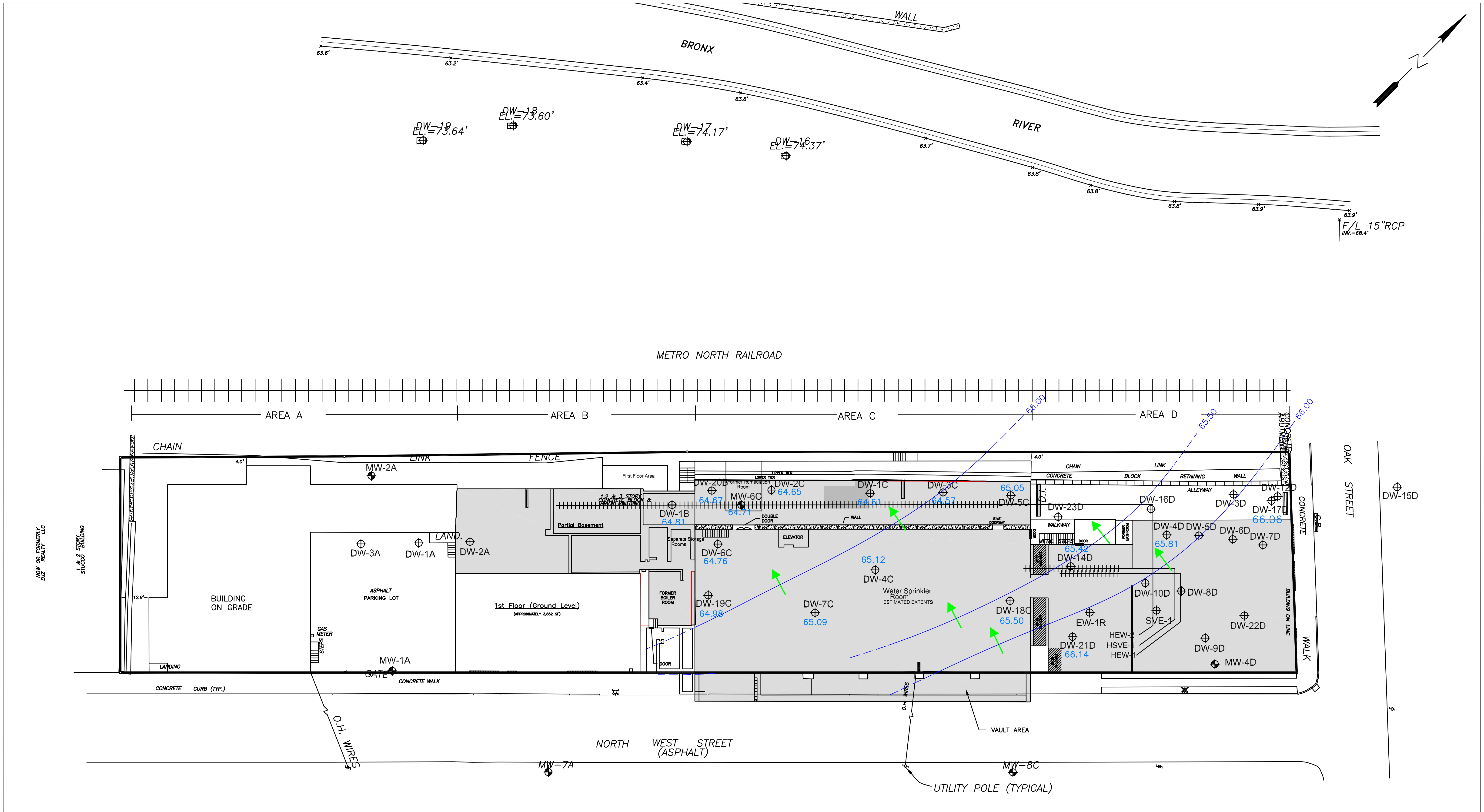
GROUND WATER ELEVATION CONTOUR MAP
MARCH 17, 2008 (PRIOR TO HEW–2 PUMP TEST)

DATE	REVISED

PREPARED BY:

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM
CHECKED: SG
DATE: 1/19/09
FIGURE: 44



LEGEND

—	PROPERTY BOUNDARY
⊕	GROUND-WATER MONITORING WELL
⊕	NAPL DELINEATION WELL
↖	GROUND WATER ELEVATION CONTOURS WITH FLOW DIRECTION (DASHED WHERE INFERRED)

NOTE: IT IS A VIOLATION OF ARTICLE 130 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER THIS DOCUMENT IN ANY WAY WITHOUT THE EXPRESS WRITTEN VERIFICATION OR ADOPTION BY A NEW YORK STATE LICENSED LAND SURVEYOR OR ENGINEER IN ACCORDANCE WITH SECTION 7209 (2), ARTICLE 130, NEW YORK STATE EDUCATION LAW.

0 40
SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

GROUND WATER ELEVATION CONTOUR MAP
MARCH 18, 2008 (38 HOURS OF PUMPING HEW-2 AT 3 GPM)

DATE	REVISED

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
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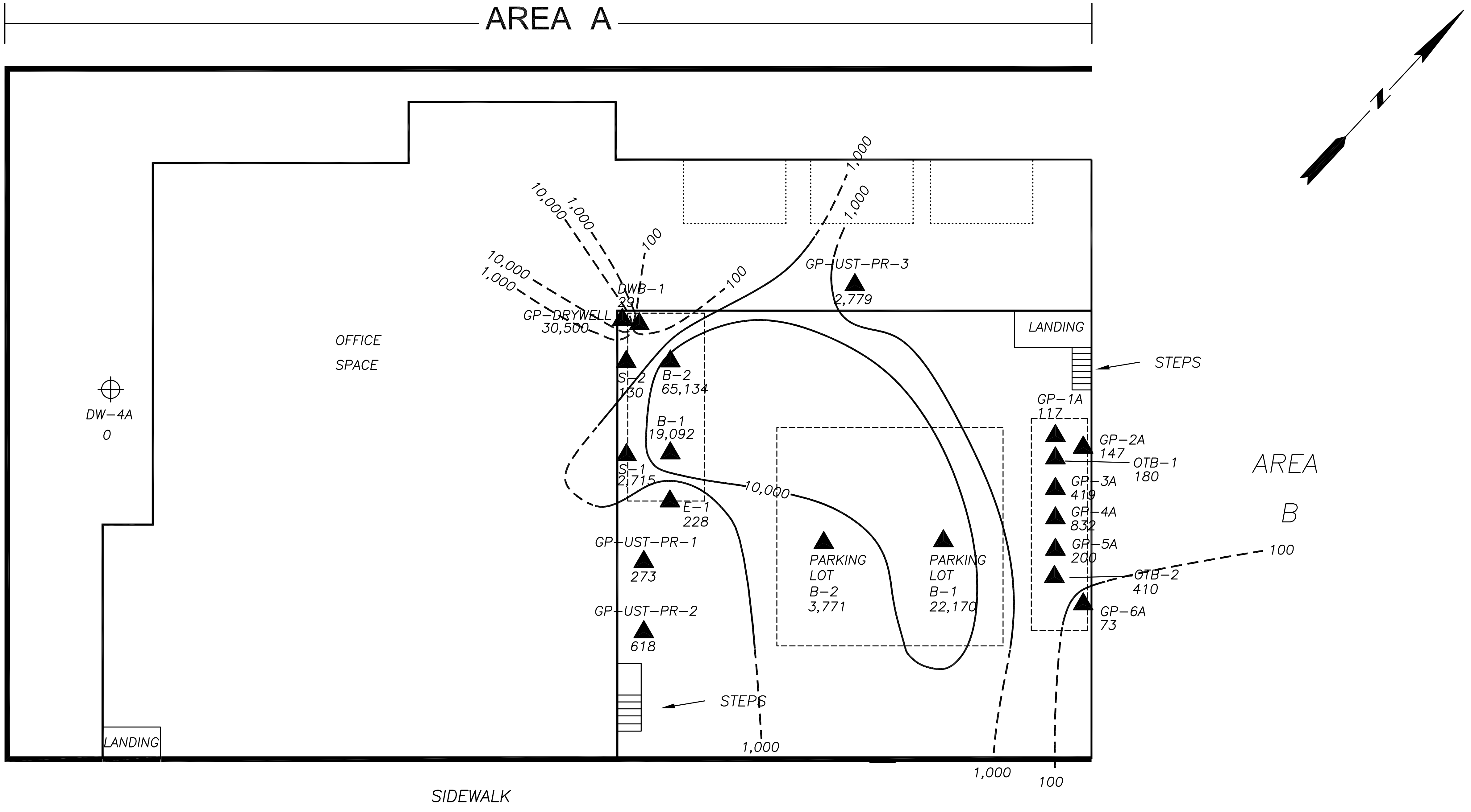
White Plains, NY 10604
(914) 694-5711

DRAWN: JM
CHECKED: SG
DATE: 1/19/09
FIGURE: 45

UST	SIZE	SAMPLE I.D.	DEPTH (FT BG)	TOTAL VOC's (ug/kg)
P	3,000 GALLON STEEL	B-1 B-2 S-1 S-2 E-1 DWB-1	10 10 5 5 5 10	19,092 65,134 2,715 130 228 29
N/A	N/A	OTB-1 OTB-2 PARKING LOT B-1 PARKING LOT B-2	12 12 11 11	180 410 22,170 3,771
N/A	N/A	GP-1A	4-8 32-34	117*
		GP-2A	4-8 28-32	147*
		GP-3A	4-8 32-35	419*
		GP-4A	4-8 32-33	832*
		GP-5A	4-8 32-33.5	200*
		GP-6A	12-16 32-35	73*
		LBG HP-6 RESAMPLE	12-16	0
		GP-DRY WELL	22-26 30-34	30,500*
		GP-UST-PR-1	4-8 32-35.5	273*
		GP-UST-PR-2	4-8 28-31	618*
		GP-UST-PR-3	10-15 35-39.5	2,779*
N/A	N/A	DW-4A	35	0



