IT CORPORATION
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INVESTIGATION RESULTS REPORT
UNDER NYSDEC VOLUNTARY CLEANUP PROGRAM
NATIONAL FUEL GAS DISTRIBUTION CORPORATION
BUFFALO, NEW YORK
IT Corporation Project 805808 JANUARY 15, 2002
VOLUME 1 OF 2

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NATIONAL FUEL GAS DISTRIBUTION CORPORATION
FORMER BUFFALO SERVICES CENTER
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VOLUME 1 OF 2

January 15, 2002

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INVESTIGATION RESULTS REPORT
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NATIONAL FUEL GAS DISTRIBUTION CORPORATION
FORMER BUFFALO SERVICE CENTER
249 WEST GENESSEE STREET
BUFFALO, NEW YORK

Agreement Index # B9-0577-00-05
Site Number: V00362-9

IT Corporation Project: 805808

January 15, 2002

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1.0 INTRODUCTION

The IT Group (IT) has prepared this Investigation Results Report in support of National Fuel Gas Distribution Corp's (NFG) Voluntary Agreement ("Agreement") with the New York State Department of Environmental Conservation (NYSDEC). The purpose of this investigation is to satisfy the technical requirements of the Agreement while summarizing historic site assessment and remediation activities that have been completed at NFG's former Buffalo Service center (BfSC) located at 249 West Genessee Street in Buffalo, New York. The location of this site is shown on **Figure 1**. This report describes the additional assessment activities undertaken to characterize the nature and extent of soil and groundwater impacts, including delineation of source areas, residual materials and potential migration pathways both on and off-site, qualitatively define the level of risk associated with the property, and determine what type of additional investigative or remedial actions are warranted so that the property may be remediated and redeveloped pursuant to the terms and conditions of the Agreement. Data collected from this investigation will be used to develop preliminary remediation and closure goals, define remedial action objectives and form the basis for the selection of a remedy that is consistent with future property use and redevelopment in a forthcoming Focused Feasibility Study (FFS). This FFS will be undertaken once the NYSDEC has approved the site assessment activities discussed herein.

1.1 Project Background and Objectives

Several phases of investigative and remedial activities have been proactively completed by NFG at this property over the last 10 to 15 years. Assessment activities have included focused soil and groundwater quality investigations across and adjacent to the site. This soil and groundwater quality data was used to prepare an initial qualitative risk assessment that evaluated whether constituents detected in groundwater beneath the adjacent Waterfront School property were posing an unacceptable risk to students or school employees. Additionally, a focused remedial program was implemented at the NFG site to remove certain surface soils with elevated cyanide concentrations for off-site disposal. IT completed a geophysical survey across the property in an attempt to map relict structures and locate the former Wilkeson Slip prior to the implementation of the assessment activities discussed herein. The results of this survey are discussed in **Section 2.3**.

This report briefly summarizes all previously existing soil and groundwater data and historic remedial activities as well as discuss the most recent investigation activities completed on site.

2.0 SITE BACKGROUND

2.1 Site Description

The BfSC is located in the southwest section of downtown Buffalo (**Figure 1**). The site is defined as that property consisting of approximately 5 acres located at 249 West Genessee Street and is designated Map Parcel Number SBL #110.60-2-3. The site consists of vacant, gravel covered and paved parking areas and relict buried abandoned structures related to the former operation of the site as a manufactured gas plant (MGP). Most above grade structures have been demolished, with the exception of the former façade fronting West Genessee Street. The surrounding area may be considered "urban industrial" including a commercial parking lot and New York State (NYS) Route 190 to the southwest, West Genessee Street to the south, commercial properties to the northeast and the Waterfront School to the northwest.

2.2 Site History

Reportedly, the site was operated as an MGP starting in approximately 1848 by the Buffalo Gas Light Company, the first gas light company organized in New York state. This could not be confirmed based upon maps and related information reviewed for this report, although historical Sanborn maps dating from 1888 showing the layout of the former MGP operations are included in **Appendix A**. The facility originally produced gas using the "horizontal retort" method that uses thermal decomposition of coal at a high temperature without contact with air. The coal gas operation was capable of producing 2,400,000 cubic feet of gas per day, The facility was operational as an MGP until approximately 1948 under various owners/operators. Additional operational data regarding the use of this site is not readily available as NFG or its corporate predecessors have not continuously owned or operated the facility. A map showing the historic layout and orientation of site structures during MGP operations was used to prepare the site maps included as figures in this report. The history of the site and adjacent properties, based upon the review of available Sanborn maps, is discussed below.

2.2.1 Adjacent Site History

The historical usage of the site and adjacent properties was determined primarily through the review of Sanborn maps of the general area. These maps are included in **Appendix A**. Generally speaking, the site was always used for some type of industrial activities as discussed below. Adjacent property usage has typically also been industrial with the exception of portions

of Jackson Street which historically included residential and single family dwellings. Specific changes in property use are discussed below.

1888

- The subject property is owned by Buffalo Gas Light Company. The primary site features include three (3) gas holders and associated support structures.
- The current Waterfront school parcel is owned by Lee Holland and Company's lumber yard. The properties are separated by the Wilkeson Slip, which is shown extending almost to Jackson Street.
- The majority of the buildings along Jackson Street appear primarily to be single family dwellings with the exception of a machine shop, iron works and coal storage shed and yard.
- Clinton Iron Works and J. Graying and Sons (carpet cleaning, painting and blacksmithing) is located immediately across West Genessee Street.

1899

- Site is still owned by Buffalo Gas Light Company and the gasometers (relief holders) are prominently depicted on the Sanborn map.
- The current Waterfront School area was owned by Montgomery Door and Box Company. The majority of the property appears as lumber storage which extended across Fourth Street.
- Portions of the Wilkeson Slip are shown on this map although the slip is bifurcated by Fourth Street and railroad tracks running along Fourth Street. Additionally, the slip does not appear to extend all the way to Jackson Street as shown on the previous Sanborn map.
- Jackson Street remained primarily residential although some buildings in the middle of the block were used as paint and machine shops and manufacturing of wire cloth.
- Fisher Malting Company and A.P. Kehr-Stone Cutter occupied the corner of Church Street.

1915

- The Wilkeson Slip appears to have been filled-in and closed by this time. A shed or building associated with Montgomery Brothers Lumber is shown spanning portions of the slip.
- The subject site appears similar as 1899 although two (2) additional iron gas tanks are shown near the West Genessee and Jackson Street sides of the property.

1925

- The Wilkeson Slip is not shown on this figure. The area of the former slip is shown as a driveway and "lumber piles" associated with the Montgomery Brothers lumber yard.

- The subject property appears similar to previous Sanborn maps although only one (1) relief holder is shown on this map. The site is noted as being owned by Iroquois Gas Corporation.
- The Jackson Street block has become more industrialized including Buffalo Wire Works, Buffalo Galvanizing Company and Century Manufacturing Company that produced paints and varnishes.

1951

- The property is still shown as being owned by Iroquois Gas Corporation. None of the relict structures related to gas production, such as the relief holders, retort house, purifiers, etc, are shown on this map. Rather the former purifier house is shown as being used as an automotive garage and for the storage of appliances, autos, trailers and "other road machinery." Other buildings at the site were used for offices, shops, records vault and related administrative functions.
- The Waterfront School property was owned by Malmont Corporation and tenants. Property usage included wood working, storage of metal parts, calstex (unknown usage) and wire rope manufacturing.
- Buffalo Wire Works continued to occupy the eastern half of Jackson Street and Erie Electric Company (an electric motor company) was established in the middle of the block. A relatively large gas station, with at least five (5) underground storage tanks, was constructed on the Terrace Street side of Jackson Street.

2.3 Historic Site Assessment and Remedial Activities

Several phases of assessment and remedial activities have been completed at this property. These activities are highlighted and discussed below. Copies of these reports are a matter of public record and have previously been provided to the Department.

May-September, 1989 (Ecology and Environment)

- Ecology and Environment, Inc. (E&E) was retained to complete a preliminary site assessment
- Assessment activities included the collection of soil samples to define a "cyanide hot spot" previously identified near the western corner of the property
- Conclusions recommended that additional assessment activities, including the installation of groundwater monitoring wells, be completed at the site

January, 1990 (E & E)

- E&E prepared a work plan outlining the collection of additional soil samples and completion of a cursory "health assessment"

- The results of this assessment indicated that arsenic and mercury concentrations were within the range typically found in surface soils while cyanide and lead concentrations were below the levels potentially associated with adverse health effects.
- E&E concluded that there was no apparent health risk to people on the Waterfront School property and that removal of the "cyanide hot-spot" was warranted.

Mid 1990 (E & E)

- Six groundwater monitoring wells were installed across the property
- Wells were sampled for quantification of volatile organic and semivolatile organic compounds, total phenols, total cyanide, sulfide, ammonia, nitrate, nitrite and seven metals (arsenic, chromium, copper, iron, nickel, lead and zinc)
- Constituents encountered included benzene, toluene, ethylbenzene and xylene, naphthalene, phenanthrene and acenapthylene. The highest concentrations were encountered in monitoring well MW-3 that is located adjacent to the former Wilkeson Slip.

IT Corporation's attempts to locate the data generated from the above assessment activities were unsuccessful.

March, 1995 (Groundwater Technology, Inc.)

- Groundwater Technology, Inc. (GTI) was retained to complete a sensitive receptor survey at the NFG property. This survey was completed to "evaluate the potential for human or environmental receptors of (and use of) shallow groundwater downgradient of the Buffalo Service Center (BfSC)."
- This survey confirmed that groundwater was not used as a public or private water supply within two miles of the site and that the Buffalo River and Lake Erie were identified as the closest surface water bodies.
- Six sumps were identified in the basement of the Waterfront School. These sumps were determined to be potential groundwater receptors.

The data resulting from this survey is included in **Appendix B**.

November, 1996 (Fluor Daniel GTI)

- Fluor Daniel GTI (formerly GTI) was retained to complete a qualitative risk assessment to "determine whether chemicals in groundwater beneath the BfSC could affect the health of the students or employees at the Waterfront School". The assessment was completed in accordance with standard and EPA-approved methods and formulations using data collected from the BfSC.
- The primary potentially complete exposure pathway identified at the Waterfront School was breathing vapors that could enter the building through cracks in the basement.
- The potential exposure pathway was determined not to pose an unacceptable risk to the students and/or employees of the Waterfront School.

- Water samples collected from the basement sumps in the Waterfront School by the New York State Department of Health (NYSDOH) showed detectable concentrations of "site-related constituents." The NYSDOH subsequently stated that no health threat existed to students or employees from the sump water because the students and employees were not exposed to the sump water.
- Fluor Daniel GTI was retained to sample the on-site monitoring wells.
- Several volatile organic compounds were identified for the first time including cis-1,2-dichloroethene, isopropylbenzene, n-propylbenzene, 1,3,5-trimethylbenzene and 1,2,4-trimethylbenzene. The VOC and SVOC concentrations showed a general reduction in comparison to the historic groundwater quality data.

The data resulting from this assessment is included in **Appendix C**.

October, 1998 (Fluor Daniel GTI)

- Fluor Daniel GTI installed nineteen (19) geoprobe borings and two (2) additional groundwater monitoring wells across the site. Soil samples were collected from the geoprobe points (**Figure 2**) and water samples were collected from all seven (7) groundwater monitoring wells for quantification of volatile and semivolatile organic compounds, PCBs, metals and free cyanide.
- Potential adsorbed sources of volatile and semivolatile organic compounds were detected within the inferred area of the former gasometers (relief holders), storage tanks, scrubber area and purifiers. The primary impacts were observed near the scrubber area and purifier area. The primary cyanide and metals impacts were observed within the areas of the former gasometers, purifiers and coal shed.
- Groundwater impacts were observed primarily in wells MW-01, MW-02, MW-03, MW-04, MW-05, and MW98-07.

The data generated during this investigation is included in **Appendix D**.

1999/2000 Work (The IT Group)

- Three additional monitoring wells (MW00-9, MW00-10 and MW00-11) were installed at the site during this phase of site investigative activities.
- All wells on the NFG site (MW-1, MW-2, MW-3, MW-4, MW-5, MW98-07, MW98-08, MW00-09, MW00-10, and MW00-11), including monitoring wells MW-9, MW-11 and MW-12 (installed by the city of Buffalo located on the Waterfront School property) were sampled for volatile organic and semivolatile organic compounds via U.S. EPA Methods 8260 and 8270 and metals including total and amenable cyanide.
- The volatile impacts were observed primarily in wells MW-3, MW-4, MW-5, MW00-9, MW00-11, MW-9 and MW-12. The impacts within each area were chemically distinct– the highest benzene levels were observed in monitoring well MW-9 whereas benzene levels were at least one order of magnitude or lower in wells MW-2, MW-4 and MW-9. Alternatively, concentrations of ethylbenzene and xylene isomers were much higher in

wells MW-3, MW-4 and MW-5 and relatively low in MW-9. This difference may indicate separate source areas for the impacts.

- Naphthalene was the primary semivolatile organic compound observed across the site. The highest naphthalene concentrations were encountered in the wells located in or near the inferred location of the Wilkeson Slip (MW-12) and proximal to the former purifiers on the NFG property (MW-1).
- The primary inorganic impacts were aluminum, iron and sodium. These constituents were found in all wells across the site. All constituents were, however, detected at relatively low levels that are considered common in industrial areas.
- Total cyanide was detected primarily in monitoring wells MW-1, MW-3 and MW-5 that are located near the former Wilkeson Slip.

A copy of this report is included in **Appendix E**.

All historic groundwater monitoring well data that was available to IT Corporation is graphically presented on **Figure 3**.

Spring 2001

- IT Corporation retained Geomatrix Consultants (Geomatrix) to complete a geophysical survey across the subject property. The purpose in conducting the survey was to locate buried relict structures, such as the former relief holders, footers and foundations related to the storage tanks, and other site improvements including scrubbers and purifiers, that may be including groundwater flow and to attempt to locate the former Wilkeson Slip which is assumed to abut the site. The former slip may act as a groundwater collector or interceptor and locally control flow and contaminant migration, both across as well as off-site. The results of this survey are included in **Appendix F**. The results of this survey also served as the basis for site investigative activities completed under this Agreement.
- The geophysical survey identified a total of eight (8) anomalies that are identified as Anomaly A through H on the figures included in **Appendix F**. As shown on these figures, Anomaly A likely corresponds to the former Wilkeson Slip, Anomaly B appears to correspond to the former rail bed located adjacent to the site, Anomaly C corresponds to former "storage tanks" observed on the Sanborn maps, Anomalies D, E and F likely represent the former relief holders and associated piping, Anomaly G is inferred to represent a reinforced concrete pad while Anomaly H likely represents a zone of miscellaneous buried metals. These locations have been verified by a review of historic Sanborn maps and were targeted during soil and groundwater sampling completed under the Agreement.

