

**Steel Treaters, Inc.**

**Site Number VCA No. V00578-4  
Troy, New York**

**Work Plan for  
Remedial Investigation Closeout  
And  
Final Remedy Selection**

**July 2012**

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Final Remedy Selection

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Prepared For:

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## 1.0 INTRODUCTION

The Steel Treathers, Inc. site is located at 520 Campbell Avenue in Troy, New York (Site). The work is subject to the terms of the Voluntary Cleanup Agreement (VCA) between Steel Treathers and the New York State Department of Environmental Conservation (NYSDEC) dated September 19, 2003 (VCA No. V00578-4).

This work plan provides the scope of work to close out the Remedial Investigation (RI) phase of work at the Site; this work plan also provides the procedures for selection of a final remedy. This work plan was prepared in response to a letter request from NYSDEC dated February 22, 2012 and discussed during a meeting with NYSDEC on March 19, 2012.

A Pre-Remedial Investigation Report was submitted to NYSDEC in January 2012 to summarize the investigation and remediation work that had been performed at the site starting in 2003 until 2011. In approving the Pre-Remedial Investigation Report, the NYSDEC identified data gaps that would need to be resolved to close out the RI phase. Summarizing from NYSDEC's letter of February 22, 2012, these data gaps are as follows:

- Additional data is needed to fully characterize the current extent of residual subsurface contamination following the remedial efforts (RegenOx™ injection, soil vapor extraction, source removal).
- Groundwater contamination detected in well BRMW-3 has not been characterized.
- Several piping features located on the west/southwest side of the building need to be identified and characterized for their potential to act as contributors to subsurface contamination.

As discussed with NYSDEC, this work plan also provides the procedures for selection of a final remedy for the Site, in a manner consistent with the Voluntary Cleanup Program (VCP).

## 2.0 SCOPE OF WORK

### 2.1 Investigation of Residual Soil and Groundwater Contamination

A former degreaser on the interior of the vacant facility has been determined to be the primary suspect source of contamination. The NYSDEC February 22, 2012 letter stated that

previously unsampled areas must be assessed, together with additional samples within and near the degreaser area. To more fully characterize the extent of subsurface contamination in and around the former degreaser footprint, a series of borings will be advanced at the proposed locations shown on Figure 1. All borings will be advanced inside the existing building. The borings will be advanced using a Geoprobe equipped with a Membrane Interface Probe (MIP), which is a real-time sensor for detecting volatile organic compounds (VOCs). The MIP has been successfully used previously at this site; the output from the MIP is a real-time vertical log of VOC concentrations (from ground surface to the top of bedrock, in one-foot increments). The MIP contains three detectors, and the electron captor detector (ECD) is the most sensitive to chlorinated VOCs; the approximate detection limit for the ECD is 250 parts per billion (ppb)

Borings will be advanced until refusal is encountered (top of bedrock), which is roughly fifteen (15) feet below the floor surface. The depth to bedrock will be recorded for each borehole. The MIP detects the total concentration of VOCs, regardless of the matrix (present as a vapor in the soil vapor, dissolved in groundwater or adsorbed to soil/geologic materials).

Prior to commencing the MIP borings, a groundwater sample will be collected from monitoring well MW-7 to provide a current snapshot of groundwater quality in the investigation area. The first MIP boring will be the one closest to MW-7, then proceeding to the proposed borings closest to the previous MIP borings, then proceeding to the borings which would be downgradient (north). As the MIP provides real-time data, some of the proposed boring locations may be changed, in consultation with NYSDEC, depending upon the findings of the initial borings.

Soil samples will be collected at approximately half of the boring locations using a MacroCore sampler; soil samples will be submitted to a laboratory for analysis for VOCs by USEPA Method 8260B. The selection of the boring location and sample depth will be made following completion of the MIP borings, in consultation with NYSDEC. In general, the sample locations and depths will be selected to provide representative correlation of VOC concentrations with the MIP data, and allow for comparison to DER-10 cleanup guidance criteria.

## 2.2 Investigation of BRMW-3 Area

Concentrations of total VOCs (TVOCs) ranging from 370 ug/L to 23,300 ug/L have been detected in well BRMW-3 since its installation in early 2011. Although the source of contaminants detected in BRMW-3 has not yet been identified, it is suspected that the contaminant pathway is at or near the interface between the overburden and bedrock. The NYSDEC February 22, 2012 letter stated that the extent of bedrock groundwater contamination to the east of the Site must be delineated. To satisfy this requirement and to attempt to locate the source of contaminants to BRMW-3, a series of borings will be advanced at the proposed locations shown on Figure 2. The borings will be advanced using a Geoprobe equipped with a Membrane Interface Probe (MIP). Borings will be advanced until refusal is encountered (top of bedrock), which is roughly thirteen (13) feet below grade. Per NYSDEC request, potentiometric surface maps for the bedrock flow system are presented as Figures 3 and 4.