NORTH WEST STREET

LEGEND

▬ PROPERTY BOUNDARY

⬚ APPROXIMATE EXTENT OF EXCAVATION

▲ ENDPOINT SAMPLE LOCATION

⬚ STORAGE (UTILITY AND ELECTRIC)

VOC VOLATILE ORGANIC COMPOUND

ug/kg MICROGRAMS PER KILOGRAM

--- VOC ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

* INDICATES AN AVERAGE

0 20
SCALE IN FEET

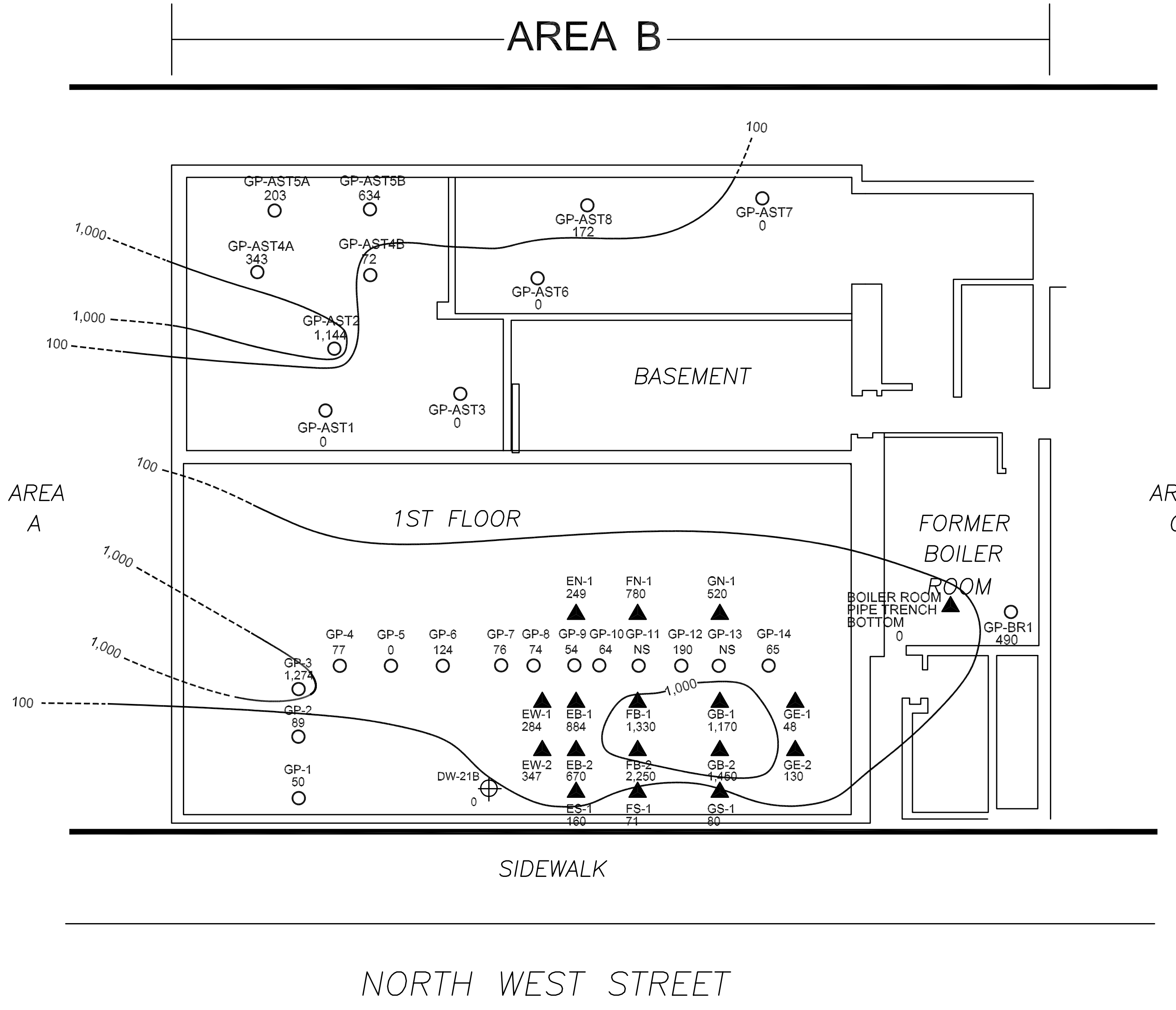
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MT. VERNON, NY
SITE NUMBER 3-60-03

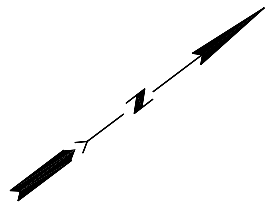
TOTAL VOC CONCENTRATIONS IN SOIL
HORIZONTAL DELINEATION MAP - AREA A

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Services
110 Corporate Park Drive; Suite 112
White Plains, New York
(914) 694-5711

DATE: 2/23/09
FILE: VOC conc-area A
DRAWN BY: JM
CHECKED BY: SG
FIGURE: 46

UST	SIZE	SAMPLE I.D.	DEPTH (FT BG)	TOTAL VOCs (ug/kg)
E F G	EACH 3,000 GAL STEEL TANKS	GP–1	0–5	50
		GP–2	15–20	89
		GP–3	15–20	1,274
		GP–4	15–20	77
		GP–5	5–10	0
		GP–6	10–15	124
		GP–7	10–15	76
		GP–8	15–20	74
		GP–9	0–5	54
		GP–10	0–5	64
		GP–11	NOT SAMPLED	NOT SAMPLED
		GP–12	0–5	190
		GP–13	NOT SAMPLED	NOT SAMPLED
		GP–14	0–5	65
E F G	EACH 3,000 GAL STEEL TANKS	EN–1	5	249
		EW–1	5	284
		EW–2	5	347
		ES–1	5	160
		EB–1	7	884
		EB–2	7	670
		FN–1	5	780
		FB–1	7	1,330
		FB–2	7	2,250
		FS–1	5	71
		GB–1	9	1,170
		GB–2	9	1,450
		GN–1	4	520
		GS–1	4	80
		GE–1	4	48
		GE–2	4	130
NA	NA	BR–1	16–20	490
NA	NA	DW–21B	33–35	0
NA	NA	BOILER ROOM PIPE TRENCH BOTTOM	3	0

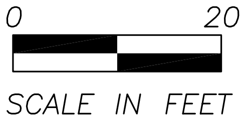




AST	SIZE	SAMPLE I.D.	DEPTH (FT BG)	TOTAL VOCs (ug/kg)
1	NA	GP–AST–1	12–16	0
2		GP–AST–2	0–4	1,144
3		GP–AST–3	0–4	0
4		GP–AST–4A	0–4	343
		GP–AST–4B	0–4	72
5		GP–AST–5A	0–4	203
		GP–AST–5B	0–4	634
6		GP–AST–6	11.5–14	0
7		GP–AST–7	8–11	0
8		GP–AST–8	0–4	172

LEGEND

▬	PROPERTY BOUNDARY
○	GEOPROBE BORING LOCATION WITH DESIGNATION
NS	NOT SAMPLED
NA	NOT AVAILABLE
VOC	VOLATILE ORGANIC COMPOUND
ug/kg	MICROGRAMS PER KILOGRAM
100 - - - - ——	VOC ISOCONCENTRATION LINE (DASHED WHERE INFERRED)



FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NY
SITE NUMBER 3–60–031

TOTAL VOC CONCENTRATIONS IN SOIL
HORIZONTAL DELINEATION MAP – AREA B

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
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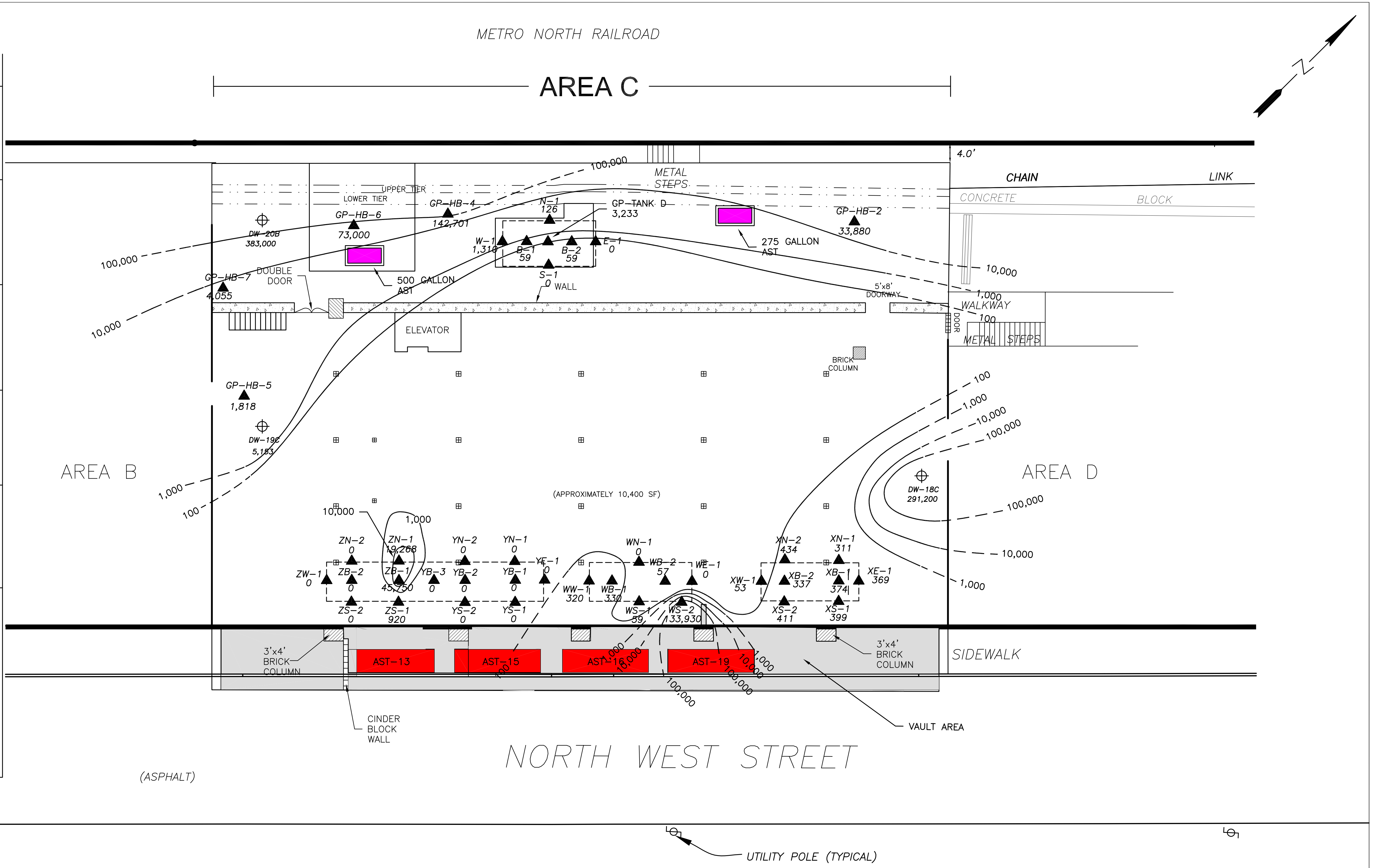
White Plains, New York
(914) 694–5711

DATE: 2/27/09

RED DEVIL/VOC conc–area B	DRAWN BY: JM	CHECKED BY: BH	FIGURE: 47

UST	SIZE	SAMPLE I.D.	DEPTH (FT BG)	TOTAL VOCs ug/kg
W	3,000 GALLON STEEL	WN-1	5	0
		WW-1	5	320
		WS-1	5	59
		WS-2	5	133,930
		WE-1	5	0
		WB-1	7	330
		WB-2	7	57
X	3,000 GALLON STEEL	XN-1	4	311
		XN-2	4	434
		XW-1	4	53
		XS-1	4	399
		XS-2	4	411
		XE-1	4	369
		XB-1	6	374
		XB-2	6	337
D	4,000 GALLON STEEL	N-1	5.5	126
		E-1	5.5	0
		S-1	5.5	0
		W-1	5.5	1,310
		B-1	7.5	59
		B-2	7.5	93
		GP-TANK D	15-20 25-29.5	3,233*
Z	3,000 GALLON STEEL	ZN-1	4	19,268
		ZN-2	4	0
		ZW-1	4	0
		ZS-1	4	920
		ZS-2	4	0
		ZB-1	7	45,750
		ZB-2	7	0
Y	3,000 GALLON STEEL	YN-1	4	0
		YN-2	4	0
		YS-1	4	0
		YS-2	4	0
		YE-1	4	0
		YB-1	7	0
		YB-2	7	0
		YB-3	7	0
NA	NA	GP-HB-2	10-15 25-29.5	33,880*
		GP-HB-4	10-15 25-28	142,701*
		GP-HB-5	15-20 20-25	1,818*
		GP-HB-6	15-20 25-27	73,000*
		GP-HB-7	20-25 25-27	4,055*
		DW-18C	12-14	291,200
		DW-19C	16-18	5,153
		DW-20B	14-16	383,000



LEGEND

—	PROPERTY BOUNDARY	VOC	VOLATILE ORGANIC COMPOUND
⊞	BASEMENT PILLAR SUPPORT	ug/kg	MICROGRAM PER KILOGRAM
🟪	EXISTING AST WITH SECONDARY CONTAINMENT (REMEDIAL DERIVED WASTE STORAGE	NA	NOT AVAILABLE
		—	VOC ISOCONCENTRATION LINE (DASHED WHERE INFERRED)
▲	ENDPOINT SOIL SAMPLE LOCATION	*	INDICATES AN AVERAGE

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0 20
SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

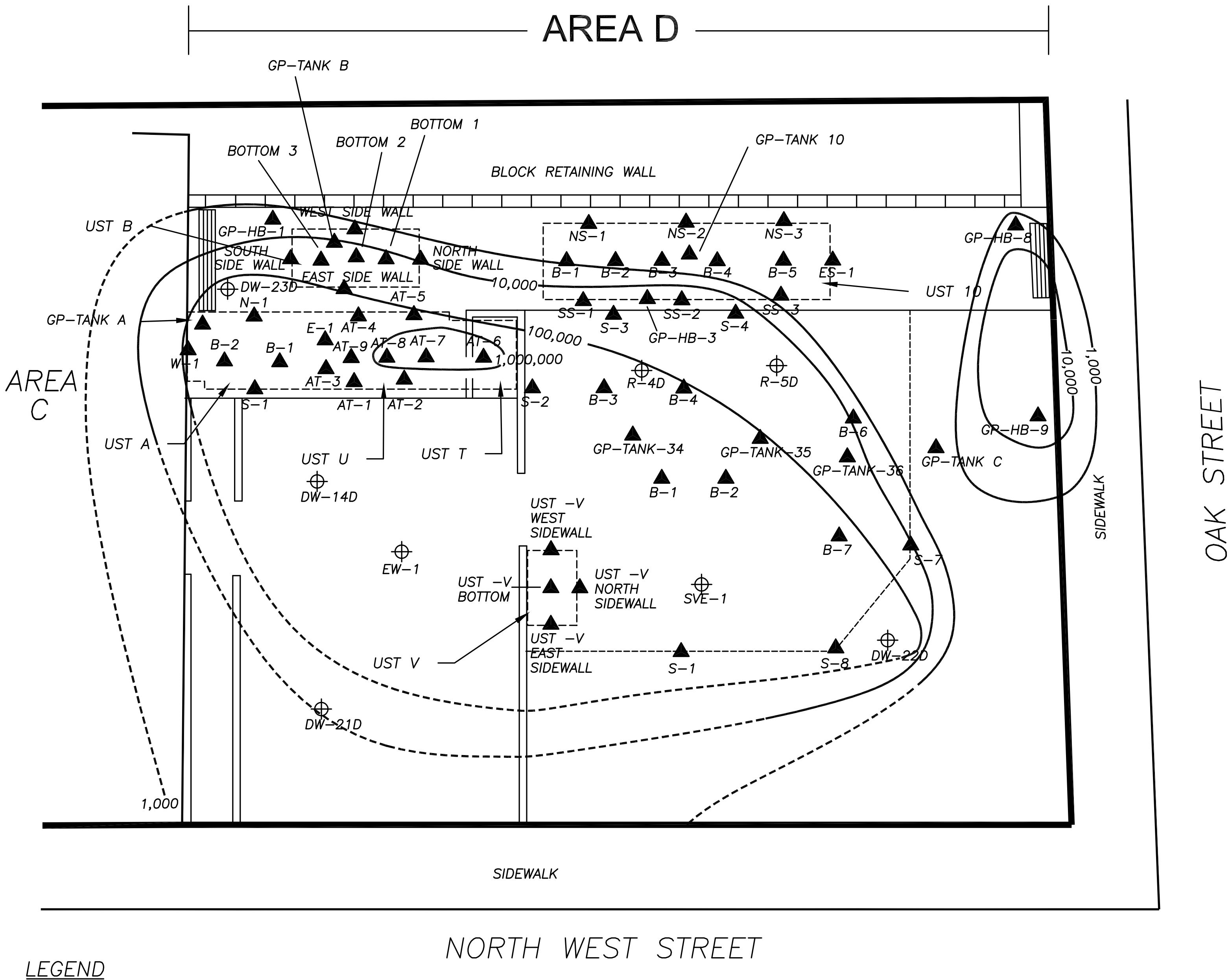
TOTAL VOC CONCENTRATIONS IN SOIL
HORIZONTAL DELINEATION MAP – AREA C

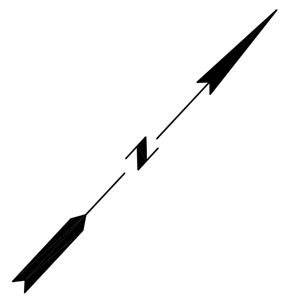
DATE	REVISED

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM | CHECKED: BH | DATE: 2/27/09 | FIGURE: 48