2.4 Adjacent Property Investigations

A parking lot and NYS Route 190 surround the BfSC property to the southwest, West Genesee Street to the south, and the Waterfront School to the northwest. The former Wilkeson Slip, a shipping slip connected to the Erie Canal, trended somewhere near the property line separating the NFG site and the property currently occupied by the Waterfront School. These properties are generally shown on **Figures 1** and **4**.

Fourth Street Site

The Fourth Street Site, a former MGP site unrelated to BfSC is located adjacent to the Waterfront School property further to the northeast of the school property. The Fourth Street Site is, according to the RI/FS prepared for the site, a NYSDEC listed hazardous waste site formerly known as the Citizens Gas Works. Reportedly, this facility was operational from the 1870's to the early 1900's, ceasing operations prior to 1915. Environmentally significant usage of this property has included a Greyhound Bus Company service and maintenance garage, several lumber mills, shipbuilding, and a railroad spur.

Several phases of soil and groundwater quality investigations have been completed at the Fourth Street Site, culminating in a Remedial Investigation/Feasibility Study (RI/FS) in the summer of 1999. The results of these investigative activities were summarized in Parsons Engineering Science, Inc.'s (Parsons) November, 1999 *Remedial Investigation/Feasibility Study at the Fourth Street Site.* The Final RI/FS was submitted to the Department in January 2001. This report was prepared for Buffalo Urban Renewal Agency (BURA) the designated PRP for this property.

The results of the RI/FS completed at the Fourth Street Site indicate the presence of polycyclic aromatic hydrocarbons (PAHs) and benzene, toluene, ethylbenzene and xylene (BTEX) compounds above background or NYSDEC standards and guidance values in soil and groundwater. The elevated soil concentrations typically coincided with the presence of a dark-colored, viscous, dense non-aqueous phase liquid (DNAPL) that was observed within and downgradient from the former MGP facilities. Dissolved BTEX concentrations exceeded NYSDEC groundwater quality standards/guidance values in several wells on-site.

The subsequent Record of Decision (ROD) issued for this site focuses upon the excavation and off-site disposal of impacted soils and recovery or management of DNAPL followed by groundwater monitoring and associated post-closure activities.

Waterfront School Property

As previously discussed, portions of the Waterfront School property was historically used as a lumber yard and other commercial/industrial endeavors.

In 1990, the City of Buffalo Board of Education retained Empire Soils Investigations, Inc. (ESI) to complete a soil-sampling program across the Waterfront School property. The purpose in completing this sampling program was to determine whether soils at the school contained ferric cyanide and USEPA target compound list parameters above applicable state standards. The investigation was centered along the southern border of the school property, immediately adjacent to the NFG site (and likely within the area of the former Wilkeson Slip).

The results of this investigation indicated that no releasable cyanide was detected and the soil was not classified as a hazardous waste (based upon the amount of total releasable cyanide). Total cyanide concentrations, were, however, detected in all of the soil samples analyzed.

Additional investigative activities completed at the Waterfront School property included a soil gas survey, excavation of 29 exploratory test pits, installation of four groundwater monitoring wells and sampling and laboratory analysis of soil, groundwater and non-aqueous phase liquids, according to the information contained within the Fourth Street RI/FS. The results of this sampling indicated the occurrence of a black, tar-like substance (NAPL) in shallow soil in test pits and soil borings and elevated concentrations of VOCs and SVOCs in soil and groundwater.

3.0 FIELD INVESTIGATIVE ACTIVITIES

This section outlines the supplemental site investigative activities that were completed at the site pursuant to the Investigative Work Plan. Consistent with the proposed redevelopment/ reuse of the site, these tasks were completed to further characterize the site, delineate the level of risk associated with the property and determine whether or what types of remedial actions are warranted prior to the proposed redevelopment of the site. All work was completed pursuant to the approved work scope, a copy of which is contained in **Appendix G**.

3.1 Health and Safety Plan

The existing Health and Safety Plan (HASP) was updated and signed by an approved Certified Environmental Hygienist (CIH) for the project in accordance with the Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response Regulation, 29 CFR 1910.120. All field personnel involved with completing field activities signed the document acknowledging that they read and fully understood its contents.

All personnel who worked at the site (with the exception of the surveyor) had a minimum of 40 hours of initial hazardous waste activity instruction and an annual 8 hours of refresher training, as well as a minimum of three days of field experience under the direct supervision of an experienced professional. Some on-site managers and supervisors directly responsible for the employees engaged in the sampling activities also received an additional 8 hours of supervisor training. The training requirements comply with the OSHA Hazardous Waste Operations and Emergency Response Regulation, 29 CFR 1910.120. An on site health and safety officer was present during all field drilling activities to ensure compliance with these protocols. Daily tailgate safety meetings were also convened to discuss health and safety topics or issues that may be encountered during the workday.

3.2 Site Soil Investigation

Soil quality conditions across the site and portions of immediately adjacent properties were evaluated using test pits, geoprobe points and samples collected during the installation of groundwater monitoring wells. The locations of these sampling points are shown on figures included with this report.

3.2.1 Test Pits

Seventeen (17) test pits were installed near the former locations of the storage tanks and relief holders (gasometers) to provide a visual inspection of the soil and determine the margins of structures across the site. Two additional trenches, approximately 50 feet long, were dug at the direction of NYSDEC representatives to locate pipes, discharge lines or other inferred conduits from the site into the Wilkeson Slip. The locations of the test pits and trenches are shown on **Figure 4**.

The test pits were excavated using a backhoe and proceeded to the water table, bedrock or refusal, whichever came first. The materials encountered were generally a brown sandy gravel with some construction debris (brick, slag, wood etc.). All observations were recorded on logs included as **Appendix H**.

One soil sample was collected for laboratory analysis from each test pit at the soil/water interface, the soil/bedrock interface if refusal was encountered above the water table, or at intervals specified by the NYSDEC representative above. Samples submitted for laboratory analysis were composited to be representative for each sampling horizon. All test pit samples were analyzed for volatile organic compounds (VOCs) via U.S. EPA Method 8260B, semivolatile organic compounds (SVOCs) via U.S. EPA Method 8270, total metals, total cyanide and amenable cyanide. The resulting data is presented in tables and figures and is included in **Appendix I** and discussed in **Section 4.3.1**.

3.2.2 Geoprobe Points

Twenty-seven (27) geoprobe points were installed across the property and adjacent properties at the locations shown on **Figure 4.** Geoprobe points were installed primarily to minimize damage done to the improved and vegetated portions of the property as well as to expedite assessment activities. Sampling locations were selected to assess geophysical anomalies A and B, areas not addressed by historic site assessment activities (i.e. the parking lot), as well as an attempt to locate the margins of the Wilkeson Slip.

Depth discrete samples were typically collected in four-foot intervals from within each boring. Samples were split and a portion of the sample was placed in a plastic bag for headspace analysis. The soil type and quality information was logged on drill logs, which are included as **Appendix H**. Headspace readings were taken by cracking the baggie and inserting the tip of the calibrated photoionization (PID).

Borings continued to the top of bedrock or noticeable changes in lithology which may impact or control contaminant flow or migration. Borings were not advanced through clay lens or similar confining unit.

Samples exhibiting the highest PID reading, closest to the soil/water interface, or collected from sampling intervals requested by the NYSDEC were submitted for laboratory analysis. Geoprobe soil samples were analyzed for volatile organic compounds (VOCs) via U.S. EPA Method 8260 B, semivolatile organic compounds (SVOCs) via U.S. EPA Method 8270 C, total and amenable cyanide and RCRA metals. Samples were analyzed pursuant to NYSDEC ASP methods and Category B deliverables. Results of this sampling event are discussed in **Section 4.3.2**.

3.3.3 Soil Borings/Monitoring Well Soil Samples

Soil samples were collected concurrently with the installation of sixteen (16) groundwater monitoring wells onsite. The locations of the monitoring wells and soil boring are depicted on **Figure 4**. The borings were advanced through the unconsolidated deposits using a 4.25 inch hollow stem auger drill rig. The boreholes were completed at least ten (10) feet below the water table and continued to the bedrock/soil interface and were not advanced through a clay lens or similarly confining unit.

Depth discrete samples were collected at 2 foot intervals within each boring. The sample was split and a portion of the sample was retained for head space analysis. Headspace readings were taken by cracking the baggie and inserting the tip of the PID.

The soil type and quality and related soil information was logged on appropriate drill logs and are included as **Appendix H**. Samples with the highest PID reading, closest to the water/soil interface, or collected from sampling intervals requested by the NYSDEC were submitted for laboratory analysis. Soil samples were analyzed for VOCs via U.S. EPA Method 8260 B, SVOCs via U.S. EPA Method 8270 C, total and amenable cyanide and RCRA metals. Samples were analyzed pursuant to NYSDEC ASP methods and Category B deliverables.

Three monitoring wells were lost and/or destroyed during the demolition of several buildings on site. These wells, MW-1, MW98-07 and MW98-08 were replaced by MW01-01, MW01-25 and MW01-24 respectively. Two additional monitoring wells were installed in the area of the former tar well (MW01-27) and north of the former NO. 3 relief Holder (MW01-26) to further asses soil and groundwater quality. These five wells were installed by Parratt Wolff Inc. The boring logs and well construction details are included in **Appendix H**.

3.4 Site Groundwater Assessment

Sixteen (16) groundwater monitoring wells were installed across the site at the locations shown on **Figure 4**. These locations were chosen to further evaluate groundwater quality at the property boundary (MW00-15, MW00-16, MW00-17, MW01-01, MW01-24, MW01-25 and MW01-26), recharge and groundwater quality within and near the former relief holders and tar well (MW00-12 and MW01-27), define groundwater quality within the former areas of the former storage tank pits (MW00-13) and scrubber (MW00-14) and off-site areas (MW00-18, MW00-19 and MW00-20). Monitoring wells MW00-21, MW00-22 and MW00-23 were installed to evaluate groundwater quality within the area of the former retort house and coke shed. These well locations were approved by the NYSDEC prior to their installation.

Monitoring wells were installed using a 4 ¼" hollow stem auger drill rig. The wells were advanced to the top of bedrock. Each well was constructed of 2-inch diameter PVC riser pipe and screen. Well screen was installed at least five feet above the soil/water interface and completed with a flush mount well head. Well construction details are included in **Appendix H**.

Each monitoring well was developed as soon after installation as possible. Each well was developed by Parratt Wolff Inc until 10 well volumes were removed or the well went dry. All purge water was containerized for treatment or disposal as required.

A licensed New York State surveyor was retained to survey in the top of casing for each well and prepare a site base map complete with property boundaries. This data was used to prepare a groundwater contour map for the site, which is included as **Figure 5**.

The depth to water within each well was measured, relative to the top of casing elevation, to provide information regarding groundwater flow and hydraulic conductivity. Measurements were collected using an electronic interface probe capable of detecting both liquid and dense non-aqueous phase liquids.

3.4.1 Groundwater Sampling

The wells on site were sampled following the removal of three (3) to five (5) volumes by the IT Corporation sampling technician. Purge water generated during this activity was containerized for later treatment or disposal as necessary. Samples were collected using a dedicated bailer for each well.

Geoprobe points were left to sit for several hours (or days in some cases) to allow for water to collect in each boring. This water was then collected via a dedicated disposable bailer and sent

for laboratory analysis. A grab sample of water was collected from geoprobe points ITGP-7, ITGP-8, ITGP-9, ITGP-10, ITGP-11, ITGP-12, ITGP-13, ITGP-18, ITGP-19 and ITGP-20. There was not enough volume in the other borings to facilitate the collection of a representative sample.

Samples were collected for laboratory analysis of volatile organic compounds (VOCs) via U.S. EPA Method 8260 B, semivolatile organic compounds (SVOCs) via U.S. EPA Method 8270 C, total and amenable cyanide and RCRA metals. Samples were analyzed pursuant to NYSDEC ASP methods and Category B deliverables and are discussed in **Section 4.3.5.** Laboratory analytical data is included in **Appendix J**.

4.0 RESULTS OF SITE INVESTIGATIVE ACTIVITIES

4.1 Physical Site Characteristics

4.1.1 Regional Geologic Setting

Unconsolidated soil at the facility is identified as Urban Land according to the Soil Survey of Erie County, New York. This designation is given to areas in which 80 percent or more of the soil surface is covered by asphalt, concrete, buildings, or other impervious structures. Several feet of varied fill material have been placed over native soils.

Bedrock underlying the site is mapped as Devonian age Onondaga Limestone, a massive limestone with cherty interbeds that is frequently fossiliferous.

4.1.2 Site-specific Geology

Fill material mantles the site and ranges in thickness from approximately four (4) feet near the property boundaries to approximately fourteen (14) feet. This material consists of a mixture of sand, gravel, silt, brick fragments, slag, coal, ash, wood and other manmade materials and shale.

Native soils beneath the fill consist of heterogeneous mixtures of silty-clay to clayey silt, fine to coarse sand, silty sand and plastic clay with some fine to coarse gravel throughout. Thin peat layers were noted in several areas of the site suggesting deposition in a near shore shallow water environment (i.e. a swamp or marsh). A discontinuous glacial till layer composed of stiff, clayey-silt with some fine to coarse gravel and little sand was encountered in several locations while glacio-fluvial or glaciolacustrine deposits were observed near the bottom of other borings. Refusal depths in native soil materials ranged from 18 feet to 23.5 feet below ground surface (bgs). These subsurface conditions are graphically depicted on geologic cross-sections included as **Figures 6A** and **6B**.

4.1.3 Regional Hydrogeological Setting

The BfSC property is located approximately 1,000 feet northeast of Lake Erie near the mouth of the Upper Niagara River, which is the nearest discharge zone for local groundwater found in the unconsolidated overburden deposits. Regionally, groundwater would be anticipated to flow toward Lake Erie in a southwesterly direction, although the extent of building and infrastructure in the area is likely to locally divert groundwater flow. Shallow groundwater in the area of the

site is typically found in coarser grained glacially derived sediments or as perched water over deposits of fine-grained sediments of lower permeability. The inferred groundwater table is included on the geologic cross-sections (**Figure 6**).

4.1.4 Site Specific Hydrogeology

Depth to groundwater across the site ranges between five (5) and eight (8) feet below ground surface during the recent groundwater sampling event.

Recharge of the water table is likely provided by meteoric precipitation infiltrating the unpaved areas of the property, specifically, in the area of MW00-12 and the center area of the site (near the former relief holders). Recharge in this area is highest as the depth to water in MW00-12 and MW01-27 is the least (i.e. most shallow) across the site. Groundwater flows from the center of the property (where hydraulic head is the greatest) toward the west and east as shown on **Figure 5**. This groundwater flow model is consistent with historic site investigative activities.