Prior to commencing the MIP borings, a groundwater sample will be collected from monitoring well BRMW-3 to provide a current snapshot of groundwater quality in the investigation area. . The first MIP boring will be the one closest to BRMW-3, then borings will be advanced to the south (towards the garage door), then to the east, and finally in a downgradient direction (to the north). As the MIP provides real-time data, some of the proposed boring locations may be changed, in consultation with NYSDEC, depending upon the findings of the initial borings.

Soil and/or groundwater samples will be collected at approximately half of the boring locations using a MacroCore sampler for soil or a well-point sampler for groundwater; samples will be submitted to a laboratory for analysis for VOCs by USEPA Method 8260B. The selection of the boring location, matrix (soil or water), and sample depth will be made following completion of the MIP borings, in consultation with NYSDEC. In general, the sample locations and depths will be selected to provide representative correlation of VOC concentrations with the MIP data, and allow for comparison to DER-10 cleanup guidance criteria.

An additional bedrock monitoring well will be installed at the location shown on Figure 2; this location may be changed based on the results of the MIP work, in consultation with NYSDEC. Drilling will be conducted with a truck-mounted rotary drilling rig. A 6.25-inch inner diameter hollow-stem auger will be advanced to the top of bedrock. Split-spoon samples will be

collected on a continuous basis through the overburden for geologic characterization. Once bedrock is encountered, a tri-cone roller bit (5-inch diameter, nominal) will be employed to create a socket roughly 5 feet into the bedrock. A 4-inch diameter steel casing will then be inserted into the socket and grouted into place.

After allowing the grout to set, an HQ core barrel will be installed on HQ rods and will be inserted into the steel casing. The HQ core barrel will be advanced roughly 10 feet beyond the bottom of the steel casing, and bedrock cores will be retained in standard wooden core boxes. Only potable water will be used as a drilling fluid; the amount of water added to a borehole will be carefully monitored, and the amount of drilling water lost to the formation will be recorded.

Once the bedrock well is completed, it will be developed using pumping, surging or a similar technique. Field parameters (pH, temperature, and specific conductance) will be monitored during well development; stabilization of field parameters will be used as an indicator of proper well development. Turbidity will also be measured during well development; stable turbidity measurements below 50 NTUs will also be used as an indicator of proper well development.

### 2.3 Subsurface Piping Investigation

The Pre Remedial Investigation Report mapped and identified several piping features (stubs) along the west side of the building; the identified features are shown on Figure 5. Not all of the mapped piping features could be identified, and some of the features related to the cooling water system are believed to be interconnected, but this could not be confirmed. The NYSDEC February 22, 2012 letter requested an assessment of certain features at the Site as potential secondary sources of contamination, including the following:

- The perforated pipe at the rear of the Site building;
- The enclosed/caged area on the eastern edge of the building;
- The floor drain in the northeastern corner of the building;
- Three 2-inch steel pipe stickups on the eastern side of the building;
- Four stickups on the northeastern corner of the building.

An investigation of the piping features will be performed to identify the remaining mapped features and to evaluate the potential for one or more of the piping features to act as pathways for subsurface contamination.

Steel Treaters' personnel will be on site to verify the purpose of piping features based on their experience. As applicable, physical investigation may be performed where verification cannot be determined otherwise. The first phase of the investigation of the piping features will entail visual inspection, hand-digging to expose piping and mechanical evaluation (plumbers snake, water flush). A photoionization detector (PID) will be used to detect the presence of volatile organic compounds (VOCs) in and around the piping features. Depending upon field observations, samples of soil and/or water may be collected for laboratory analysis; samples will be submitted to a laboratory for analysis for VOCs by USEPA Method 8260B. It is anticipated that six (6) samples will be collected during this task. Samples will be collected with an appropriate sampling implement (e.g. - scoop, spoon, trowel). The selection of samples will be made in consultation with NYSDEC. In general, the sample locations will be selected to provide representative correlation of VOC concentrations with the PID readings, and allow for comparison to DER-10 cleanup guidance criteria.

Additionally, samples of accumulated sediment in the two largest interior equipment pits will be collected. Samples will be submitted to a laboratory for analysis for polychlorinated biphenyls by USEPA Method 8082 and additional parameters designated by the anticipated disposal facility.

## 2.4 Reporting

A summary report will be prepared to present the results of the investigation tasks. The report will include data tables and appropriate supporting figures.