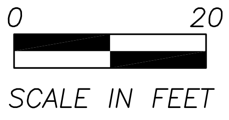
UST	SIZE	SAMPLE I.D.	DEPTH (FT BG)	TOTAL VOCs ug/kg
V	275 GALLON STEEL	NORTH SIDEWALL	5	66
		EAST SIDEWALL	5	67
		WEST SIDEWALL	5	270
		BOTTOM	10	110
U	3,000 GALLON STEEL	AT–1	5	320
		AT–3	5	770
		AT–4	5	891
		AT–8	13	3,892,400
		AT–9	13	13,344
T	500 GALLON STEEL	AT–2	5	289
		AT–5	5	3,358
		AT–6	13	6,093,800
		AT–7	13	6,147,200
34	4000 GAL STEEL	B–1	13	91,190
35	4000 GAL STEEL	B–2	13	165,200
36	4000 GAL STEEL	B–3	13	130,610
C	1500 GAL STEEL	B–4	13	656,200
		B–6	13	53,350
		B–7	13	139,700
		S–1	6	33
		S–2	7	240
		S–3	7	75,209
		S–4	7	60,940
		S–7	7	0
		S–8	7	0
NA	NA	EW–1	14–16	297,900
		DW–21D	15–17	335,900
		DW–22D	12–14	218,000
		DW–23D	15–17	205,160
		SVE–1	19–21	375,600
		R–4D	24–26	52,860
		R–5D	14–16	166,360
		GP–TANK 10	12–24	107,850
		GP–TANK A	10–27	74,300
		GP–TANK B	12–27	53,450
		GP–HB–1	15–27	33,000
		GP–HB–3	20–34	28,205
		GP–HB–8	15–27	8,312
		GP–HB–9	15–25	75,535





LEGEND

▬	PROPERTY BOUNDARY
▤	CATCH BASIN
▲	ENDPOINT SOIL SAMPLE LOCATION
VOC	VOLATILE ORGANIC COMPOUND
ug/kg	MICROGRAMS PER KILOGRAMS
NA	NOT AVAILABLE
⊃	VOC ISOCONCENTRATION LINE (DASHED WHERE INFERRED)



SCALE IN FEET

UST	SIZE	SAMPLE I.D.	DEPTH (FT BG)	TOTAL VOCs ug/kg
10	10,000 GALLON STEEL	NS–1	5	54
		NS–2	5	170
		NS–3	6	130
		ES–1	6	140
		SS–1	5	170
		SS–2	5	53
		SS–3	6	160
		B–1	11	57
		B–2	11	198
		B–3	11	176
		B–4	11	150
		B–5	11	130
A	3,500 GALLON STEEL	N–1	7	203
		E–1	7	66
		S–1	7	447
		W–1	7	1,028
		B–1	10	248
		B–2	10	0
B	3,500 GALLON STEEL	NORTH SIDEWALL	5	644
		EAST SIDEWALL	5	1,291
		SOUTH SIDEWALL	5	72
		WEST SIDEWALL	5	0
		BOTTOM 1	8	0
		BOTTOM 2	8	0
		BOTTOM 3	8	72

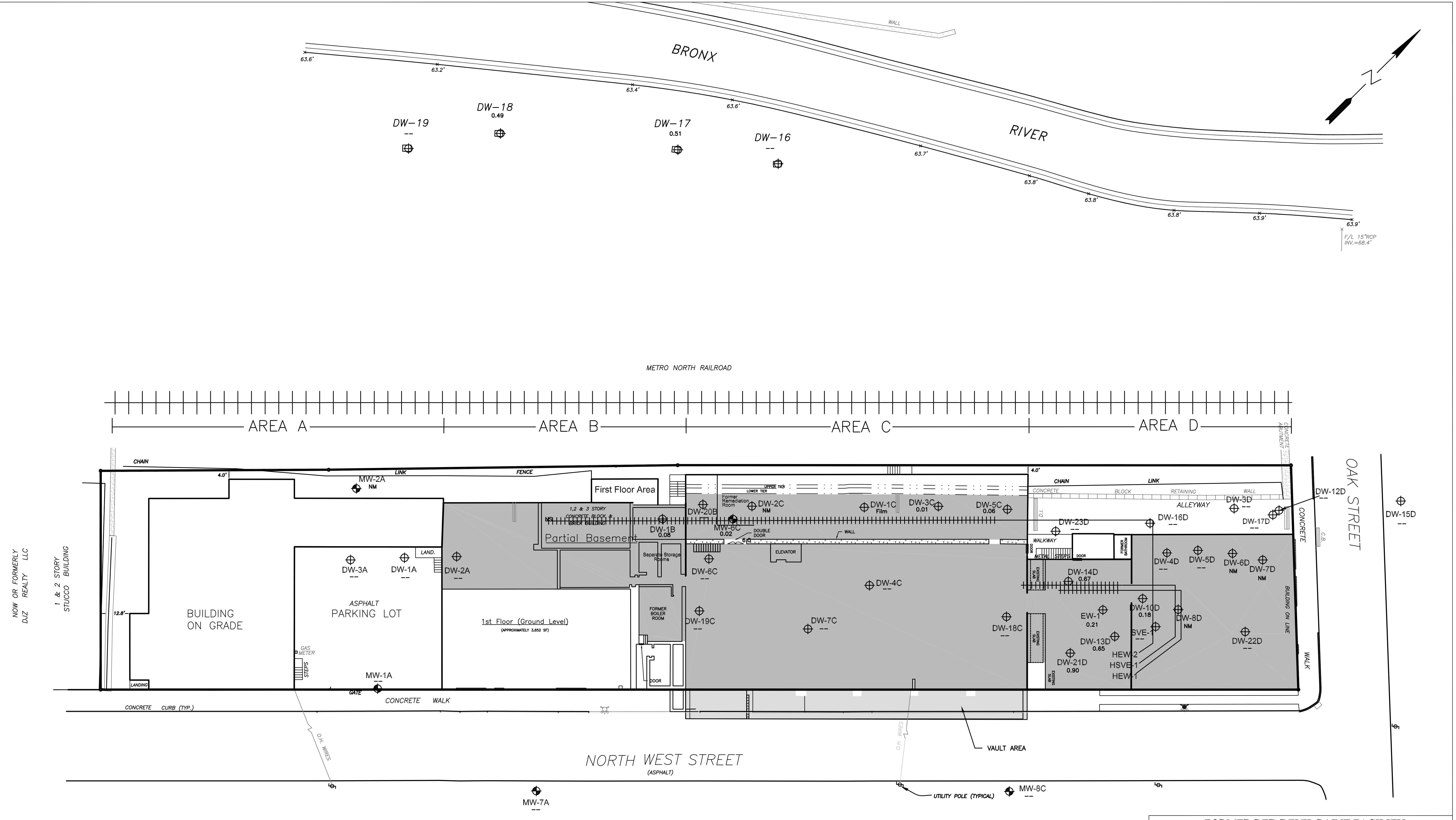
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MT. VERNON, NY
SITE NUMBER 3–60–03

TOTAL VOC CONCENTRATIONS IN SOIL
HORIZONTAL DELINEATION MAP – AREA D

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground–Water and Environmental Services
110 Corporate Park Drive; Suite 112
White Plains, New York
(914) 694–5711

DATE: 2/27/09

FILE: VOC conc – area d	DRAWN BY: JM	CHECKED BY: BH	FIGURE: 49



LEGEND

▬	PROPERTY BOUNDARY
⊕	GROUND WATER MONITOR WELL LOCATION
⊕	PRODUCT DELINEATION WELL LOCATION
0.06	PRODUCT THICKNESS (FEET)
NM	NOT MEASURED
┼┼┼┼┼┼┼┼┼┼	HORIZONTAL WELL

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0 40
SCALE IN FEET

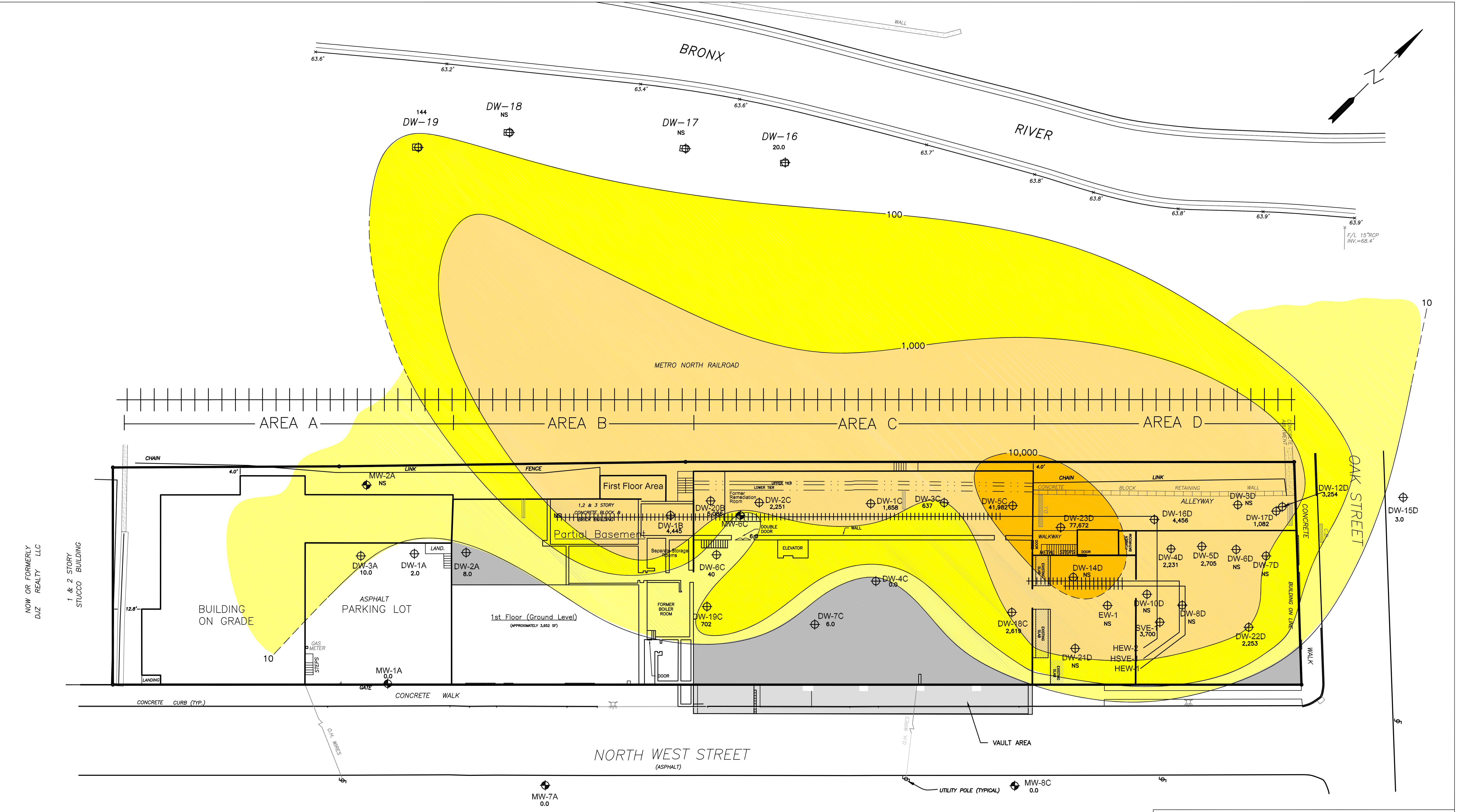
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