The native soils and unconsolidated fill materials on site vary in permeability. These materials, as well as foundations of former buildings, may impact groundwater flow direction and speed of recharge. The former Wilkeson Slip also appears to act as a groundwater "sink" along the western property line.

4.2 Results Historic Site Investigative Activities

4.3 Results of Site Investigative Activities

4.3.1 Test Pit Data

4.3.1.1 Visual Observations

The installation of the test pits across the site was successful in defining the construction, location and apparent limits of the former relief holders. Specifically, test pit (TP) 06 indicates that portions of the former relief holders may have been wooden (as evidenced by the vertical wooden planks encountered within the test pit) while other test pits confirm that the footers were concrete and brick. Visual observations further indicated that the footers within the former relief holders extended between five (5) and seven (7) feet below ground surface (see the test pit logs for TP-03, TP-05, and TP-09). Finally, the test pits confirm that the margins of the former relief

holders are accurately represented on the former site plans provided to IT by NFG and as delineated by the geophysical survey.

The test pits were also advantageous in locating relict piping runs leading into, out-of or near the relief holders. Specifically, a pipe was encountered about 6-inches below ground surface (bgs) in TP-7 and at four (4) feet bgs in TP-16. These pipes are likely related to historic MGP operations.

A secondary benefit of the test pits was to provide a description of soil type and quality within these areas. As indicated in the field observations noted on the test pit logs contained in **Appendix H**. Black, discolored soils, some with a product-like odor, were typically encountered at or near the base of portions of some of the relief holders (see TP-2, TP-3, TP-5 and TP-6). Groundwater was also encountered within these test pits at depths of between six (6) and seven (7) feet. An "oily" sheen was also noted on water encountered within test pits TP-02, TP-06, TP-13 and TP-14.

Finally, two trenches, each approximately 50 feet long, and test pit 17 were installed to locate pipes, discharge lines or other inferred conduits from the site into the Wilkeson Slip. These trenches were installed at the request of the NYSDEC. A small pipe (approximately 2 inches in diameter) trending toward the Wilkeson Slip was encountered at a depth of about three (3) feet bgs in TP-17. No other large, process-type pipes were observed trending toward the Slip in any other test pits installed in this area.

4.3.1.2 Soil Quality Data – Test Pits

Soil samples were typically collected at or below the groundwater table within each test pit although additional samples were collected from locations or depths requested by the NYSDEC. Analytical data generated during these sampling events is tabulated on **Tables 1A, 1B and 1C** and graphically depicted on **Figures 7,8,9 and 10**.

Note that the resulting analytical data has been compared to NYSDEC TAGM 1.1.1. Standards in these tables. Site-specific remedial action objectives (RAOs) have not been developed during this phase of site investigative activities as the NYSDEC has indicated its preference for the use of TAGM levels when determining whether remedial actions are required. Potential chemical specific RAOs will, however, be evaluated and discussed in the Focused Feasibility Study (FFS) that will be prepared for this project. The methodology for the development of the RAO's is discussed in **Section 5.0**.

As shown on **Table 1A** and **Figure 7**, volatile organic compound (VOC) concentrations exceeded NYSDEC soil cleanup objectives (TAGM 1.1.1) for benzene in test pits TP-4, TP-5, TP-12, TP-15A, TP-15C and TP-17. Carbon disulfide and methylene chloride was detected above cleanup objectives in TP-15A and ethylbenzene, toluene and total xylenes were detected above cleanup objectives in TP-15C. VOC concentrations were highest in TP-15C (collected at a depth of 6-7.5 feet below ground surface).

Several semivolatile organic compound (SVOC) concentrations exceeded NYSDEC soil cleanup objectives in test pits TP-5, TP-7, TP-9, TP-11, TP-12, TP-13, TP-14, TP-15A, TP-15C, and TP-17. Compound concentrations were highest in TP-15C, TP-15A, TP-13 and TP-12. SVOC results are tabulated on **Table 1B** and are visually presented on **Figure 8**.

Metal concentrations (**Table 1C**) exceeded NYSDEC soil cleanup objectives for iron and zinc in almost all test pits. Mercury was detected above cleanup objectives in TP-2, TP-5, TP-7, TP-8, TP-9, TP-10, TP-12, TP-13, TP-15A and TP-15C. RCRA metal exceedences are shown on **Figure 9**. The elevated metals concentrations appear to be consistent with the historic industrial use and urban location of the site.

For the purpose of this report, cyanide and ameanable cyanide are presented on separate figures than the RCRA metals (**Figure 10**). Ameanable cyanide was detected in TP-1, TP-3, TP-4, TP-5 and TP-6 in concentrations ranging from 2.8 mg/kg to 30.8 mg/kg. Cyanide was detected in 10 out of the 17 test pits completed, ranging in concentration from 3.2 mg/kg to 109 mg/kg. NYSDEC soil cleanup objectives for cyanide and ameanable cyanide are not promulgated in TAGM 1.1.1.

4.3.2 Geoprobe Results

4.3.2.1 Visual Observations

The greatest benefit of the geoprobe points was to assist in locating and determining the margins of the former Wilkeson Slip. Existing soil data indicates that the Slip likely trends along the entire property line between the NFG site and Waterfront School, extending approximately 50 to 70 feet wide. The Slip is located roughly between GP-17 and MW-00-19 near the parking lot and fence line and alley on the Jackson Street side of the property. The margins of the Slip are graphically presented on the figures included with this report.

4.3.2.2 Geoprobe Analytical Data

As shown on **Table 2A**, VOC concentrations exceeded pertinent soil cleanup objectives (TAGM 1.1.1) for 2-butanone, acetone, benzene, ethylbenzene, toluene and total xylenes in ITGP-6, ITGP-9, ITGP-10, ITGP-12, ITGP-13, ITGP-15, ITGP-16, ITGP-17, ITGP-18, ITGP-19, ITGP-20, ITGP-21, ITGP-22, ITGP-25, ITGP-16 and ITGP-26. The most significant exceedances were in ITGP-17, ITGP-18 and ITGP-19 (which are located in the parking lot) ranging in depth from four (4) to twenty-three (23) feet below grade. The results are presented on **Figure 11**.
SVOC concentrations (**Table 2B**) were highest in ITGP-17, ITGP-15, ITGP-13, ITGP-21, ITGP-19, ITGP-21 and ITGP-26. Naphthalene was the most common analyte detected with the highest concentrations. Naphthalene ranged from non detect to 2,100 µg/kg in ITGP-17. Other common exceedences detected in the geoprobe samples include benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(ghi)perlyene and benzo(k)fluoranthene. The results are presented on **Figure 12**.

The most common metals (**Table 2C**) detected above NYSDEC standards were iron, mercury and zinc. The geoprobe points with the most numerous exceedences were ITGP-15, ITGP-17, ITGP-19 and ITGP-23. Again, these exceedances are typical of industrial/ urban sites. Results of metals in geoprobe soils are presented on **Figure 9.**

Cyanide and ameanable cyanide are presented separately from the RCRA metals for the purpose of this report (**Figure 10**).

4.3.3 Soil Boring and Monitoring Well Soil Sample Results

VOCs detected in soils above the NYSDEC objectives are primarily BTEX (Benzene, toluene, ethylbenzene, and xylene) compounds. The highest concentrations of benzene, toluene, ethylbenzene and xylene compounds were detected in MW00-22, MW00-23, MW00-16, MW00-15, MW01-01 and MW01-27. Monitoring well MW00-23, located near the former retort house had the highest VOC concentrations out of all of the borings completed. Resulting data is tabulated on **Table 3A** and is presented on **Figure 13**.

Monitoring wells MW00-22, MW00-23, MW00-16, MW01-26 and MW01-01 had the most exceedences of NYSDEC objectives for SVOCs in soil. Again MW00-23, located near the former retort house demonstrated the highest concentrations across the site. The data is tabulated on **Table 3B** and is presented on **Figure 14**.

Mercury, iron and zinc were the common metal exceedences in the soil boring samples. Iron and zinc were above NYSDEC objectives in every sample and mercury was detected above objectives in MW00-23, MW00-16, MW01-24, MW01-25, MW01-26, MW01-27 and MW01-01. Metal results are on **Table 3C** and **Figure 9**.

Ameanable cyanide and cyanide are presented separately (**Figure 10**) from the RCRA metals for the purpose of this report. NYSDEC soil cleanup objectives for cyanide and ameanable cyanide in TAGM 1.1.1 are not promulgated.

In all cases, impacted soils were typically encountered at depths greater than four (4) feet below ground surface.

4.3.5 Groundwater Quality Results

Benzene, toluene, ethylbenzene and xylene were the primary constituents detected in geoprobe point water analyzed for VOCs. Geoprobe points ITGP-11, ITGP-13, ITGP-18 and ITGP-19 demonstrated the highest concentrations of BTEX compounds above NYSDEC guidance values and are located off-site, within the area of the former Wilkeson Slip. Results are tabulated on **Table 4A** and are presented on **Figure 15.**

Naphthalene was detected above NYSDEC guidance values in ITGP-11, 13, 18, 19 and 20 while several other SVOC exceedances were observed in ITGP-8, ITGP-13, ITGP-18 and ITGP-20. SVOC results are tabulated on **Table 4B** and are presented on **Figure 16**.

Aluminum, arsenic, iron, lead, magnesium, mercury and sodium were detected in all groundwater samples collected from the geoprobe points. Results are depicted on **Table 4C** and **Figure 17**.

Cyanide and amenable cyanide results for groundwater are presented on **Figure 18**.

Groundwater samples collected from the monitoring wells demonstrated BTEX exceedences above NYSDEC TOGS guidance values at several locations. The highest exceedances occurred in monitoring well MW-12 (in the Wilkeson Slip), MW00-15 (near the former Purifying House), MW00-16, MW00-23 (near the former retort house) and MW00-27 (located near the former tar well). Resulting VOC data is included on **Table 5A** and on **Figure 15**.

SVOC concentrations exceed NYSDEC guidance values most prominently in MW00-16, MW00-22, and MW01-27. SVOC data is included in **Table 5B** and on **Figure 16**.

Aluminum, iron, lead, manganese, magnesium, mercury and sodium were the analytes most commonly detected in the groundwater samples collected from the monitoring wells. Groundwater metal results are tabulated on **Table 5C** and are graphically depicted on **Figure17**.

Cyanide and amenable cyanide results for groundwater are presented on **Figure 18**.

In summary, groundwater impacts are located mostly on the southern portion of the property in the area of the former retort house, the area of the former tar well and on the western side of the site, in the former Wilkeson Slip Channel. Groundwater impacts are isolated in nature and not ubiquitous across the site based upon the data generated during the investigation.

5.0 DEVELOPMENT OF REMEDIAL ACTION OBJECTIVES

The RAOs will be used to evaluate potentially applicable remedial alternatives within this FFS. The general requirements for this work are described in relevant guidance, including the NYSDEC TAGM 4030 (NYSDEC, 1990) and USEPA (USEPA, 1988) guidance for developing remedial actions.

RAOs will consist of medium-specific (i.e., fill, fill water, confined groundwater, etc) goals for protecting human health and the environment (USEPA, 1988). The process for developing RAOs will include the identification of:

- Chemicals of Potential Concern (COPCs) at the Site
- Complete exposure pathways and receptors of potential concern
- Qualitative and quantitative goals for COPC cleanup in each medium that may require treatment based upon a future intended use as a commercial/industrial.

According to USEPA (1988) guidance, RAOs for protecting human receptors should express a remediation goal for COPCs in association with a complete exposure pathway (e.g., fill, fill water, etc.), because protection may be achieved by reducing exposure (such as capping an area, limiting access, or providing an alternate water supply), as well as by reducing COPC levels. The COPCs identified at the site will be discussed in detail in the FFS but will likely include benzene and related BTEX compounds as well as selected semivolatile organic compounds. The concentrations and spatial distribution of COPCs across the site will be evaluated in the context of potentially complete exposure pathways associated with current and hypothetical future land-use scenarios. Qualitative and quantitative goals for COPC response actions in each impacted media will be based upon:

- Published NYSDEC SCGs
- Other state and federal ARARs
- Acceptable contaminant levels (preliminary remediation goals, or PRGs) for the protection of human health for the identified site-specific exposure pathways.

PRGs will be calculated to determine the acceptable risk criteria for a commercial/industrial land-use scenario. The PRGs will be used during the evaluation of the protectiveness of human health provided by each alternative developed for this FS. Each alternative will be evaluated relative to its effectiveness in achieving these goals by either limiting exposures to media containing COPCs exceeding these numeric criteria, or by removal of and treatment of off-site disposal of the media.

6.0 CONCLUSIONS

Assessment activities completed during this Voluntary Cleanup Investigation have adequately characterized the history of the site as well as the nature and extent of soil and groundwater impacts both on and off-site.

Existing Sanborn maps confirm that the subject property has been used as an industrial facility since at least the late 1800's. Adjacent property usage has historically been industrial-manufacturing including lumber yards, wire rope manufacturing, gas stations, and activities that have included the use of paints, solvents and varnishes.

Specific discussions regarding the soil and groundwater quality data generated during this assessment are included below.

Volatile Organic Compounds

All soil samples collected during the course of site investigative activities were secured from intervals within each sampling location that exhibited the highest PID readings, at locations requested by the NYSDEC, and or from the materials at the inferred soil/water table interface. The highest volatile organic impacts were typically encountered at the inferred water table interface (which was encountered at a depth of eight (8) to ten (10) feet across the site), within urban fill material with high pore spaces (bricks, rubble or wood) or between the transition zone from urban backfill material to native soils. This relationship is shown very well by the drill logs within soil boring SB00-22 and 00-23 as well as the majority of the geoprobe points installed within and near the former Wilkeson Slip.

The geology within the soil sample collected between 9.5 and 10 feet in SB/MW00-23 poses an isolated problem in that this sampling location exhibited the highest VOC and SVOC impacts observed in soil across the site. This sample is not considered to be representative of "native" soil conditions at the site. This sample was "skewed" to a six inch zone of woody debris (in opposition to the other sample intervals which spanned 2 to 4 feet) which exhibited a 'product-like" sheen during field screening. This is discussed in more detail under the discussion of semivolatile organic compounds.

Laboratory analytical data supports the conclusion that the VOC impacts are adsorbed at discrete locations and not readily dissolving into groundwater. As an example, adsorbed VOC impacts (which appeared to be a "weathered gasoline" component, being composed primarily of

xylene isomers) were observed within geoprobe points GP-17, GP-18 and GP-19 but decreased relatively quickly radially outward from those points, not manifesting themselves as a well-defined "classic contaminant plume".

An additional "weathered" gasoline-type impact, appearing to be "more fresh" (with a higher benzene and ethylbenzene component) and chemically distinct from those observed in the western portions of the slip was observed around and within GP-13 and GP-15.