## 2.5 Selection of Final Remedy

### 2.5.1 Voluntary Cleanup Agreement (VCA)

The VCA between Steel Treaters and the NYSDEC is dated September 19, 2003 (VCA No. V00578-4). The VCA reads *"At a minimum, the remedial activities contemplated by the proposed Work Plan must eliminate or mitigate all significant*

*threats to public health and/or the environment and must result in the Site being protective of public health and the environment for the Contemplated Use”.*

As defined in the VCA, the Contemplated Use for the Site is “restricted commercial use/restricted industrial use excluding day care, child care and medical care uses”. The process for selection of a final remedy is provided in §II.F of the VCA, which is provided below:

*F. Department’s Determination of Need for Remediation*

*The Department will determine upon its approval of each final report dealing with the investigation of the Site whether remediation, or additional remediation as the case may be, is needed to allow the Site to be used for the Contemplated Use.*

*1. The Department shall timely notify Volunteer if it determines that remediation, or additional remediation, is not needed to allow the Site to be used for the Contemplated Use. If the Department determines that additional remediation is not needed and such determination is based upon use restrictions, Volunteer shall cause to be filed a Declaration of Covenants and Restrictions in accordance with Paragraph X within sixty (60) Days of receipt of Department’s determination. Upon receipt of a copy of such instrument, the Department will provide Volunteer with the Release described in Subparagraph IIH.*

*2. If the Department determines that remediation, or additional remediation, is needed to allow the Site to be used for the Contemplated Use, Volunteer may elect to submit for review and approval a proposed Work Plan (or a revision to an existing Remedial Action Work Plan for the Site) which addresses the remediation of Existing Contamination. Such proposed Work Plan shall include, among other requirements, an evaluation of the proposed remedy considering the factors set forth in 6NYCRR 375-1.10(c)(1) through (c)(6), excluding consideration of cost-effectiveness. At a minimum, the remedial activities contemplated by the proposed Work Plan must eliminate or mitigate all significant threats to the public health and/or the environment and must result in the Site being protective of public health and the environment for the Contemplated Use. The Department will notice a proposed Work Plan addressing the*

*Site's remediation for public comment in accordance with Subparagraph II.G of this Agreement. If Volunteer elects not to develop a Work Plan under this Subparagraph or either party concludes that a mutually acceptable Work Plan under this Subparagraph cannot be negotiated, then this Agreement shall terminate in accordance with Subparagraph XII.A.*

## 2.5.2 Technical Guidance for Site Investigation and Remediation

The Technical Guidance for Site Investigation and Remediation (DER-10, dated May 2010) also sets forth a methodology for selection of a final site remedy. Under Section 4.4(c) of DER-10, an Alternatives Analysis (AA) Report is specified, with an AA being defined as “*a report, or portion of a remedial work plan, which identifies one or more alternatives and evaluates the effectiveness of each with respect to the criteria in subdivision 4.2(a).*”

Under Section 4.4 (d) 3., DER-10 further states that:

*The AA for a VCP ... will develop at least one alternative:*

- i. Unless DER requests that additional alternatives be evaluated and documented; or*
- ii. The remedial party elects to evaluate and document additional alternatives.*

Finally, in Section 4.5(a)2. , DER-10 describes the procedure for the preparation of a Decision Document (DD) by the Division of Environmental Remediation (DER), provision for public review and comment, and preparation of a final DD.

## 2.5.3 6 NYCRR Part 375

Section 1.8(f)(1) through (f)(6) of 6 NYCRR Part 375 describes the methodology for remedy selection is provided below (this information was formerly provided in 6 NYCRR 375 - 1.10(c)(1) through (c)(6)).

*(f) Remedy selection. A remedy shall be selected upon consideration of these nine factors:*

(1) Overall protectiveness of the public health and the environment.

(2) Standards, criteria and guidance. The remedy will:

(i) conform to standards and criteria that are generally applicable, consistently applied, and officially promulgated, that are either directly applicable, or that are not directly applicable but are relevant and appropriate, unless good cause exists why conformity should be dispensed with. Good cause exists if any of the following is present:

(a) the proposed action is only part of a complete program or project that will conform to such standard or criterion upon completion;

(b) conformity to such standard or criterion will result in greater risk to the public health or to the environment than alternatives;

(c) conformity to such standard or criterion is technically impracticable from an engineering perspective;

(d) the program or project will attain a level of performance that is equivalent to that required by the standard or criterion through the use of another method or approach; and

(ii) consider applicable Department guidance.

(3) Long-term effectiveness and permanence: a program or project that achieves a complete and permanent cleanup of the site is preferred over a program or project that does not do so.