FREE-PHASE PRODUCT (NAPL) DISTRIBUTION
JUNE 2007

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN:	JM	CHECKED:	SG	DATE:	12/30/08	FIGURE:	50



LEGEND

━━━	PROPERTY BOUNDARY
⊕	GROUND WATER MONITOR WELL LOCATION
2,231	TOTAL VOC CONCENTRATION IN GROUNDWATER (ug/l)
NS	NOT SAMPLED
⊕	PRODUCT DELINEATION WELL LOCATION
┼┼┼┼┼┼┼┼┼┼	HORIZONTAL WELL
⬭	TOTAL VOC ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

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0 40
SCALE IN FEET

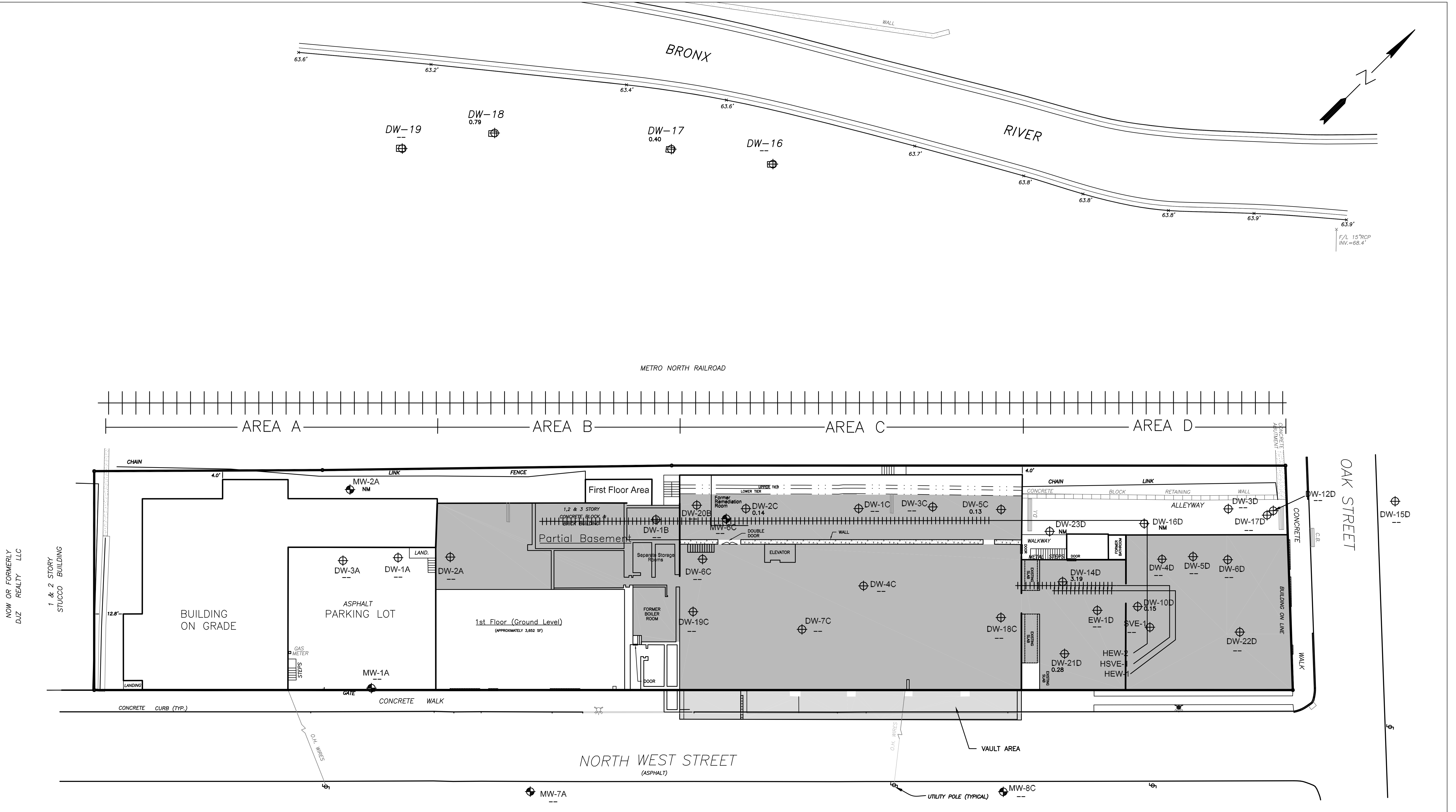
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

TOTAL VOC CONCENTRATIONS IN GROUNDWATER
JUNE 2007

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM | CHECKED: SG | DATE: 2/23/09 | FIGURE: 51



PROPERTY BOUNDARY
GROUND WATER MONITOR WELL LOCATION
PRODUCT DELINEATION WELL LOCATION
0.14 PRODUCT THICKNESS (FEET)
NM NOT MEASURED
HORIZONTAL WELL

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0 40
SCALE IN FEET

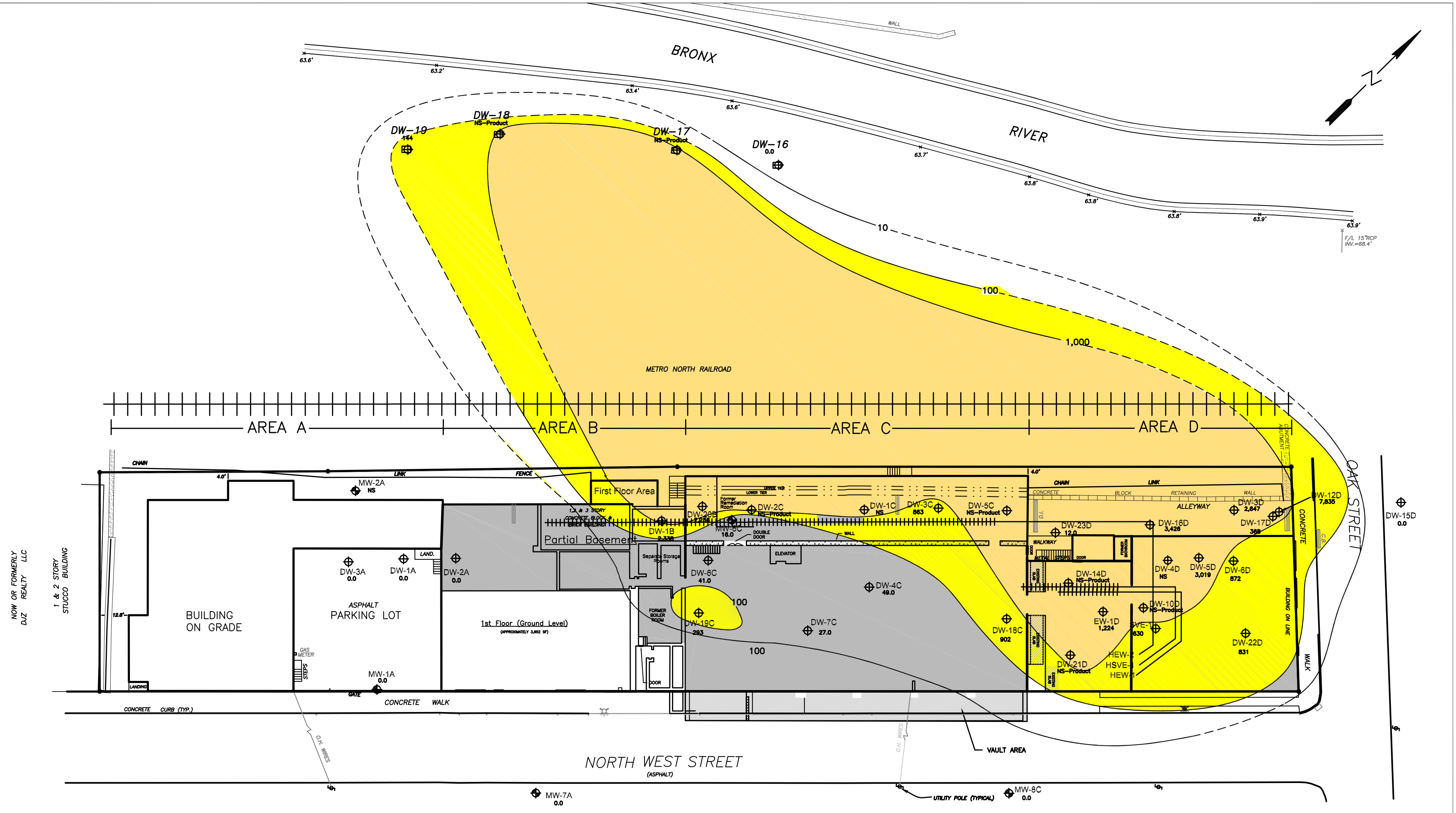
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