An additional adsorbed point source was observed within GP-26 which is located hydrogeologically downgradient from monitoring well MW-12 (which has historically shown the highest gasoline-type impacts on site).

The test pits defined the limits of the formed relief holders and confirmed that they are not contributing an appreciable (if any) source of volatile organic compounds to soil or groundwater based upon the information generated during this and previous investigations. An isolated VOC impact was observed at a depth of about six (6) feet in test pit TP-15 but these impacts do not extend down to and were not encountered in the samples collected at a depth of twelve (12) to sixteen (16) feet.

Volatile Organic Compounds in Groundwater

The highest dissolved VOC impacts were observed within monitoring well MW00-23 at concentrations above which one might expect to have found liquid non-aqueous phase liquid (LNAPL). LNAPL (or DNAPL) was not observed at the time that the well was sampled nor was any noted by the laboratory when the sample was analyzed. Note that a "product-like" sheen was noted within the fill materials at this sampling location when the well was installed and may have been contributing to the elevated dissolved concentrations observed in this well.

Dissolved VOC impacts were also observed in monitoring well MW00-16, which is located hydrogeologically downgradient from monitoring well MW00-23. There is considerably less dissolved impacts observed within monitoring well MW00-22 in comparison to the soil quality data generated from this sampling point. Dissolved impacts were also observed at MW01-27 but was not observed in MW-17, which is located downgradient from this sampling point. This data confirms that the impacts are remaining adsorbed to soils and not readily dissolving into or moving with groundwater.

Groundwater quality data indicates the presence of different "gasoline-like" plumes at the northwest (near the front of the school) and north (behind and near the side wall of the school) corners of the property. Monitoring well MW-12 had relatively high xylene concentrations (in

comparison to benzene levels) whereas monitoring well MW-11, MW-9 and MW-10 have high benzene concentrations (indicative of a more "recent" impact) and little to no xylene impacts. The benzene levels decrease rapidly between monitoring well MW-9 and MW-11, indicating that a physical geologic, and/or hydrogeologic barrier exists between these points. The most likely "barrier" to groundwater movement is the walls of the Wilkeson Slip as MW-9 is located within the Slip Channel whereas MW-11 is located in the Slip "alley" which is the towpath along with pedestrians, oxen, or other tow animals walked (based upon the title search and site survey completed by Niagara Boundary).

The source of "gasoline-type" constituents within these wells is enigmatic since there has been no documented on-site sources. The historic Sanborn maps indicate that wire rope was manufactured on the school property area 1951, paints, varnishes and solvents were used since at least 1925 in tenants near the current United States Post Office and a large gas station was located upgradient from MW-11 in 1951.

Groundwater Flow

Groundwater flow at the site is similar to the conditions previously observed. The water table is being recharged within the former relief holders and the newly discovered tar well, migrating radially outward toward the north and south/southeast. The gradient is much steeper on the southeast/south side of the site and relatively gentle on the north side of the property.

Evidence of perched water within the non-native fill material was observed across the site. This perched water was not laterally continuous nor moving far from their corresponding adsorbed sources.

Semivolatile Organic Compounds

The primary SVOC impacts were observed in SB/MW00-22, 23 and 16, typically occurring at depths of between five (5) feet (refusal) and approximately 15 feet. An isolated sample was collected from a 6-inch sampling interval at a depth of about 10 feet in MW00-22. This "zone" was a silt lens, located immediately above a clay lens, likely skewing the sample results.

Adsorbed impacts were also observed at SB00-23 from within a zone of non-native fill (bricks, wood, etc) that yielded a very poor recovery (on the order of 10%) with a noted odor and sheen. This result should not be indicative of native soils but rather urban fill that was emplaced within these areas.

Relatively little to no adsorbed SVOCs were encountered within MW-15, MW00-20, MW01-25, MW01-24 and MW01-27 and replacement wells MW01-1 and MW01-26 were installed in native soils and silts.

Isolated and discrete impacts were encountered within and near the former Slip. For example, there is a documented, deep SVOC impact around geoprobe points GP-16, 17, 18 and 19. The impact laterally decreases relatively quickly, not being detected in GP-14 and 20 (which are located with in 15-30 feet of these points.

Additional point sources within the slip include the area immediately adjacent to GP-26, GP-21, GP-15 and GP-13. Field observations indicate that the impacts were encountered primarily within the non-native fill material (bricks, wood and sawdust) or immediately beneath the canal debris. This material is overlain by sands, gravels and other non-native urban debris and fill.

The test pit data confirms that the relief holders are not a contributory adsorbed source area. The test pit data also indicates that impacts observed within MW-12 were isolated in nature, not extending toward or from the relief holders. Alternatively, the upper 7 feet of test pit 15 constitutes an SVOC point source which decreases to below or near SCGs (or pertinent cleanup standards) at a depth of 12 feet. Similar conditions were observed within test pit TP-13 and 15.

Groundwater/perched water quality data confirms the isolated nature of the impacts in that primary impacts were /are observed immediately adjacent to the documented adsorbed sources within the fill materials, specifically within MW01-27 and to a lesser extent MW00-15, MW00-16 and MW00-22.

The perimeter monitoring well data confirms that impacts do not extend offsite/across property line as documented by the data for wells MW01-24, 25, MW00-9,10, MW-9, 11, 5, 4,3,2, MW01-01, ITGP-08, GP-9, GP-10, MW00-19 and MW00-20.

Summary

Existing soil and groundwater quality data indicates the occurrence of isolated and discrete adsorbed and dissolved impacts across the site. The primary impacts were observed within the area of the former tar well (MW01-27), near the former retort house (MWs 00-16, 00-22, and 00-23) and isolated areas within the former purifying house (MW00-15). Isolated and sporadic soil and groundwater impacts were encountered within and adjacent to the former Wilkeson Slip with the primary impacts being observed within MW-12 and around MW-9, 10 and 11. The sources of impact within the Slip were not defined although no process piping or related

conduits leading from the NFG site into the Slip were encountered during site investigative activities. Additionally, "contaminant chemistry" with the Sip indicates impacts from multiple volatile and semivolatile organic sources which may be related to historic usage at adjacent properties (e.g. the school, post office and adjacent properties which historically used and handled volatile and semivolatile organic compounds).

No liquid or dense non-aqueous phase liquids (LNAPL/DNAPL) were encountered within the monitoring wells when sampled. Existing groundwater quality data indicates that the dissolved impacts are not widespread and migrating as a classic "plume" but rather appear to be isolated in nature and not migrating far from their corresponding adsorbed sources.

Finally, perimeter groundwater monitoring wells confirm that the dissolved impacts are not migrating "off-site" with the exception of the area around MW-9/MW-11 whose impacts appear to be related to an as-yet unidentified source area.

TABLES

Table 1A
Test Pit Soil Volatile Analytical Results - Detected Compounds
National Fuel

Sample ID / *Depth* / *Analyte*	Units	NYSDEC Cleanup Objectives	TP-1 4-7	TP-2 6	TP-3 7-8	TP-4 6-8.5	TP-5 6-7	TP-6 5-7	TP-7 3.5-4	TP-8 5-6.5	TP-9 5-6	TP-10 5.5-6	TP-11 6-7	TP-12 6-7	TP-13 5-7	TP-14 7-7.5	TP-15A 12-16	TP-15C 6-7.5	TP-16 1.5-4	TP-17 6.5-7
2-Butanone	ug/kg	30	8 J	ND	2 J	2 J	21 J	3 J	5 J	5 J	3 J	2 J	16 J	ND	ND	7 J	ND	ND	ND	52
Acetone	ug/kg	200	74	4 J	22 J	21 J	120	26	45	48	30	21 J	110	ND	54	42	ND	ND	5 J	220
Benzene	ug/kg	60	8	3 J	ND	120	60	14	3 J	36	8	2 J	4 J	170	4 J	37	280 J	18000	17	10
Carbon Disulfide	ug/kg	70	2 J	ND	2 J	ND	3 J	6	1 J	2 J	6	2 J	ND	3 J	ND	12	1600	ND	ND	6
Ethylbenzene	ug/kg	5500	ND	1 J	2 J	23	180	61	ND	300 D	2 J	ND	ND	610 D	ND	13	260 J	20000	3 J	2 J
Methylene chloride	ug/kg	100	7 B	8 B	7 B	6 B	7 B	7 B	7 B	7 B	9 B	8 B	8 B	ND	25 B	10 B	190 BJ	ND	11 B	7 B
Toluene	ug/kg	1500	3 J	3 J	1 J	3 J	5	3 J	3 J	40	6	2 J	ND	21	5	6	280 J	9600	15	3 J
Total Xylenes	ug/kg	1200	2 J	2 J	5 J	270	49	31	1 J	970 D	2 J	ND	ND	1000 D	3 J	12 J	ND	320000	4 J	15

Notes: All results in ug/kg

J= Estimated value

B=Analyte also detected in method blank

D=Value obtained from a diluted analysis

Shaded Area= Exceedence of NYSDEC TAGM soil cleanup objectives

Bolded Text=analyte detected above laboratory method detection limits

ND=Non Detect

Only compounds detected at or above laboratory mathod detecton limits included on table

Table 1C
Test Pit Soil Metal Analytical Results - Detected Compounds
National Fuel

Sample ID / *Depth* / *Analyte*	Units	NYSDEC Cleanup Objectives	TP-1 4-7	TP-2 6	TP-3 7-8	TP-4 6-8.5	TP-5 6-7	TP-6 5-7	TP-7 3.5-4	TP-8 5-6.5	TP-9 5-6	TP-10 5.5-6	TP-11 6-7	TP-12 6-7	TP-13 5-7	TP-14 7-7.5	TP-15A 12-16	TP-15B 8-12	TP-15C 6-7.5	TP-16 1.5-4	TP-17 6.5-7
Aluminum - Total	ug/Kg	NV	10000 N	2760 N	5130 N	3370 N	3780 N	5000 N	5400 N	4860 N	4210 N	3360 N	5180 N	12400 N	1900 N	2060 N	2420 N	1680 N	5690 N	2110 N	10400 N
Amenable Cyanide	mg/kg	NV	2.8	ND	30.8	3.9	4.2	22.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic - Total	mg/kg	7.5	2.1	ND	ND	ND	2	ND	2	ND	1.7	ND	2.2	6.9	10.7	3.2	16.3	3.3	11.1	ND	ND
Barium - Total	mg/kg	300	70.8 N	18 N	36.3 N	29.4 N	44.9 N	43.3 N	54.8 N	45 N	38.8 N	27.7 N	64.2 N	207 N	25.5 N	33.2 N	39.8 N	21.8 N	88.1 N	4.2 N	153 N
Beryllium - Total	mg/kg	0.16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.4	ND	ND	ND	ND	0.74	ND	ND
Cadmium - Total	mg/kg	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.81	ND	ND	ND	ND	ND	ND	ND	ND
Calcium - Total	mg/kg	NV	32600 E	105000 E	50800 E	26200 E	37300 E	51400 E	72000 E	42500 E	47600 E	65900 E	110000 E	157000 E	139000 E	273000 E	43100 E	87100 E	81200 E	330000 E	14200 E
Chromium - Total	mg/kg	10	13.5	4	7.7	5.1	5.6	7.3	8	7.5	5.1	5.3	6.5	8.3	3.9	ND	26.8	7.6	6.9	ND	14.5
Cobalt - Total	mg/kg	30	6.5	ND	3.7	2.6	3	3.7	4.1	3.9	2.4	2.7	2.8	4.1	ND	ND	7.1	2.4	5.1	ND	8.1
Copper - Total	mg/kg	25	15.7	17.7	5.8	4.7	11.6	8.5	9.4	13.9	9.4	9.7	12.6	21	14.9	5	6.4	12.8	25.2	2.9	22.9
Cyanide - Total	mg/kg	NV	3.2	ND	40	4.5	5.4	26.7	ND	14.7	ND	ND	9.3	21	61.8	3.8	109	ND	51.5	10	ND
Iron - Total	mg/kg	2000	15600 E	5140 E	9090 E	6190 E	7100 E	8750 E	10500 E	8600 E	6200 E	6950 E	8810 E	12100 E	6150 E	3510 E	32500 E	17500 E	13000 E	634 E	13700 E
Lead - Total	mg/kg	500	26.5 N	70.2 N	19.2 N	ND	46.4 N	14.8 N	24.1 N	29 N	98.8 N	65.6	58.8	223 N	23.6 N	ND	135 N	30.4 N	126 N	ND	34.8 N
Magnesium - Total	mg/kg	NV	13100	28300	20500	9280	11900	24000	20700	20800	16700	24600	16800	11300	5250	5530	617	9610	6230	1960	7500
Manganese - Total	mg/kg	NV	304 E	187 E	248 E	186 E	188 E	247 E	319 E	238 E	236 E	292 E	359 E	695 E	192 E	340 E	84.5 E	557 E	365 E	141 E	152 E
Mercury - Total	mg/kg	0.1	ND	0.172 N	ND	ND	0.149 N	ND	0.144 N	0.114 N	0.322 N	0.128 N	ND	4.9 N	0.556 N	ND	1.1 N	ND	0.593 N	ND	ND
Nickel - Total	mg/kg	13	14.4	4.2	7.3	5.7	8.3	7.8	8.5	7.8	4.9	5.4	7.7	9	5	6.3	7.1	7.5	17.6	ND	20.8
Potassium - Total	mg/kg	NV	2070	699	1540	957	869	1310	1440	1180	807	809	887	1370	378	400	638	ND	681	407	1300
Sodium - Total	mg/kg	NV	356	241	409	186	431	279	365	302	464	190	326	461	284	ND	516	ND	284	858	168
Vanadium - Total	mg/kg	150	19.4	7.8	15.3	7.5	10	13.7	13.5	13.3	11	9.9	13.1	11.5	8.8	5.1	59.1	5.1	12.6	3.3	19.4
Zinc - Total	mg/kg	20	66.7 N	50 N	321 N	23.7 N	53.7 N	50.5 N	50.7 N	134 N	71.8 N	70.5 N	64.3 N	91.4 N	72.8 N	8.4 N	27.1 N	25.6 N	54.7 N	5.9 N	121 N

Notes: All results in mg/kg
Only detected metals above laboratory detection limits included on table
N=Tentitively Identified compound
E=concentration exceeds calibration of instrument
Shaded text=Analyte exceeds NYSDEC TAGM soil cleanup objectives
Bolded Text=Analyte detected above laboratory detection limits
NV=No value reported in TAGM soil cleanup objectives
ND= Non detect