(4) Reduction in toxicity, mobility or volume of contamination through treatment: a program or project that permanently and significantly reduces the toxicity, mobility or volume of contamination is to be preferred over a program or project that does not do so. The following is the hierarchy of technologies ranked from the most preferable to the least preferable:

(i) destruction, on-site or off-site;

(ii) separation or treatment, on-site or off-site;

*(iii) solidification or chemical fixation, on-site or off-site; and*

*(iv) control and isolation, on-site or off-site.*

*(5) Short-term impacts and effectiveness.*

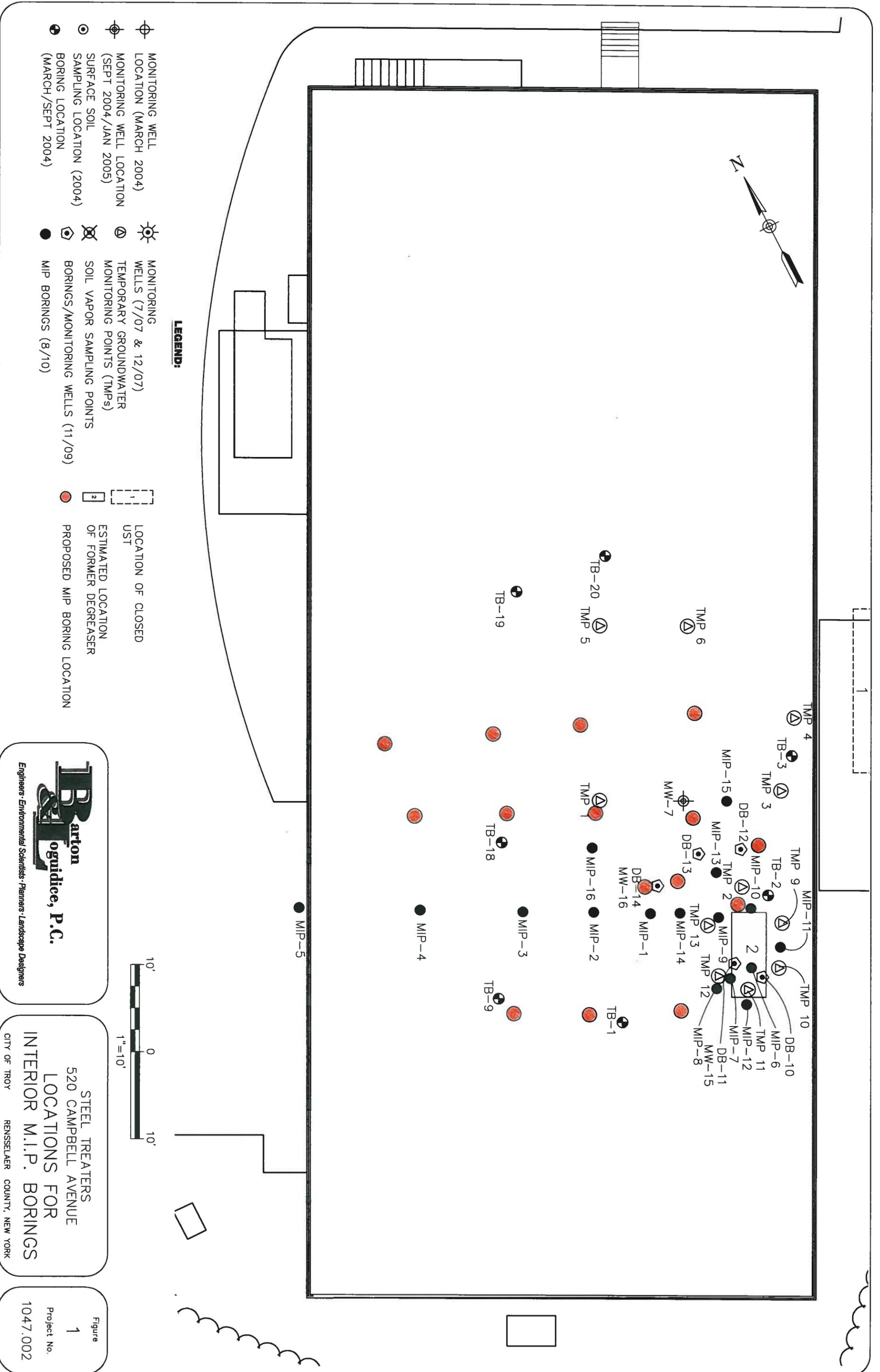
*(6) Implementability.*

#### 2.5.4 Remedy Selection

Following submission of the results of the investigation to NYSDEC and closeout of the RI phase, a meeting will be held between Steel Treaters and NYSDEC to discuss the need for further remedial action at the Site to enable it to be used for restricted commercial/industrial use.

#### 2.6 Investigation Derived Wastes

Investigation Derived Wastes (IDWs) present at the site from the previous investigation will be disposed of in accordance with the letter received from NYSDEC on 7/19/2012. Additional IDWs will be managed similarly, i.e. – representative sample data will be submitted to NYSDEC and waste will be disposed in accordance with the NYSDEC determination.