FREE-PHASE PRODUCT (NAPL) DISTRIBUTION
MARCH 2008

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM CHECKED: SG DATE: 12/30/08 FIGURE: 52



───	PROPERTY BOUNDARY
⊕	GROUND WATER MONITOR WELL LOCATION
16.0	TOTAL VOC CONCENTRATION IN GROUNDWATER (ug/l)
NS	NOT SAMPLED
⊕	PRODUCT DELINEATION WELL LOCATION
┼┼┼┼┼┼┼┼	HORIZONTAL WELL
⬭	TOTAL VOC ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

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0 40
SCALE IN FEET

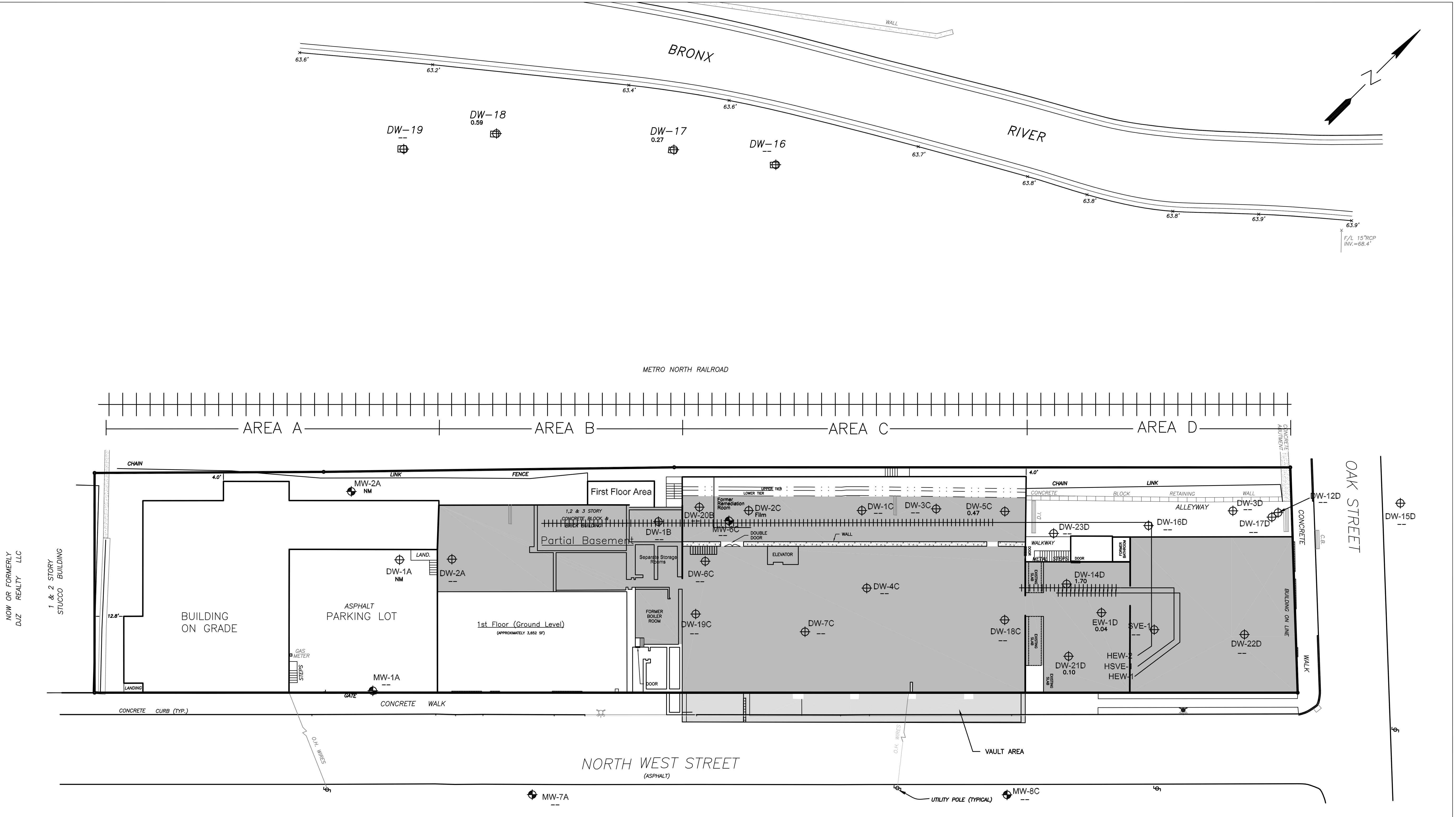
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

TOTAL VOC CONCENTRATIONS IN GROUNDWATER
MARCH 2008

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM | CHECKED: SG | DATE: 2/23/09 | FIGURE: 53



▬	PROPERTY BOUNDARY
⊕	GROUND WATER MONITOR WELL LOCATION
⊕	PRODUCT DELINEATION WELL LOCATION
0.47	PRODUCT THICKNESS (FEET)
NM	NOT MEASURED
┼┼┼┼┼┼┼┼┼┼	HORIZONTAL WELL

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0 40
SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

FREE-PHASE PRODUCT (NAPL) DISTRIBUTION
JUNE 2008

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
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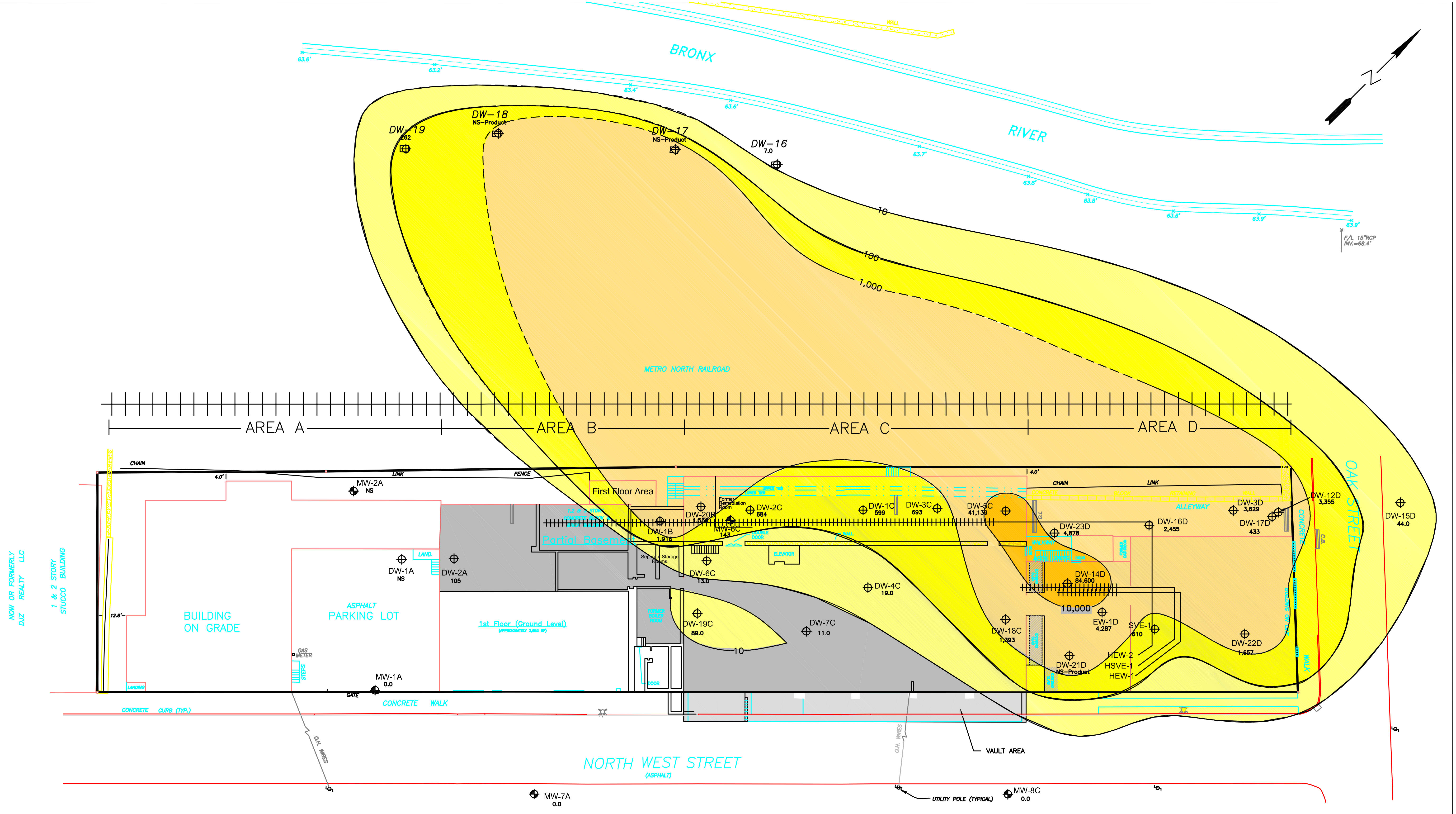
White Plains, NY 10604
(914) 694-5711

DRAWN: JM | CHECKED: SG | DATE: 12/30/08 | FIGURE: 54



▬▬ PROPERTY BOUNDARY

⊕ GROUND WATER MONITOR WELL LOCATION

143 TOTAL VOC CONCENTRATION IN GROUNDWATER (ug/l)

NS NOT SAMPLED

⊕ PRODUCT DELINEATION WELL LOCATION

┼┼┼┼┼┼┼┼┼┼ HORIZONTAL WELL

🟨 TOTAL VOC ISOCONCENTRATION LINE
(DASHED WHERE INFERRED)

NOTE: IT IS A VIOLATION OF ARTICLE 130 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER THIS DOCUMENT IN ANY WAY WITHOUT THE EXPRESS WRITTEN VERIFICATION OR ADOPTION BY A NEW YORK STATE LICENSED LAND SURVEYOR OR ENGINEER IN ACCORDANCE WITH SECTION 7209 (2), ARTICLE 130, NEW YORK STATE EDUCATION LAW.