Table 1B
Test Pit Soil Semivolatile Results - Detected Compounds
National Fuel

Sample ID / *Depth* / *Analyte*	Unit	NYSDEC Cleanup Objectives	TP-1 4-7	TP-2 6	TP-3 7-8	TP-4 6-8.5	TP-5 6-7	TP-6 5-7	TP-7 3.5-4	TP-8 5-6.5	TP-9 5-6	TP-10 5.5-6	TP-11 6-7	TP-12 6-7	TP-13 5-7	TP-14 7-7.5	TP-15A 12-16	TP-15A RE 12-16	TP-15C 6-7.5	TP-16 1.5-4	TP-17 6.5-7
2-Methylnaphthalene	ug/kg	36400	ND	ND	60 J	110 J	ND	28 J	ND	730	ND	ND	ND	500 J	3400	ND	690	12000	150000	ND	ND
Acenaphthene	ug/kg	50000	ND	ND	21 J	ND	ND	ND	ND	28 J	81 J	26 J	ND	2400	7800	ND	ND	ND	63000	ND	840
Acenaphthylene	ug/kg	41000	ND	ND	29 J	ND	ND	ND	ND	42 J	34 J	ND	280 J	2800	4600	ND	ND	ND	17000	ND	ND
Anthracene	ug/kg	50000	ND	ND	71 J	ND	130 J	53 J	350 J	40 J	300 J	56 J	ND	13000	29000	600	580	8000	91000	ND	2700
Benzo(a)anthracene	ug/kg	224	ND	ND	100 J	28 J	640	160 J	2100	110 J	750	140 J	790	19000	40000	3100	2100	31000	74000	130 J	9200
Benzo(a)pyrene	ug/kg	61	ND	ND	82 J	30 J	580	150 J	3300	150 J	610	130 J	1300	16000	30000	3900	1300	18000	56000	ND	12000
Benzo(b)fluoranthene	ug/kg	1100	220 J	ND	70 J	46 J	830	220 J	4500	260 J	520	220 J	1200	15000	25000	5300	4100	62000	52000	300 J	7700
Benzo(ghi)perylene	ug/kg	50000	ND	ND	ND	ND	100 J	39 J	1300	79 J	170 J	44 J	1200	7500	7600	1500	860	16000	12000	210 J	4400
Benzo(k)fluoranthene	ug/kg	1100	ND	ND	75 J	ND	ND	ND	ND	ND	630	ND	1100	17000	29000	ND	ND	ND	49000	230 J	10000
Chrysene	ug/kg	400	ND	ND	90 J	25 J	560	150 J	2200	120 J	720	140 J	760	18000	37000	3100	2400	35000	67000	180 J	8300
Di-n-butyl phthalate	ug/kg	8100	ND	ND	ND	ND	ND	26 J	ND	ND	30 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	ug/kg	14	ND	ND	ND	ND	ND	ND	670	ND	98 J	ND	250 J	2700	4800	760	ND	4200 J	9600	ND	3300
Dibenzofuran	ug/kg	6200	ND	ND	48 J	ND	ND	ND	ND	130 J	29 J	ND	ND	6400	7600	ND	900	15000	66000	ND	270 J
Fluoranthene	ug/kg	50000	290 J	ND	200 J	43 J	990	260 J	2400	180 J	1400	320 J	1200	48000	76000	4700	5800	85000	140000	ND	11000
Fluorene	ug/kg	50000	ND	ND	71 J	30 J	100 J	27 J	ND	110 J	89 J	25 J	ND	9500	13000	ND	290 J	4200 J	84000	ND	850
Indeno(1,2,3-cd)pyrene	ug/kg	3200	ND	ND	ND	ND	120 J	48 J	1300	78 J	180 J	39 J	1000	8100	9400	1600	1000	18000	14000	180 J	5100
Naphthalene	ug/kg	13000	720	ND	310 J	1000	740	770	ND	5000	59 J	ND	360 J	1400	3600	3100	1800	39000	690000 D	ND	940
Phenanthrene	ug/kg	50000	250 J	ND	280 J	49 J	550	230 J	1200	300 J	1100	190 J	260 J	2700	79000	1400	5800	96000	210000	ND	5500
Pyrene	ug/kg	50000	260 J	ND	170 J	40 J	870	220 J	2500	180 J	1300	260 J	1100	36000	60000	3600	3900	61000	120000	220 J	8900

Notes: All results in ug/kg
J= Estimated value
B=Analyte also detected in method blank
D=Value obtained from a diluted analysis
Shaded Area= Exceedence of NYSDEC TAGM 1.1.1 soil cleanup objectives
Bolded Text=analyte detected above laboratory method detection limits
ND=Non detect
Only analytes detected at or above laboratory detection limits are included on table

Table 2A
Geoprobe Soil Volatile Analytical Results - Detected Compounds
National Fuel

Sample ID / *Depth* / *Analyte*	Units	NYSDEC Cleanup Objectives	ITGP-3	ITGP-6 4-8	ITGP-7 8-12	ITGP-8 4-8	ITGP-9 4-8	ITGP-10 4-8	ITGP-11 4-8	ITGP-12 4-8	ITGP-13 4-8	ITGP-14 4-8	ITGP-15 9-10	ITGP-16 10-11	ITGP-17 4-16	ITGP-18 4-15	ITGP-19 2-16	ITGP-19 20-23	ITGP-20 8-12	ITGP-21 8-12	ITGP-22 5-7	ITGP-23 6-7	ITGP-24 5-7	ITGP-25 5-7	ITGP-26 7-8'	ITGP-27 8.5-9.5
2-Butanone	ug/kg	30	**13 J**	**39**		**9 J**	**53**	**8 J**	**27**	**33**	**120**	ND	**53**	**67**	**120**	**94**	**21 J**	**41**	**68**	**110**	**680**	**25**	**16 J**	**22 J**	ND	**20 J**
Acetone	ug/kg	200	**68 B**	**210**	**45**	**61**	**340 B**	**210**	**140 B**	**150**	**450 B**	**32 B**	**210 B**	**270**	**530 B**	**350 B**	**120 B**	**140**	**300 B**	**440 B**	**2700**	**100**	**120**	**100**	ND	**130**
Benzene	ug/kg	60	**36**	**4 J**	**3 J**	**4 J**	**16**	**12**	**2 J**	**19**	**30**	**10**	**45**	**28**	**2000 D**	**3800 D**	**120**	**470 DJ**	**31**	**49**	**75**	**140**	**28**	**77**	**350 DJ**	**69**
Carbon Disulfide	ug/kg	70	**2 J**	**2 J**	ND	**4 J**	ND	ND	ND	ND	**2 J**	**3 J**	**2 J**	**4 J**	**25**	**7**	**9**	**3 J**	**2 J**	ND	**17**	ND	ND	**2 J**	**6**	**9**
Chlorobenzene	ug/kg	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**1 J**	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ug/kg	5500	**28**	**4 J**	**3 J**	**4 J**	ND	ND	**3 J**	**7**	**4400 D**	ND	**3200 D**	**1800 D**	**27000 D**	**33000 D**	**4000 D**	**9700 D**	**57**	**170**	**12**	**200**	**4 J**	**220**	**9500 D**	**38**
Methylene chloride	ug/kg	100	**16 B**	**6 B**	ND	**6 B**	**15 B**	**11 B**	**5 B**	**11 B**	**7 B**	**7 B**	**8 B**	**7 B**	**9 B**	**12 B**	**17 B**	**7 B**	**14 B**	**16 B**	**35 B**	**12 B**	**17**	**15 B**	**18 B**	**11 B**
Tetrachloroethene	ug/kg	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**7**
Toluene	ug/kg	1500	**28**	**7 B**	**6 B**	**5 B**	**7**	**5 B**	**3 BJ**	**13 B**	**95 B**	**4 BJ**	**99 B**	**42 B**	**260**	**3900 D**	**34**	**84**	**29**	**32**	**45**	**30**	**26 B**	**28**	**420 DJ**	**8**
Total Xylenes	ug/kg	1200	**69**	**9 J**	**4 J**	**12 J**	ND	**2 J**	**7 J**	**25**	**18000 D**	**2 J**	**12000 D**	**7100 D**	**52000 D**	**110000 D**	**590**	**19000 D**	**120**	**430**	**23**	**310**	**6 J**	**15**	**39000 D**	**41**

Notes: All results in ug/kg

J= Estimated value

B=Analyte also detected in method blank

D=Value obtained from a diluted analysis

Shaded Area= Exceedence of NYSDEC TAGM 1.1.1 soil cleanup objectives

Bolded Text=analyte detected above laboratory method detection limits

ND=Non detect

NV= No Value reported in TAGM soil cleanup objectives

Only compounds detected at or above laboratory method detection limits included on table

Table 2B
Geoprobe Soil Semivolatile - Detected Compounds
National Fuel

Sample ID *Depth* *Analyte*	Unit	NYSDEC Cleanup Objectives	ITGP-3	ITGP-5	ITGP-6 4-8	ITGP-6 4-8	ITGP-7 8-12	ITGP-8 4-8	ITGP-8 RE 4-8	ITGP-9 4-8	ITGP-10 4-8	ITGP-10 RE 4-8	ITGP-11 4-8	ITGP-12 4-8	ITGP-13 4-8	ITGP-14 4-8	ITGP-15 9-10	ITGP-16 10-11	ITGP-16 RE 10-11	ITGP-17 14-16	ITGP-18 14-15	ITGP-19 12-16	ITGP-19 20-23	ITGP-20 8-12	ITGP-21 8-12	ITGP-22 5-7	ITGP-23 6-7	ITGP-24 5-7	ITGP-25 5-7	ITGP-26 7-8	ITGP-27 8.5-9.5
1,2-Dichlorobenzene	ug/kg	NV	120 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ug/kg	NV	120 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ug/kg	36400	250 J	ND	ND	ND	ND	ND	310 J	ND	ND	ND	ND	8800	150000	120 J	720000	14000	20000	740000 D	76000	14000	78000	1600	120000	190 J	ND	350	12000	79000	ND
Acenaphthene	ug/kg	50000	ND	400	1300	1300	ND	1200	1700	ND	ND	ND	800	4700	42000	ND	310000	2600	3400	460000 D	45000	24000	39000	16000	84000	260 J	ND	290 J	9600	20000	500
Acenaphthylene	ug/kg	4100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1200	2200	ND	7300	ND	980	11000	2600	ND	ND	240 J	2000	ND	ND	ND	ND	11000	ND
Anthracene	ug/kg	50000	230 J	1300	3800	3800	ND	3300	4700	46 J	ND	ND	2300	4000	30000	ND	180000	3300	5200	160000	30000	26000	12000	6100	47000	ND	ND	440	5200	12000	1000
Benzo(a)anthracene	ug/kg	224	620	3200	8400	7400	74 J	8400	16000	140 J	310 J	300 J	6200	6900	8800	270 J	52000	6800	14000	34000	26000	16000	4700	830	29000	250 J	470	580	2300	24000	4300
Benzo(a)pyrene	ug/kg	61	640	2800	4900	6200	52 J	8200	16000	120 J	210 J	270 J	5400	8700	4700	260 J	33000	6300	14000	21000	21000	15000	ND	240 J	19000	200 J	660	370	1600	24000	5000
Benzo(b)fluoranthene	ug/kg	1100	470	3500	5500	6800	75 J	9600	18000	140 J	230 J	270 J	5900	9000	5500	330	44000	6800	14000	22000	25000	16000	ND	310 J	23000	310 J	610	140 J	1700	22000	4800
Benzo(ghi)perylene	ug/kg	50000	190 J	1200	1600	3300	ND	3300	8100	34 J	ND	ND	2700	1900	1500	170 J	6400	2400	480	4600	4800	4200	ND	ND	1800	ND	460	ND	610	ND	1700
Benzo(k)fluoranthene	ug/kg	1100	540	2500	2200	2800	27 J	3500	5800	44 J	70 J	300 J	2100	2800	2200	110 J	17000	2800	6000	9000	9600	7000	ND	120 J	10000	110 J	250 J	400	630	9800	1900
Bis(2-ethylhexyl) phthalate	ug/kg	50000	ND	ND	ND	ND	40 J	ND	ND	25 J	ND	ND	ND	ND	ND	ND	370	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	ug/kg	400	570	3200	5700	6500	63 J	7200	13000	120 J	260 J	300 J	5800	5800	7300	270 J	42000	5800	12000	28000	22000	14000	4700	610	24000	220 J	310 J	380	1800	17000	3700
Dibenzo(a,h)anthracene	ug/kg	1.4	ND	490	550	890	ND	1100	2500	ND	ND	ND	740	940	680	ND	2900	810	2200	1400	1800	ND	ND	ND	980	ND	ND	ND	ND	ND	750
Dibenzofuran	ug/kg	6200	ND	300 J	940	760	ND	740	1100	ND	ND	ND	460	3400	38000	ND	280000	2700	4200	370000 D	38000	17000	33000	14000	63000	76 J	ND	140 J	7600	12000	220 J
Fluoranthene	ug/kg	50000	880	7200	13000	15000	180 J	15000	29000	280 J	490	440	13000	8500	26000	470	180000	12000	23000	150000	57000	35000	15000	4200	58000	380	260 J	1200	6300	47000	4100
Fluorene	ug/kg	50000	ND	480 J	1700	1500	ND	1400	2200	ND	ND	ND	820	5300	53000	ND	340000	3500	5600	400000 D	44000	19000	33000	13000	84000	ND	ND	430	10000	12000	400
Indeno(1,2,3-cd)pyrene	ug/kg	3200	190 J	1200	2100	3800	ND	4300	2200	44 J	ND	ND	3200	2400	1800	ND	9000	3000	6200	8000	6000	5600	ND	ND	2900	ND	490	130 J	740	ND	2200
Naphthalene	ug/kg	13000	ND	350 J	810 B	430	ND	1300 B	1700	ND	ND	ND	1200 B	11000 B	250000 B	2100 B	1000000 B	36000 B	28000	2100000 BD	210000 BD	240000 BD	280000 B	7600 B	92000 B	730 B	160 BJ	260 BJ	19000 B	930000	1600
Phenanthrene	ug/kg	50000	820	5800	13000	13000	110 J	9900	15000	170 J	ND	ND	11000	9000	71000	ND	500000	11000	17000	680000 D	92000	47000	53000	19000	130000	260 J	ND	960	16000	56000	2600
Pyrene	ug/kg	50000	830	5700	11000	11000	120 J	10000	17000	210 J	440	380	11000	7800	18000	450	110000 E	9000	15000	88000	44000	24000	11000	3600	54000	620	340	1000	4600	28000	3200

Notes: All results in ug/kg
J= Estimated value
B=Analyte also detected in method blank
D=Value obtained from a diluted analysis
Shaded Area= Exceedence of NYSDEC TAGM soil cleanup objectives
Bolded Text=analyte detected above laboratory method detection limits
NV=No value reported in TAGM soil cleanup objectives
Only compounds detected at or above method detection limits are included on table
ND=non detect