- ☉ MONITORING WELL LOCATION (MARCH 2004)
- ☉ MONITORING WELL LOCATION (SEPT 2004/JAN 2005)
- ☉ SURFACE SOIL SAMPLING LOCATION (2004)
- ☉ BORING LOCATION (MARCH/SEPT 2004)

- ☉ MONITORING WELLS (7/07 & 12/07)
- ☉ TEMPORARY GROUNDWATER MONITORING POINTS (TMPs)
- ☉ SOIL VAPOR SAMPLING POINTS
- ☉ BORINGS/MONITORING WELLS (11/09)
- ☉ MIP BORINGS (8/10)

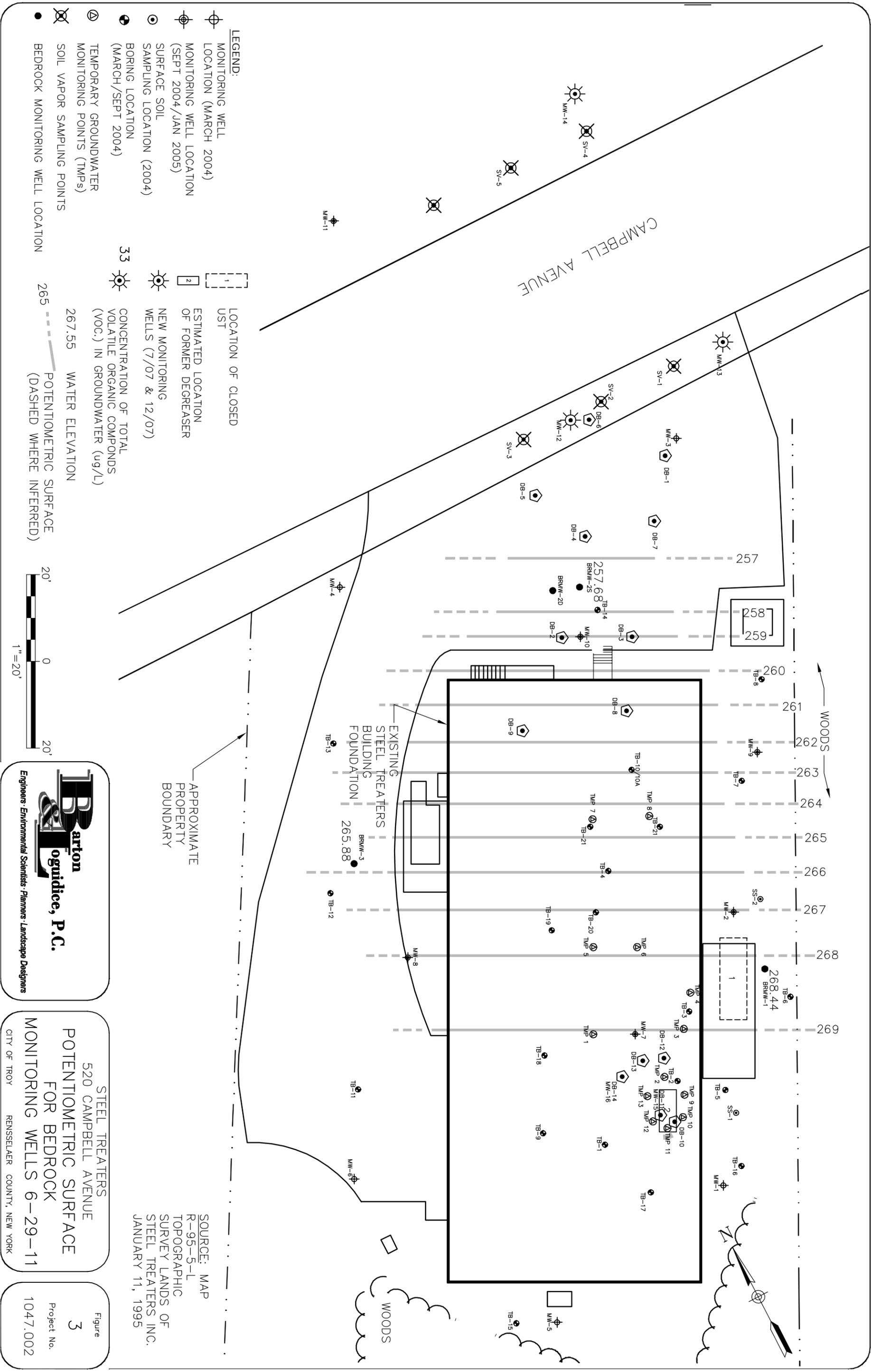
- ☐ LOCATION OF CLOSED UST
- ☐ ESTIMATED LOCATION OF FORMER DEGREASER
- ☐ PROPOSED MIP BORING LOCATION



STEEL TREATERS  
520 CAMPBELL AVENUE  
LOCATIONS FOR  
INTERIOR M.I.P. BORINGS  
CITY OF TROY RENSSELAER COUNTY, NEW YORK