0 40
SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

TOTAL VOC CONCENTRATIONS IN GROUNDWATER
JUNE 2008

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

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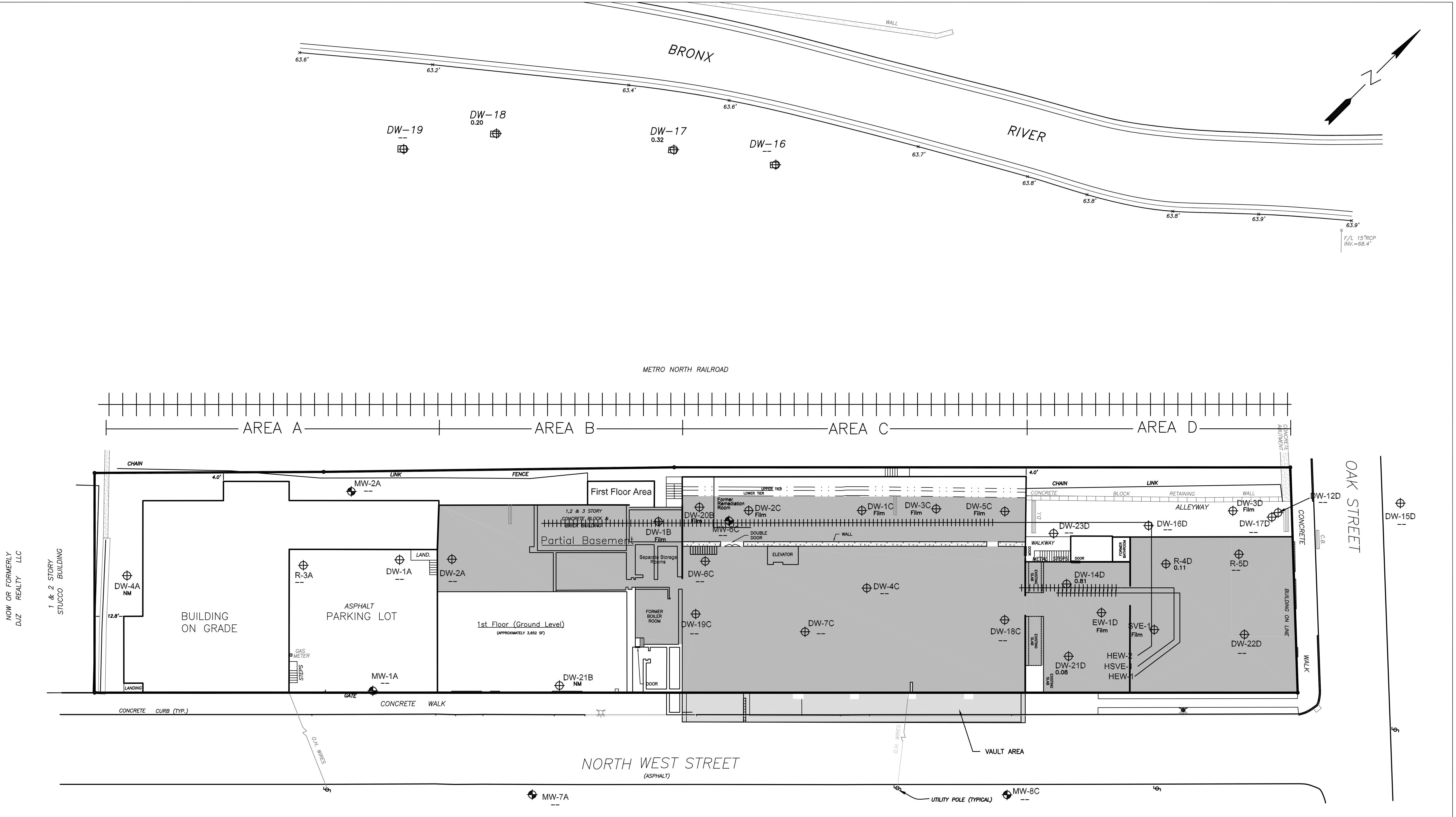

—	PROPERTY BOUNDARY
⊕	GROUND WATER MONITOR WELL LOCATION
⊕	PRODUCT DELINEATION WELL LOCATION
0.08	PRODUCT THICKNESS (FEET)
NM	NOT MEASURED
++++++++++++	HORIZONTAL WELL

R-3A, R-4D AND R-5D ARE REPLACEMENT WELLS

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0 40
SCALE IN FEET

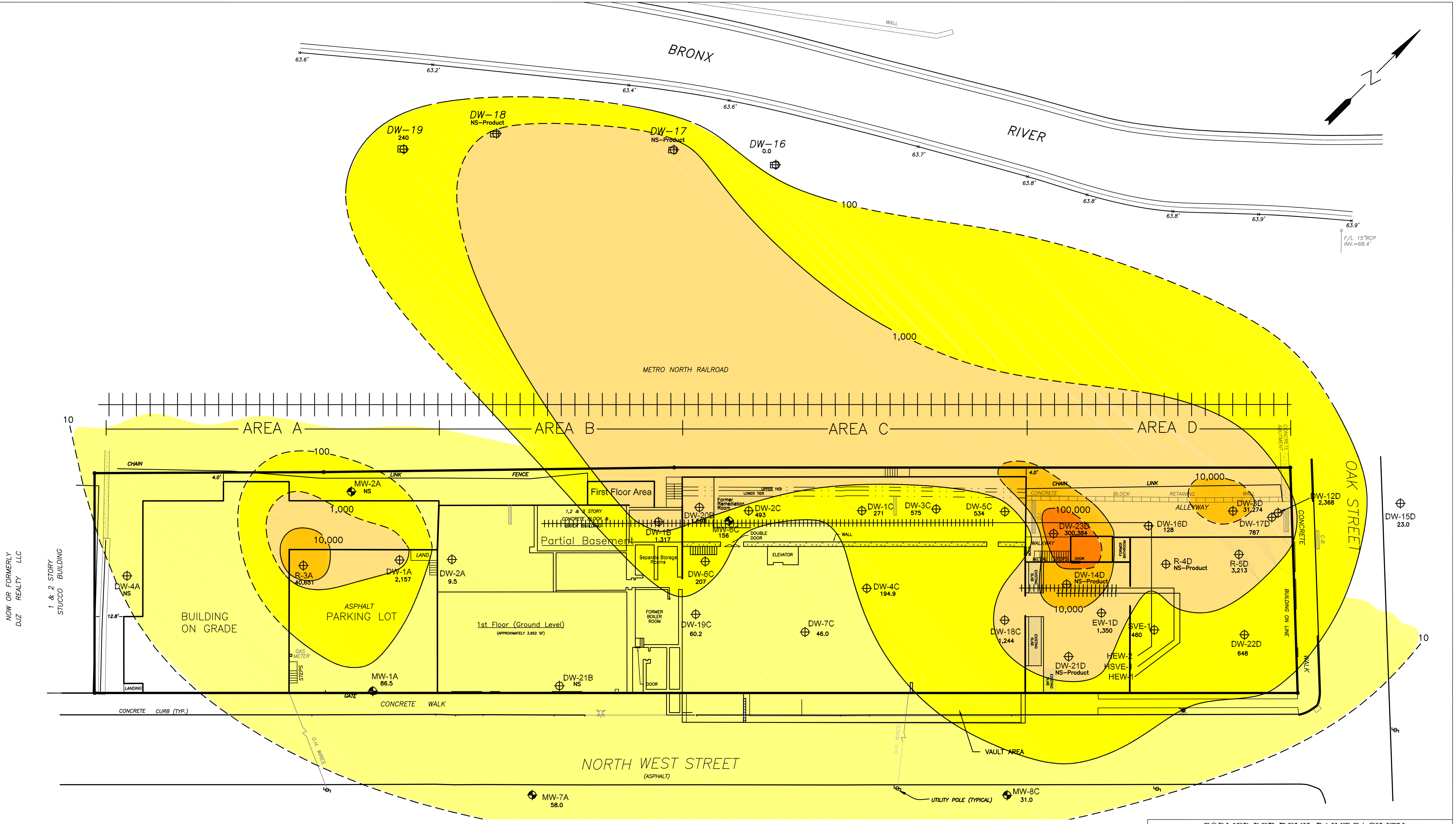
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

FREE-PHASE PRODUCT (NAPL) DISTRIBUTION
OCTOBER 2008

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM | CHECKED: SG | DATE: 12/30/08 | FIGURE: 56



PROPERTY BOUNDARY

⊕ GROUND WATER MONITOR WELL LOCATION

58.0 TOTAL VOC CONCENTRATION IN GROUNDWATER (ug/l)

NS NOT SAMPLED

⊕ PRODUCT DELINEATION WELL LOCATION

┼┼┼┼┼┼┼┼┼┼ HORIZONTAL WELL

TOTAL VOC ISOCONCENTRATION LINE
(DASHED WHERE INFERRED)