Table 2C
Geoprobe Soil Metal Analytical Results - Detected Compounds
National Fuel

Sample ID / *Depth* / *Analyte*	Units	NYSDEC Cleanup Objectives	ITGP-3	ITGP-4	ITGP-5	ITGP-6 4-8	ITGP-7 8-12	ITGP-8 4-8	ITGP-9 4-8	ITGP-10 4-8	ITGP-11 4-8	ITGP-12 4-8	ITGP-13 4-8	ITGP-14 4-8	ITGP-15 9-10	ITGP-16 10-11	ITGP-17 14-16	ITGP-18 14-15	ITGP-19 12-16	ITGP-19 20-23	ITGP-20 8-12	ITGP-21 8-12	ITGP-22 5-7	ITGP-23 6-7	ITGP-24 5-7	ITGP-25 5-7	ITGP-26 7-8	ITGP-27 8.5-9.5
Aluminum - Total	ug/Kg	NV	9100	921	5020	5720 E	4430 E	5840 E	11100 E	6210 E	5460 E	7270 E	6790 E	4810 E	5980 E	6540 E	7640 E	6400 E	18000 E	6870 E	1740 E	7420 E	6970 E	6240 E	6900 E	4630 E	7820 E	4870 E
Amenable Cyanide	mg/kg	NV	ND	ND	2	ND	ND	46.2	ND	ND	ND	ND	ND	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	18.6
Arsenic - Total	mg/kg	7.5	2.7	2.2	78.6	3.8	2.2	13.4	ND	3.8	8.8	5	9.4	4.5	20.4	4.2	11.6	7.5	13	4.3	ND	3.3	11.3	12.5	5.7	2.8	7.4	3.2
Barium - Total	mg/kg	300	88.5	3.8	75.4	64.2	799	57.8	180	106	139	133	210	39.8	136	87.3	112 E	80.3 E	70.9 E	135 E	16.5 E	94.5 E	119 E	94.2 E	87.5 E	47.3 E	66.3	55.1
Beryllium - Total	mg/kg	0.16	ND	ND	ND	ND	ND	ND	ND	0.68	ND	ND	ND	ND	0.86	ND	ND	ND	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium - Total	mg/kg	1	ND	ND	1.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.89	ND	ND	ND	13.3	ND	ND	ND	ND	0.66	ND	ND	ND	ND
Calcium - Total	mg/kg	NV	14900	461000	20100	57200 E	231000 E	110000 E	6510 E	25400 E	18600 E	24700 E	29900 E	4200 E	24700 E	31500 E	161000 E	30400 E	7820 E	36000 E	31000 E	30600 E	25300 E	18200 E	17200 E	46700 E	54400 E	21000 E
Chromium - Total	mg/kg	10	12.5	ND	6.4	9.9	4.8	7	20.6	7.3	11.9	12.5	23.2	8.7	24	11.1	13.8	10.2	33.4	11.3	2.7	10.7	10.9	17.2	10.3	6.9	10.4	7.5
Cobalt - Total	mg/kg	30	8.8	ND	2.9	3.5	ND	4.3	6.9	5.2	3.5	6	5	3.8	8.7	4.2	6	4.2	12.6	5.1	ND	5.3	7.1	42.3	5.8	3.7	6.4	3.9
Copper - Total	mg/kg	25	20.4	ND	50.4	18.4	76.9	36.9	12.8	16.2	97	67.1	55.9	50.6	92.1	18.3	44.7	17.4	77.5	21.8	2.7	20.5	21.9	82.2	18.6	8.7	15.3	12.4
Cyanide - Total	mg/kg	NV	2.8	ND	2	ND	0.51	132	ND	ND	1.1	ND	2.6	4.6	2.4	0.51	ND	ND	ND	ND	ND	ND	8.9	32.9	ND	ND	7.1	35.9
Iron - Total	mg/kg	2000	13300	1290	25100	10200 E	5060 E	17500 E	15200 E	10900 E	15500 E	14100 E	12800 E	12300 E	35500 E	11000 E	21000 E	11400 E	29900 E	12800 E	4210 E	10500 E	21200 E	28700 E	13100 E	8390 E	14000 E	7640 E
Lead - Total	mg/kg	200-500	19.9	ND	163	60.6	367	158	17.7	50.3	273	212	483	94.6	358	45.9	130	71.4	260	108	8.3	123	ND	27.1	32.5	23.8	24.5	37.8
Magnesium - Total	mg/kg	NV	6290	2580	2050	9830 E	12400 E	2630 E	2970 E	6240 E	3480 E	8580 E	7750 E	946 E	4990 E	8290 E	6430 E	9160 E	1590 E	11200 E	2220 E	11300 E	2420 E	6620 E	9100 E	18700 E	20900 E	6410 E
Manganese - Total	mg/kg	NV	146	146	158	256	2110	183	253	308	163	219	225	33.5	510	258	444 E	204 E	118 E	235 E	137 E	267 E	198 E	134 E	149 E	255 E	386 E	148 E
Mercury - Total	mg/kg	0.1	ND	ND	0.651	ND	ND	0.521	ND	0.151	0.252	1.1	3.1	ND	0.813	ND	2.4	0.512	0.651	0.967	ND	2.6	ND	ND	ND	0.332	0.326	0.181
Nickel - Total	mg/kg	13	19.2	5.3	7.4	9.7	12.8	8.9	39.9	10.3	10.1	14.4	12	6.6	20.2	10.5	16.2	10.9	24.9	11.4	3.3	11	16.1	73	14.3	7.6	13.8	8.5
Potassium - Total	mg/kg	NV	1120 N	ND	456 N	842	2660	737	951	789	452	1130	1120	ND	622	899	1210	891	505	1230	314	1250	705	769	992	989	1810	716
Selenium - Total	mg/kg	2	ND	ND	ND	ND	ND	4.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.3	ND	ND	ND	ND	10.2	ND	ND	ND	ND
Sodium - Total	mg/kg	NV	352	ND	379	588	1210	628	ND	278	423	205	208	237	578	536	259	297	519	185	285	177	1150	196	204	131	266	143
Vanadium - Total	mg/kg	150	17.3	2.8	15.9	10.9	7.3	12.8	21	14.3	14	15.6	13.7	14.5	17.4	13.2	16.8	16.9	59.8	14.7	6.7	15.9	21.3	18.4	17.5	11.9	16.5	11.7
Zinc - Total	mg/kg	20	82.8	4.2	480	64.7	169	57.7	87.8	77	202	110	882	61.7	287	59.2	151	66.9	6440	133	14.8	75.2	173	62.5	71.5	51.4	59.9	60.1

Notes: All results in mg/kg
Only detected metalsat or above laboratory method detection limits included on table
N=Tentitively Identified compound
E=concentration exceeds calibration of instrument
Shaded text=Analyte exceeds NYSDEC TAGM soil cleanup objectives
Bolded Text=Analyte detected above laboratory detection limits
NV=No value reported in TAGM soil cleanup objectives
ND=Non detect

Table 3A
Monitoring Well Soil Volatile Analytical Results - Detected Compounds
National Fuel

Sample ID / *Depth* / *Analyte*	Units	NYSDEC Cleanup Objectives	ITMW00-17 18-20	ITMW00-22 16-18	ITMW00-22 9.5-10	ITMW00-23 8-10	ITSB00-21 16-17	MW00-16 12-14	MW00-12 21-21.5	MW00-13 18-20	MW00-14 18-20	MW00-15 14-19	MW00-18 14-24	MW00-19 14-20	MW00-20 16-20	MW01-24 4	MW01-25 8	MW01-26 12	MW01-1 12	MW01-27 12-14
2-Butanone	ug/kg	30	ND	ND	ND	ND	ND	ND	2 J	ND	2 J	ND	ND	5 J	3 J	15 J	97	32	ND	ND
Acetone	ug/kg	200	20 BJ	47	ND	ND	16 BJ	ND	19 BJ	19 BJ	17 BJ	ND	17 BJ	32	27 B	9 BJ	17 BJ	14 BJ	92 B	ND
Benzene	ug/kg	60	190	160	ND	3000000 D	11	46000	170	38	440 DJ	1600	2 J	14	270 D	ND	ND	6	820	27000
Carbon Disulfide	ug/kg	70	ND	ND	ND	ND	1 J	ND	2 J	19	3 J	320 J	28	7	8	ND	ND	3 J	280 DJ	ND
Ethylbenzene	ug/kg	5500	150	520	10000	610000 D	3 J	21000	190	13	820 D	1400	2 J	2 J	330 D	ND	ND	16	500	21000
Methylene chloride	ug/kg	100	14 B	38	ND	ND	9 B	ND	10 B	9 B	6 B	ND	7 B	10	8 B	8 B	11 B	8 B	160	260 J
Styrene	ug/kg	NV	ND	ND	ND	2100000 D	ND	50000	ND	ND	ND	1400	ND	ND	ND	ND	ND	ND	ND	35000
Tetrachloroethene	ug/kg	NV	ND	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	13	ND
Toluene	ug/kg	1500	40	500 B	5400	5100000 D	8	190000	26	7	150	3100	3 J	14 B	130	2 J	14	15	550 B	100000 D
Total Xylenes	ug/kg	1200	290	11000 D	110000	3100000 D	6 J	310000	340	24	3000 D	10000	5 J	3 J	1100 D	ND	ND	240	3500 B	380000 D

Notes: All results in ug/kg

J= Estimated value

B=Analyte also detected in method blank

D=Value obtained from a diluted analysis

Shaded Area= Exceedence of NYSDEC TAGM 1.1.1 soil cleanup objectives

Bolded Text=analyte detected above laboratory method detection limits

ND=Non detect

NV= No Value reported in TAGM soil cleanup objectives

Only compounds detected at or above laboratory method detection limits included on table

Table 3B
Monitoring Well Soil Semivolatile Results - Detected Compounds
National Fuel

Sample ID / *Depth* / *Analyte*	Unit	NYSDEC Cleanup Objectives	ITMW00-17 18-20	ITMW-0022 16-18	ITMW-0022 9.5-10	ITMW-0023 5-7	ITSB00-21 16-17	MW-0016 12-14	MW00-12 21-21.5	MW00-13 18-20	MW00-14 18-20	MW00-15	MW00-18 14-24	MW00-18 RE 14-24	MW00-19	MW00-20 16-20	MW01 24 4	MW01 25 8	MW01 26 12	MW01-1 12	MW01-27 12-14	MW01-27 RE 12-14
1,2,4-Trichlorobenzene	ug/kg	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2800	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ug/kg	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2500	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ug/kg	NV	ND	ND	ND	ND	ND	50000	ND	ND	75 J	1800	ND	ND	ND	ND	ND	ND	ND	28000	ND	ND
2,4-Dinitrotoluene	ug/kg	1000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3800	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	ug/kg	800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2700	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ug/kg	36400	ND	26000	530000	14000000 D	ND	450000	ND	58 J	ND	5300	ND	ND	ND	1300	ND	ND	80000 D	770000	2600 B	22000
2-Methylphenol	ug/kg	100	ND	ND	ND	ND	ND	16000	ND	ND	ND	2100	ND	ND	ND	ND	ND	ND	ND	27000	ND	ND
4-Chloro-3-methylphenol	ug/kg	240	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3500	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methylphenol	ug/kg	900	ND	ND	ND	ND	ND	45000	ND	ND	ND	2800	ND	ND	ND	ND	ND	ND	ND	60000	ND	ND
4-Nitrophenol	ug/kg	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3400	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	ug/kg	50000	ND	4800	100000	1200000	ND	52000	ND	250 J	ND	620	3600	ND	ND	540	ND	ND	6300	100000	ND	1400
Acenaphthylene	ug/kg	4100	ND	320 J	7000 J	3300000	ND	130000	ND	34 J	ND	1400	ND	ND	ND	360	840	ND	5600	370000	ND	730
Anthracene	ug/kg	50000	ND	560	12000	2900000	ND	150000	ND	320 J	ND	1300	ND	ND	ND	680	2000	ND	18000	350000	610	2900
Benzo(a)anthracene	ug/kg	224	ND	8200	160000	2000000	ND	130000	ND	80 J	ND	ND	ND	ND	ND	550	11000	2000	22000	270000	ND	7800
Benzo(a)pyrene	ug/kg	61	ND	8700	160000	2100000	ND	92000	ND	46 J	ND	670	ND	ND	ND	460	12000	2400	14000	220000	1000	4400
Benzo(b)fluoranthene	ug/kg	1100	ND	12000	120000	860000	ND	64000	ND	66 J	ND	420	ND	ND	ND	610	8800	1600	16000	170000	1800	5900
Benzo(ghi)perylene	ug/kg	50000	ND	3400	54000	780000	ND	18000	ND	ND	ND	ND	ND	ND	ND	220 J	3800	640	7200	75000	960	3100
Benzo(k)fluoranthene	ug/kg	1100	ND	ND	150000	1200000	ND	94000	ND	ND	ND	660	ND	ND	ND	ND	13000	2600	15000	260000	1900	8900
Bis(2-ethylhexyl) phthalate	ug/kg	50000	74 J	ND	ND	ND	190 J	ND	49 J	170 J	51 J	ND	59 J	46 J	300 J	39 J	200 J	210 J	ND	ND	ND	ND
Chrysene	ug/kg	400	ND	9100	170000	2000000	ND	110000	ND	67 J	ND	ND	ND	ND	ND	490	11000	1900	20000	240000	2300	7700
Dibenzo(a,h)anthracene	ug/kg	1.4	ND	1600	27000	260000	ND	15000	ND	ND	ND	ND	ND	ND	ND	93 J	2200	ND	2900	38000	ND	1300
Dibenzofuran	ug/kg	6200	ND	11000	210000	310000	ND	170000	ND	110 J	ND	1400	ND	ND	ND	530	220 J	ND	27000	340000	1500	8500
Fluoranthene	ug/kg	50000	ND	25000	480000	3200000	ND	280000	ND	280 J	ND	2300	ND	ND	ND	1500	16000	2300	53000	600000	5400	19000
Fluorene	ug/kg	50000	ND	12000	240000	3400000	ND	260000	ND	470	ND	ND	ND	ND	ND	710	370	ND	13000	390000	ND	4600
Indeno(1,2,3-cd)pyrene	ug/kg	3200	ND	3600	59000	480000	ND	23000	ND	ND	ND	ND	ND	ND	ND	220 J	4400	700	8400	89000	1000	3700
Naphthalene	ug/kg	13000	160 J	120000 D	2800000 D	30000000 D	66 J	1300000 D	400	150 J	680	23000	69 J	39 J	ND	3300	280 J	ND	170000 D	4000000 BD	7900 B	65000 B
Pentachlorophenol	ug/kg	1000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3800	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	ug/kg	50000	ND	38000	720000	12000000 D	ND	490000	ND	540	ND	4600	ND	ND	ND	2100	6100	1400	86000 D	940000	6800	26000
Phenol	ug/kg	30	ND	ND	ND	ND	ND	5300 J	ND	ND	64 J	3400	2700	ND	ND	ND	ND	ND	ND	51000	ND	ND
Pyrene	ug/kg	50000	ND	19000	370000	6700000	ND	220000	ND	170 J	ND	1700	4200	ND	ND	1000	14000	2000	36000	470000	4000	14000