Figure  
1  
Project No.  
1047.002





**LEGEND:**

- MONITORING WELL LOCATION (MARCH 2004)
- MONITORING WELL LOCATION (SEPT 2004/JAN 2005)
- SURFACE SOIL SAMPLING LOCATION (2004)
- BORING LOCATION (MARCH/SEPT 2004)
- TEMPORARY GROUNDWATER MONITORING POINTS (TMPs)
- SOIL VAPOR SAMPLING POINTS
- BEDROCK MONITORING WELL LOCATION

- LOCATION OF CLOSED UST
- ESTIMATED LOCATION OF FORMER DEGREASER
- NEW MONITORING WELLS (7/07 & 12/07)
- CONCENTRATION OF TOTAL VOLATILE ORGANIC COMPOUNDS (VOC.) IN GROUNDWATER (ug/L)
- WATER ELEVATION
- POTENTIOMETRIC SURFACE (DASHED WHERE INFERRED)



APPROXIMATE PROPERTY BOUNDARY

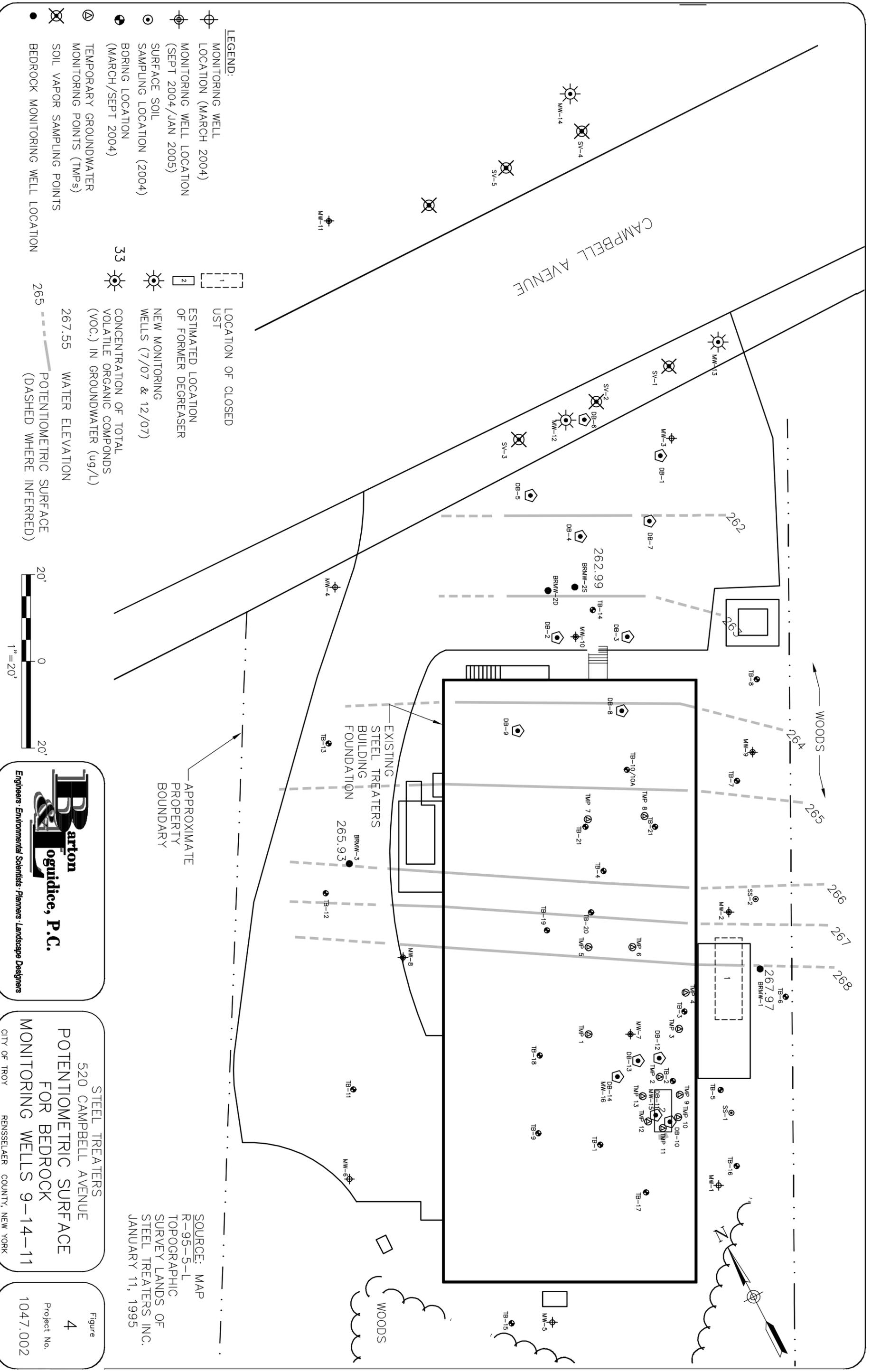
EXISTING STEEL TREATERS BUILDING FOUNDATION