R-3A, R-4D AND R-5D ARE REPLACEMENT WELLS

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0 40
SCALE IN FEET

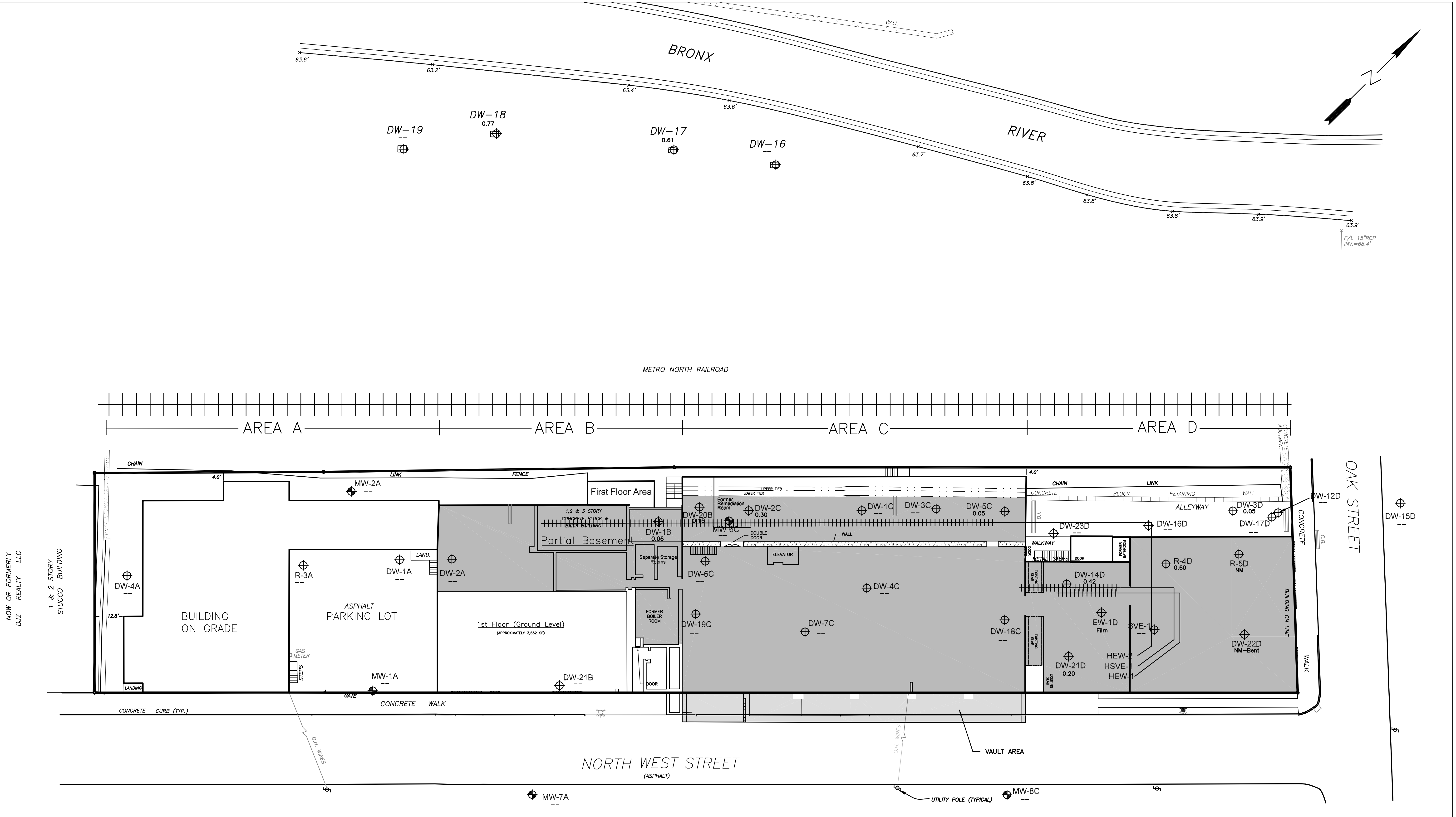
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

TOTAL VOC CONCENTRATIONS IN GROUNDWATER
OCTOBER 2008

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN: JM
CHECKED: SG
DATE: 2/23/09
FIGURE: 57



—	PROPERTY BOUNDARY
⊕	GROUND WATER MONITOR WELL LOCATION
⊕	PRODUCT DELINEATION WELL LOCATION
0.30	PRODUCT THICKNESS (FEET)
NM	NOT MEASURED
┼┼┼┼┼┼┼┼┼┼┼	HORIZONTAL WELL

R–3A, R–4D AND R–5D ARE REPLACEMENT WELLS

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0 40
SCALE IN FEET

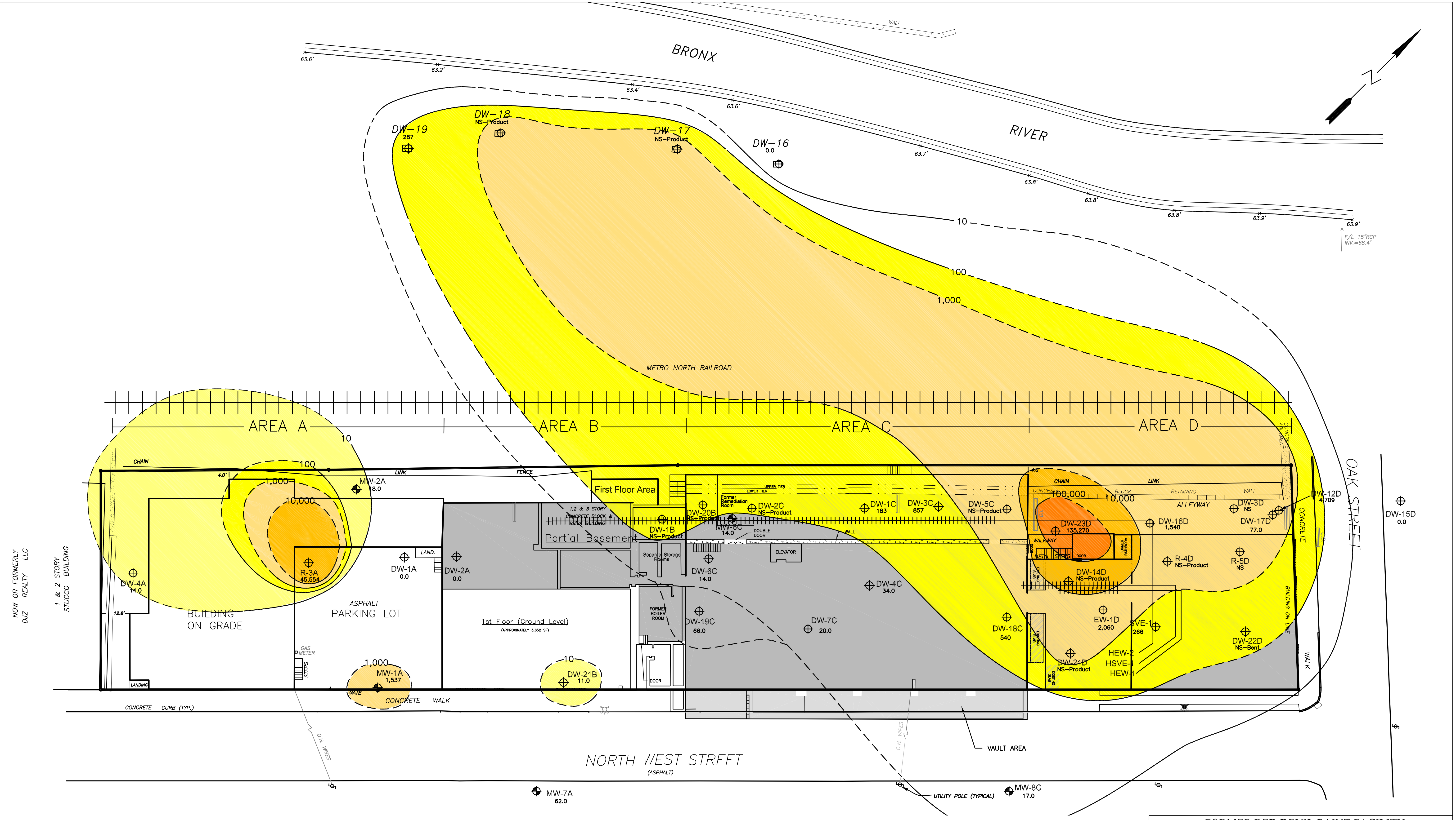
FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

FREE-PHASE PRODUCT (NAPL) DISTRIBUTION
JANUARY 2009

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN:	JM	CHECKED:	SG	DATE:	12/30/08	FIGURE:	58



━━━━	PROPERTY BOUNDARY
⊕	GROUND WATER MONITOR WELL LOCATION
62.0	TOTAL VOC CONCENTRATION IN GROUNDWATER (ug/l)
NS	NOT SAMPLED
⊕	PRODUCT DELINEATION WELL LOCATION
┼┼┼┼┼┼┼┼┼	HORIZONTAL WELL
🟧	TOTAL VOC ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

R-3A, R-4D AND R-5D ARE REPLACEMENT WELLS

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SCALE IN FEET

FORMER RED DEVIL PAINT FACILITY
30 NORTH WEST STREET
MOUNT VERNON, NEW YORK
SITE NO. 3-60-031

TOTAL VOC CONCENTRATIONS IN GROUNDWATER
JANUARY 2009

DATE	REVISED

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
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White Plains, NY 10604
(914) 694-5711

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