Notes: All results in ug/kg
J= Estimated value
B=Analyte also detected in method blank
D=Value obtained from a diluted analysis
Shaded Area= Exceedence of NYSDEC TAGM soil cleanup objectives
Bolded Text=analyte detected above laboratory method detection limits
NV=No value reported in TAGM soil cleanup objectives
ND=Non detect
Only compounds detected at or above laboratory method detection limits included on table

Table 3C
Monitoring Well Soil Metal Analytical Results - Detected Compounds
National Fuel

Sample ID / *Depth* / *Analyte*	Units	NYSDEC Cleanup Objectives	ITMW00-17 18-20	ITMW-0022 16-18	ITMW-0023 5-7	ITSB00-21 16-17	MW-0016 12-14	MW00-12 21-21.5 RE	MW00-13 18-20	MW00-14 18-20	MW00-15 14-19	MW00-18 14-24	MW00-19 14-20	MW00-20 16-20	MW01 24 4	MW01 25 8	MW01 26 12	MW01-1 12	MW01-27 12-14
Aluminum - Total	mg/Kg	NV	3410	3580 N	3620 N	4060	851 N	2730 N	2340 N	3460 N	2920	3570 N	7900	4400 N	5630	6440	2790	13400	2590
Amenable Cyanide	mg/kg	NV	ND	ND	2.1	ND	3.4	166	117	37	ND	ND	ND	3	ND	ND	ND	ND	ND
Arsenic - Total	mg/kg	7.5	2	6.4	12.6	1.7	3	ND	ND	1.1	ND	ND	ND	ND	6.2	3.4	3.1	28.2	7.7
Barium - Total	mg/kg	300	28.3	28.6	226	34.5	15.6	25.8 N	15.1 N	30 N	26.4	33.2 N	104	42.2 N	54.3	107	24.2	224	90.9
Cadmium - Total	mg/kg	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.3
Calcium - Total	mg/kg	NV	114000	33300 N	5560 N	65100	8280 N	47600 E	48400 E	105000 E	49100 E	116000 E	30900 E	50700 E	22400 E	31300 E	41200 E	11800	18600
Chromium - Total	mg/kg	10	6.4	6.2	15.7	8.4	ND	5.2	4.3	6.1	5.8	6.1	11.1	7	7.8	9.2	6	50.6	5.6
Cobalt - Total	mg/kg	30	2.6	3.1	11.9	3.3	ND	2.5	ND	3.1	ND	2.9	4.7	3.8	3.7	4.4	ND	13.9	3.4
Copper - Total	mg/kg	25	6.2	6.3 N	145 N	9.1	40.6 N	7.1	5.3	6.4	6.4	7.5	17.2	8.4	21.5	18.7	7.4	18.7	56.7
Cyanide - Total	mg/kg	NV	ND	ND	2.1	ND	11.2	166	126	37	0.5	ND	ND	3	ND	ND	ND	439	42.5
Iron - Total	mg/kg	2000	7320	6710 E	48100 E	9260	2550 E	6260 E	6020 E	7180 E	6980 E	7920 E	10300 E	9800 E	10500 E	9570 E	6530 E	45000	11200
Lead - Total	mg/kg	500	ND	11.5	460	8.7	24.6	6.5	9.7	ND	7.7	6.8	11.5	9.2	101	77.9	19.8	298	427
Magnesium - Total	mg/kg	NV	29100	18900 N	1740 N	26100	1440 N	21700	22400	26300	22800	34700	14800	22600	3700	10200	17300	1630	2720
Manganese - Total	mg/kg	NV	221	228	255	300	62.9	223 E	225 E	400 E	235	244 E	191	313 E	375 E	214 E	226 E	565	108
Mercury - Total	mg/kg	0.1	ND	ND	0.152	ND	0.485	ND	ND	ND	ND	ND	ND	ND	0.366	0.16	0.723	0.233	7.4
Nickel - Total	mg/kg	13	6	6.2	14.2	6.7	ND	4.5	3.9	7.2	4.7	6.6	10.5	7.6	8.6	12.5	5.2	17.8	8.4
Potassium - Total	mg/kg	NV	1090	655 N	616 N	1040	ND	807	615	879	645	1070	1070	974	861	1060	671	455	344
Sodium - Total	mg/kg	NV	140	136	244	156	ND	169	314	133	217	207	156	142	237	411	154	767	250
Vanadium - Total	mg/kg	150	9.6	8.1	13	11.3	2.1	8.8	8.6	8.6	9.7	10.6	17.1	11.9	10.1	12	8.9	68.6	7.5
Zinc - Total	mg/kg	20	39.8	50.9	202	50.6	33.1	46.3 N	49.4 N	31.3 N	44.2	52.7 N	91	58.3 N	45	87.3	38.9	126	169

Notes: All results in mg/kg
Only detected metals above laboratory detection limits included on table
N=Tentitively Identified compound
E=concentration exceeds calibration of instrument
Shaded text=Analyte exceeds NYSDEC TAGM 1.1.1 soil cleanup objectives
Bolded Text=Analyte detected above laboratory detection limits
NV=No value reported in TAGM soil cleanup objectives
ND=Non detect

Table 4A
Geoprobe Water Volatile Analytical Results - Detected Compounds
National Fuel

Sample ID / *Analyte*	Units	NYSDEC Guidance Values	ITGP-08	ITGP-11	ITGP-12	ITGP-13	ITGP-18	ITGP-19	ITGP-20
1,1-Dichloroethane	ug/L	5	ND	ND	ND	ND	**1.2 J**	ND	ND
1,2-Dichloroethene (Total)	ug/L	NV	ND	ND	ND	ND	**1.1 J**	ND	ND
Acetone	ug/L	50	ND	ND	ND	**33**	ND	**17 J**	ND
Benzene	ug/L	1	ND	**28**	ND	**3 J**	**140**	**31**	ND
Carbon Disulfide	ug/L	NV	**13**	**38**	ND	**180**	**16**	**120**	**1.3 J**
Ethylbenzene	ug/L	5	ND	**8**	ND	**22**	**46**	**15**	**17**
Toluene	ug/L	5	ND	**8.2**	ND	**4.5 J**	**14**	**13**	ND
Total Xylenes	ug/L	5	ND	**26**	**1.6 J**	**79**	**92**	**66**	**39**

Notes: All results in ug/L

J=Estimated value

B=Analyte also detected in method blank

NV=No value reported in TOGS 1.1.1 guidance values

ND=Non detect

Bold text=Analyte detected at or above laboratory method detection limits

Shaded text= Exceedence of NYSDEC TOGS 1.1.1 groundwater guidance values

Only analytes detected at or above laboratory method detection limits included on table

Table 4B
Geoprobe Water Semivolatile - Detected Compounds
National Fuel

Sample ID / Analyte	Units	NYSDEC Guidance Values	ITGP-08	ITGP-09	ITGP-10	ITGP-11	ITGP-13	ITGP-18	ITGP-19	ITGP-20
2,4-Dimethylphenol	ug/L	50	ND	ND	ND	ND	**5 J**	**12**	ND	ND
2-Methylnaphthalene	ug/L	NV	ND	ND	ND	**34**	**530 D**	**300**	**44**	**630**
4-Methylphenol	ug/L	NV	ND	ND	ND	ND	**3 J**	ND	ND	ND
Acenaphthene	ug/L	20	**2 J**	ND	ND	ND	**110**	**190**	**12**	**270**
Acenaphthylene	ug/L	NV	ND	ND	ND	ND	**3 J**	ND	ND	ND
Anthracene	ug/L	50	ND	ND	ND	ND	**15**	**12**	ND	ND
Benzo(a)anthracene	ug/L	0.002	**2 J**	ND	ND	ND	**1 J**	ND	ND	ND
Benzo(a)pyrene	ug/L	NV	**2 J**	ND	ND	ND	**0.6 J**	ND	ND	ND
Benzo(b)fluoranthene	ug/L	0.002	**2 J**	ND	ND	ND	**0.8 J**	ND	ND	ND
Benzo(k)fluoranthene	ug/L	0.002	**0.8 J**	ND	ND	ND	**0.2 J**	ND	ND	ND
Chrysene	ug/L	0.002	**2 J**	ND	ND	ND	**1 J**	ND	ND	ND
Dibenzofuran	ug/L	NV	ND	ND	ND	ND	**83**	**120**	**13**	**140**
Fluoranthene	ug/L	50	**4 J**	ND	ND	ND	**7 J**	**6 J**	ND	ND
Fluorene	ug/L	50	ND	ND	ND	ND	**85**	**110**	ND	**120**
Naphthalene	ug/L	10	**4 J**	ND	ND	**700**	**1900 D**	**2000 D**	**650**	**390**
Phenanthrene	ug/L	NV	**5 J**	ND	ND	ND	**50**	**71**	**12**	**100**
Pyrene	ug/L	50	**4 J**	ND	ND	ND	**4 J**	ND	ND	ND

Notes: All results in ug/L

J=Estimated value

B=Analyte also detected in method blank

NV=No value reported in TOGS 1.1.1 guidance values

ND=Non detect

Bold text=Analyte detected at or above laboratory method detection limits

Shaded text= Exceedence of NYSDEC TOGS 1.1.1 groundwater guidance values

Only analytes detected at or above laboratory method detection limits included on table

Table 4C
Geoprobe Water Metal Analytical Results - Detected Compounds
National Fuel

Sample ID / *Analyte*	Units	NYSDEC Guidance Values	ITGP-07	ITGP-08	ITGP-09	ITGP-10	ITGP-11	ITGP-12	ITGP-13	ITGP-18	ITGP-19	ITGP-20
Aluminum - Total	ug/L	100	**37800**	**27800**	**141000**	**38700**	**18300**	**2490**	**89400**	**4340**	**1430**	**123000**
Arsenic - Total	ug/L	25	**30.5**	**27.5**	**63.5**	**20.1**	**47**	**34**	**108**	**8.3**	**15**	**102**
Barium - Total	ug/L	1000	**3470 N**	**485 N**	**1550 N**	**733 N**	**504 N**	**458 N**	**2290**	**168**	**86.7**	**1750**
Beryllium - Total	ug/L	3	ND	ND	**7**	**6.6**	ND	ND	ND	ND	ND	**7**
Cadmium - Total	ug/L	5	**3.7**	**1.1**	**13**	**2.8**	**6.2**	**1.5**	**4.5**	**1.1**	ND	**6**
Calcium - Total	ug/L	NV	**1490000 E**	**1300000 E**	**406000 E**	**647000 E**	**386000 E**	**419000 E**	**678000 E**	**889000 E**	**323000 E**	**924000 E**
Chromium - Total	ug/L	50	**77.9**	**54.8**	**502**	**59.9**	**50.2**	**12.9**	**201**	**12.6**	**9.5**	**221**
Cobalt - Total	ug/L	NV	**28.5**	**15**	**98.5**	**15.3**	**18.6**	ND	**61.4**	**13.8**	**11.1**	**92.6**
Copper - Total	ug/L	200	**415**	**78.2**	**476**	**145**	**480**	**54.5**	**492**	**20.5**	**100**	**291**
Amenable Cyanide	ug/L	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron - Total	ug/L	300	**45900**	**35600**	**253000**	**40000**	**113000**	**90000**	**167000**	**96800**	**53600**	**232000**
Lead - Total	ug/L	25	**3090**	**833**	**1660**	**893**	**1230**	**122**	**3130**	**64.8**	**74.8**	**1080**
Magnesium - Total	ug/L	35000	**466000**	**90700**	**96700**	**104000**	**38500**	**73900**	**119000**	**76700**	**28400**	**204000**
Manganese - Total	ug/L	300	**10800**	**1500**	**12100**	**5520**	**3640**	**5020**	**5030**	**4010**	**2120**	**4330**
Mercury - Total	ug/L	0.7	**1.6**	**1**	**6.3**	**1.9**	**1.2**	ND	**35.3**	ND	**0.462**	**2.6**
Nickel - Total	ug/L	100	**79.5**	**40.1**	**294**	**43.4**	**37.9**	ND	**150**	**22.5**	**16.8**	**218**
Potassium - Total	ug/L	NV	**132000 E**	**76900 E**	**32800 E**	**30800 E**	**10100 E**	**40200 E**	**60900**	**13300**	**6580**	**56200**
Selenium - Total	ug/L	10	ND	ND	**10.4**	ND	ND	ND	ND	ND	ND	ND
Silver - Total	ug/L	50	ND	ND	ND	ND	ND	ND	6.8	ND	ND	ND
Sodium - Total	ug/L	20000	**488000**	**572000**	**78700**	**191000**	**186000**	**381000**	**145000**	**160000**	**159000**	**666000**
Thallium - Total	ug/L	0.5	ND	ND	**21.8**	ND	ND	ND	ND	ND	ND	ND
Vanadium - Total	ug/L	NV	**64.5**	**44.6**	**410**	**44.6**	**58.7**	**6.3**	**144**	**11**	**7.8**	**213**
Zinc - Total	ug/L	2000	**1240**	**192**	**2060**	**619**	**1340**	**65.1**	***7050 E***	***153 E***	***115 E***	***1050 E***
Cyanide - Total	mg/L	200	**0.34**	**0.65**	**0.018**	**0.027**	**0.16**	**0.017**	ND	**0.29**	**0.14**	**2**

Notes: All results in ug/L

J=Estimated value

B=Analyte also detected in method blank

NV=No value reported in TOGS 1.1.1 guidance values

ND=Non detect

Bold text=Analyte detected at or above laboratory method detection limits

Shaded text= Exceedence of NYSDEC TOGS 1.1.1 groundwater guidance values

Only analytes detected at or above laboratory method detection limits included on table

Table 5A
Monitoring Well Water Volatile Analytical Results - Detected Compounds
National Fuel