SOURCE: MAP R-95-5-L TOPOGRAPHIC SURVEY LANDS OF STEEL TREATERS, INC. JANUARY 11, 1995

**Barton**  
**Loguidice, P.C.**  
Engineers · Environmental Scientists · Planners · Landscape Designers

STEEL TREATERS  
520 CAMPBELL AVENUE  
POTENTIOMETRIC SURFACE FOR BEDROCK  
MONITORING WELLS 6-29-11  
CITY OF TROY  
RENSSELAER COUNTY, NEW YORK

Figure 3  
Project No. 1047.002



- LEGEND:**
- MONITORING WELL LOCATION (MARCH 2004)
  - MONITORING WELL LOCATION (SEPT 2004/JAN 2005)
  - SURFACE SOIL SAMPLING LOCATION (2004)
  - BORING LOCATION (MARCH/SEPT 2004)
  - TEMPORARY GROUNDWATER MONITORING POINTS (TMPs)
  - SOIL VAPOR SAMPLING POINTS
  - BEDROCK MONITORING WELL LOCATION

- LOCATION OF CLOSED UST
- ESTIMATED LOCATION OF FORMER DEGREASER
- NEW MONITORING WELLS (7/07 & 12/07)
- CONCENTRATION OF TOTAL VOLATILE ORGANIC COMPOUNDS (VOC.) IN GROUNDWATER (ug/L)
- WATER ELEVATION
- POTENTIOMETRIC SURFACE (DASHED WHERE INFERRED)



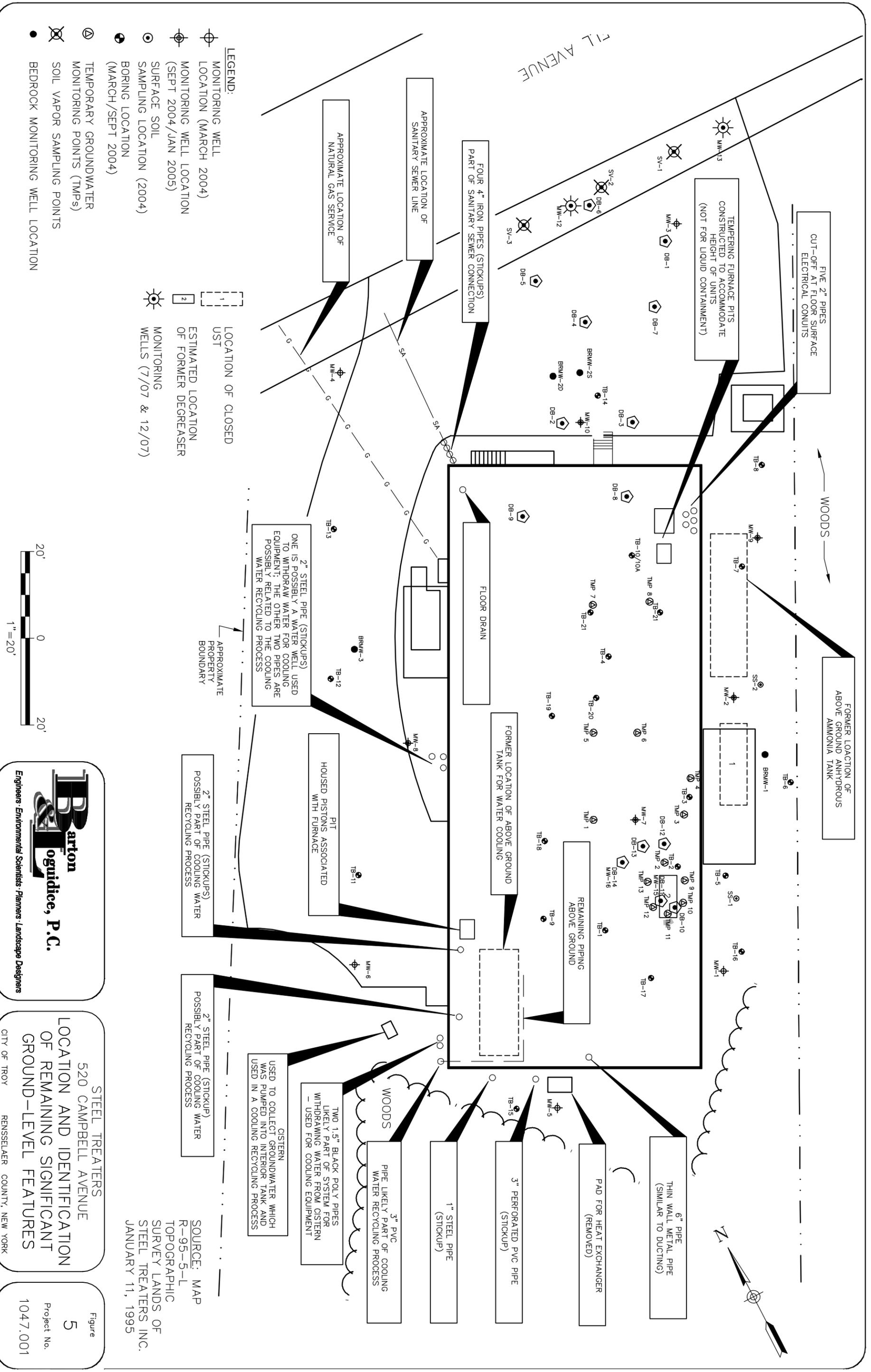
APPROXIMATE PROPERTY BOUNDARY

EXISTING STEEL TREATERS BUILDING FOUNDATION

SOURCE: MAP R-95-5-L TOPOGRAPHIC SURVEY LANDS OF STEEL TREATERS, INC. JANUARY 11, 1995

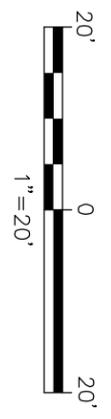
STEEL TREATERS  
520 CAMPBELL AVENUE  
POTENTIOMETRIC SURFACE FOR BEDROCK  
MONITORING WELLS 9-14-11  
CITY OF TROY  
RENSSELAER COUNTY, NEW YORK

Figure 4  
Project No. 1047.002



- LEGEND:**
- ⊕ MONITORING WELL LOCATION (MARCH 2004)
  - ⊕ MONITORING WELL LOCATION (SEPT 2004/JAN 2005)
  - ⊙ SURFACE SOIL SAMPLING LOCATION (2004)
  - ⊕ BORING LOCATION (MARCH/SEPT 2004)
  - ⊕ TEMPORARY GROUNDWATER MONITORING POINTS (TMPs)
  - ⊙ SOIL VAPOR SAMPLING POINTS
  - BEDROCK MONITORING WELL LOCATION

- 1 LOCATION OF CLOSED UST
- 2 ESTIMATED LOCATION OF FORMER DEGREASER MONITORING WELLS (7/07 & 12/07)



STEEL TREATERS  
520 CAMPBELL AVENUE  
LOCATION AND IDENTIFICATION  
OF REMAINING SIGNIFICANT  
GROUND-LEVEL FEATURES  
CITY OF TROY RENSSELAER COUNTY, NEW YORK

Figure  
5  
Project No.  
1047.001

SOURCE: MAP  
R-95-5-L  
TOPOGRAPHIC  
SURVEY LANDS OF  
STEEL TREATERS INC.  
JANUARY 11, 1995

2" STEEL PIPE (STICKUPS)  
ONE IS POSSIBLY A WATER WELL USED  
TO WITHDRAW WATER FOR COOLING  
EQUIPMENT; THE OTHER TWO PIPES ARE  
POSSIBLY RELATED TO THE COOLING  
WATER RECYCLING PROCESS

PIT  
HOUSED PISTONS ASSOCIATED  
WITH FURNACE

2" STEEL PIPE (STICKUPS)  
POSSIBLY PART OF COOLING WATER  
RECYCLING PROCESS

2" STEEL PIPE (STICKUP)  
POSSIBLY PART OF COOLING WATER  
RECYCLING PROCESS

CISTERN  
USED TO COLLECT GROUNDWATER WHICH  
WAS PUMPED INTO INTERIOR TANK AND  
USED IN A COOLING RECYCLING PROCESS

3" PVC  
PIPE LIKELY PART OF COOLING  
WATER RECYCLING PROCESS

1" STEEL PIPE  
(STICKUP)

3" PERFORATED PVC PIPE  
(STICKUP)

PAD FOR HEAT EXCHANGER  
(REMOVED)

6" PIPE  
THIN WALL METAL PIPE  
(SIMILAR TO DUCTING)

FORMER LOCATION OF ABOVE GROUND  
TANK FOR WATER COOLING

REMAINING PIPING  
ABOVE GROUND

FLOOR DRAIN

FOUR 4" IRON PIPES (STICKUPS)  
PART OF SANITARY SEWER CONNECTION

APPROXIMATE LOCATION OF  
NATURAL GAS SERVICE

APPROXIMATE LOCATION OF  
SANITARY SEWER LINE

TEMPERING FURNACE PITS  
CONSTRUCTED TO ACCOMMODATE  
HEIGHT OF UNITS  
(NOT FOR LIQUID CONTAINMENT)

FIVE 2" PIPES  
CUT-OFF AT FLOOR SURFACE  
ELECTRICAL CONDUITS

FORMER LOCATION OF  
ABOVE GROUND ANHYDROUS  
AMMONIA TANK

WOODS