Sample ID / *alyte*	Units	NYSDEC Guidance Values	MW-2	MW-3	MW-4	MW-5	MW-8	MW-9	MW-11	MW-12	MW00-9	MW00-10	MW00-11	MW00-12	MW00-13	MW00-14	MW00-15	MW00-16	MW00-17	MW00-18	MW00-19	MW00-20	MW00-22	MW00-23	MW01-1	MW01-24	MW01-25	MW01-26	MW01-27
,,1-Dichloroethane	ug/L	5	ND	ND	**1 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**1.6 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/L	0.6	ND	ND	**1.5 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene (Total)	ug/L	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**3.2 J**	ND	ND	ND	ND	ND	ND
2-Butanone	ug/L	NV	**5.5 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**15**	**6.1 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	ug/L	NV	ND	ND	ND	**160**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	ug/L	50	**78**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**73**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/L	1	**8.4**	**27**	**48**	**240**	ND	**1700 D**	**410 D**	**590**	**8.9**	**2000 D**	ND	**4200 D**	**270 D**	**16**	**4900 D**	**2400 D**	ND	ND	ND	**20**	**160**	**110000 D**	**63**	ND	ND	**100**	**11000 D**
Carbon Disulfide	ug/L	NV	**44**	**7.3**	ND	ND	**1.2 J**	ND	**9.4**	ND	ND	**1.3 J**	ND	ND	**1 J**	ND	ND	**8.1**	ND	ND	ND	ND	ND	ND	**160**	ND	ND	ND	ND
Ethylbenzene	ug/L	5	**2.2 J**	**330**	**28**	**880**	ND	**15**	**200 D**	**1800**	**1.2 J**	**59**	ND	**450**	**49**	**6**	**390 D**	**320 D**	**72**	ND	ND	**18**	**69**	**1700**	ND	ND	ND	**41**	**310**
Methylene chloride	ug/L	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**240**	ND	ND	ND	ND	ND
Styrene	ug/L	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**1.2 J**	ND	**280 D**	ND	ND	ND	**1.9 J**	ND	**6500**	ND	ND	ND	ND	**1400**
Tetrachloroethene	ug/L	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**2 J**	ND	ND	ND	ND	ND	ND
Toluene	ug/L	5	**4.8 J**	**2.8 J**	ND	**16**	ND	2.4 J	**12**	**1200**	**2.4 J**	**3 J**	ND	**130**	**36**	**17**	**3100 D**	**2700 D**	**26**	ND	ND	**6.9**	**27**	**52000 D**	**13**	ND	ND	**59**	**8000 D**
Total Xylenes	ug/L	5	**14 J**	**190**	**3.8 J**	**120**	ND	**24**	**34**	**6300 D**	ND	**17**	ND	**830**	**130**	**38**	**2800 D**	**2800 D**	**260**	ND	ND	**57**	**200**	**7900**	**32**	ND	ND	**280**	**5300**
Trichloroethene	ug/L	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.4 J	ND	ND	ND	ND	ND	ND

Notes: All results in ug/L

J=Estimated value

B=Analyte also detected in method blank

NV=No value reported in TOGS 1.1.1 guidance values

ND=Non detect

Bold text=Analyte detected at or above laboratory method detection limits

Shaded text= Exceedence of NYSDEC TOGS 1.1.1 groundwater guidance values

Only analytes detected at or above laboratory method detection limits included on table

Table 5B
Monitoring Well Water Semivolatile - Detected Compound
National Fuel

Sample ID / *Analyte*	Units	NYSDEC Guidance Values	MW-2	MW-3	MW-4	MW-5	MW-8	MW-9	MW-11	MW-12	MW00-9	MW00-10	MW00-11	MW00-12	MW00-13	MW00-14	MW00-15	MW00-16	MW00-17	MW00-18	MW00-19	MW00-20	MW00-22	MW00-23	MW01-1	MW01-24	MW01-25	MW01-26	MW01-27
1,4-Dichlorobenzene	ug/L	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.6 J	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ug/L	50	5 J	1 J	1 J	ND	ND	ND	ND	57	ND	ND	7 J	4 J	15	ND	3200 D	1300	6 J	ND	ND	2 J	ND	820	10	ND	ND	8 J	11000 D
2-Methylnaphthalene	ug/L	NV	86	ND	ND	ND	ND	ND	ND	540 D	ND	ND	1 J	3 J	15	1 J	320	640	8 J	ND	ND	23	190	620	77	ND	ND	88	670 D
2-Methylphenol	ug/L	NV	2 J	ND	1 J	ND	ND	ND	ND	15	ND	ND	3 J	ND	3 J	ND	2500 D	900	ND	ND	ND	0.3 J	ND	1000	8 J	ND	ND	4 J	12000 D
4-Methylphenol	ug/L	NV	3 J	1 J	2 J	ND	ND	ND	ND	ND	ND	ND	0.9 J	ND	2 J	ND	4600 D	1300 D	ND	ND	ND	2 J	ND	1200	8 J	ND	ND	7 J	24000 D
4-Nitroaniline	ug/L	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	13 J	ND	ND	ND	ND	ND
Acenaphthene	ug/L	20	2 J	12	39	12	ND	17	ND	89	ND	ND	6 J	0.4 J	26	2 J	40	80	ND	ND	31	5 J	53	28	3 J	ND	ND	11	51
Acenaphthylene	ug/L	NV	ND	2 J	4 J	ND	ND	ND	ND	98	ND	ND	2 J	ND	2 J	1 J	120	190	ND	ND	ND	4 J	ND	140	1 J	ND	ND	8 J	410
Anthracene	ug/L	50	4 J	16	2 J	7 J	ND	ND	ND	18	ND	ND	11	ND	7 J	ND	12	93	ND	ND	ND	ND	170	28	4 J	ND	ND	4 J	100
Benzo(a)anthracene	ug/L	0.002	6 J	13	ND	ND	ND	ND	ND	4 J	ND	ND	ND	ND	ND	1 J	ND	71	ND	ND	ND	0.6 J	25	7 J	10	ND	ND	2 J	54
Benzo(a)pyrene	ug/L	NV	3 J	9 J	ND	7 J	ND	ND	ND	3 J	ND	ND	0.4 J	ND	0.4 J	1 J	ND	41	ND	ND	ND	0.4 J	20	5 J	5 J	ND	ND	1 J	42
Benzo(b)fluoranthene	ug/L	0.002	5 J	10	ND	6 J	ND	ND	ND	3 J	ND	ND	0.4 J	ND	0.3 J	1 J	ND	42	ND	ND	ND	0.5 J	22	3 J	8 J	ND	ND	1 J	31
Benzo(ghi)perylene	ug/L	NV	1 J	5 J	ND	ND	ND	ND	ND	1 J	ND	ND	ND	ND	ND	ND	ND	11	ND	ND	ND	ND	6 J	ND	ND	ND	ND	0.5 J	14
Benzo(k)fluoranthene	ug/L	0.002	6 J	11	ND	8 J	ND	ND	ND	2 J	ND	ND	0.4 J	ND	0.4 J	ND	ND	21	ND	ND	ND	0.2 J	8 J	0.6 J	8 J	ND	ND	1 J	33
Benzoic acid	ug/L	NV	24 J	1 J	ND	ND	ND	ND	ND	ND	ND	ND	0.4 J	ND	2 J	ND	590	ND	ND	ND	ND	ND	ND	1000	ND	ND	ND	2 J	ND
Benzyl alcohol	ug/L	NV	1 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3 J	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	ug/L	5	ND	ND	ND	ND	0.5 J	1 J	0.9 J	0.8 J	ND	1 J	3 J	ND	0.6 J	0.6 J	ND	ND	0.7 J	0.5 J	0.8 J	2 J	ND	ND	22	1 J	0.5 J	1 J	ND
Butyl benzyl phthalate	ug/L	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.9 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	ug/L	0.002	6 J	12	ND	ND	ND	ND	ND	3 J	ND	ND	ND	ND	ND	1 J	ND	54	ND	ND	ND	0.4 J	23	6 J	10	ND	ND	2 J	46
Di-n-butyl phthalate	ug/L	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2 J	ND
Di-n-octyl phthalate	ug/L	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	ug/L	NV	ND	2 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6 J	ND
Dibenzofuran	ug/L	NV	22	22	6 J	9 J	ND	ND	ND	78	ND	ND	5 J	ND	23	0.8 J	60	230	ND	ND	ND	3 J	99	ND	21	ND	ND	21	160
Diethyl phthalate	ug/L	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	37	ND	ND	ND	ND	ND
Dimethyl phthalate	ug/L	50	4 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2 J	5 J	ND	ND	ND
Fluoranthene	ug/L	50	17	38	8 J	22	ND	1 J	ND	12	ND	ND	19	ND	6 J	3 J	7 J	150	ND	ND	ND	1 J	83	14	26	ND	ND	6 J	150
Fluorene	ug/L	50	5 J	29	25	11	ND	5 J	ND	56	ND	ND	6 J	ND	24	2 J	59	270	ND	ND	ND	3 J	90	44	6 J	ND	ND	9 J	160
Indeno(1,2,3-cd)pyrene	ug/L	0.002	2 J	5 J	ND	ND	ND	ND	ND	1 J	ND	ND	ND	ND	ND	0.6 J	ND	14	ND	ND	ND	ND	8 J	ND	ND	ND	ND	0.5 J	15
Naphthalene	ug/L	10	730 D	450 D	11	190	ND	5 BJ	ND	13000 BD	0.6 BJ	52	44	290 D	14	1 BJ	4100 D	4700 BD	320 BD	ND	0.7 BJ	230 BD	1200 B	5200 BD	470 D	ND	ND	860 D	13000 D
Phenanthrene	ug/L	50	34	48	0.6 J	28	ND	6 J	ND	64	ND	ND	32	ND	18	1 J	44	380	ND	ND	ND	2 J	180	90	34	ND	ND	14	300
Phenol	ug/L	1	ND	ND	ND	ND	ND	48	ND	ND	ND	3 J	1 J	3 J	5 J	ND	1800 D	320	2 J	ND	ND	ND	ND	800	1 J	ND	ND	3 J	11000 D
Pyrene	ug/L	50	12	28	5 J	18	ND	0.9 J	ND	10	ND	ND	12	ND	3 J	2 J	5 J	130	ND	ND	ND	1 J	62	36	18	ND	ND	4 J	110

Notes: All results in ug/L
J=Estimated value
B=Analyte also detected in method blank
NV=No value reported in TOGS 1.1.1 guidance values
ND=Non detect
Bold text=Analyte detected at or above laboratory method detection limits
Shaded text= Exceedence of NYSDEC TOGS 1.1.1 groundwater guidance values
Only analytes detected at or above laboratory method detection limits included on table

Table 5C
Monitoring Well Water Metal Analytical Results - Detected Compounds
National Fuel

Sample ID / *nalyte*	Units	NYSDEC Guidance Values	MW-2	MW-3	MW-4	MW-5	MW-8	MW-9	MW-11	MW-12	MW00-9	MW00-10	MW00-11	MW00-12	MW00-13	MW00-14	MW00-15	MW00-16	MW00-17	MW00-18	MW00-19	MW00-20	MW00-22	MW00-23	MW01-1	MW01-24	MW01-25	MW01-26	MW01-27
.uminum - Total	ug/L	100	**7750 N**	**4470 N**	**678 N**	**13800 N**	**2900 N**	**5140 N**	**1870 N**	**721 N**	**3430 N**	**19900 N**	**7210 N**	**16000 N**	**21700 N**	**4730 N**	**11200 N**	**40600 N**	**31700 N**	**42900 N**	**9690 N**	**12000 N**	**12600 N**	**5530 N**	**12300**	**586**	**442**	**5430**	**234**
Arsenic - Total	ug/L	25	**63.8**	**31.4**	ND	**42.6**	ND	ND	ND	14.6 N	ND	ND	9.8	ND	22.4	ND	10.1	**158 N**	16.3 N	**47.4 N**	ND	ND	**26 N**	**31.9 N**	**27.9**	7	ND	ND	9.4
Barium - Total	ug/L	1000	203	89.2	51.1	381	337	830 EN	85.9	156 EN	184 EN	**1130**	78.1	**1790**	157	85.4 EN	147	448 EN	797 EN	590 EN	290 EN	151 EN	138 EN	222 EN	30.4 E	452 E	69 E	183 E	107 E
Beryllium - Total	ug/L	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium - Total	ug/L	5	2.1	ND	ND	1.9	ND	1.1 N	ND	ND	ND	1.6	**10.2**	ND	1.2	ND	ND	2.6 N	1.9 N	2.4 N	ND	ND	ND	3.8 N	1.8	ND	ND	ND	ND
Calcium - Total	ug/L	NV	270000 E	441000 E	527000	426000 E	185000 E	209000 E	118000 E	319000 E	103000 E	294000 E	354000 E	217000 E	383000 E	213000 E	628000	433000 E	641000 E	294000 E	204000 E	338000 E	360000 E	388000 E	355000 E	142000 E	117000 E	186000 E	216000 E
Chromium - Total	ug/L	50	25.4	11.8	2	22.6	6.2	9.2 N	7.1	2.6 N	6.4 N	30.2	12.4	21.1	29.2	7.7 N	16.8	**53.6 N**	**45.3 N**	**66.6 N**	12.5 N	15.5 N	19 N	14 N	9.7	ND	ND	6.9	4
Cobalt - Total	ug/L	NV	13.3	9.9	ND	17.4	ND	ND	ND	ND	ND	11.7	5.4	12.6	12.6	5.3 N	16.9	29.4 N	21 N	28.9 N	ND	7.9 N	8 N	19.7 N	17.6	ND	ND	ND	ND
Copper - Total	ug/L	200	17.9	24.7	ND	**358**	ND	ND	ND	ND	15.7 N	24.9	13.2	21.5	26.7	10.3 N	23.1	76.3 N	91.4 N	**227 N**	11.7 N	19.7 N	18.6 N	52.8 N	ND	ND	ND	10.9	ND
Amenable Cyanide	ug/L	NV	ND	ND	ND	ND	ND	ND	ND	**95**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron - Total	ug/L	300	**113000**	**20000**	**4500**	**36500**	**20600**	**29900 E**	**5460**	**2280 E**	**4910 E**	**29800**	**10400**	**21700**	**30700**	**26300 E**	**16900**	**59800 E**	**66500 E**	**82800 E**	**10400 E**	**31800 E**	**20700 E**	**231000 E**	**226000 E**	**4970 E**	**588 E**	**12100 E**	**749 E**
Lead - Total	ug/L	25	**753**	**156**	ND	**626**	ND	17.3 N	ND	ND	**50.9 N**	**26.3**	14.3	**30**	**35.2**	**26.3 N**	20.1	**118 N**	**95.7 N**	**805 N**	17.4 N	21.2 N	**31.3 N**	**79.8 N**	**361**	ND	ND	12.6	ND
Magnesium - Total	ug/L	35000	32700	26500	25300	**38200**	33700	**63000 EN**	**65200**	**45800 EN**	**39600 EN**	**80300**	**62600**	**113000**	**106000**	26400 EN	**92100**	**78200 EN**	**163000 EN**	**110000 EN**	**35600 EN**	**39300 EN**	**43500 EN**	**133000 EN**	**59400 E**	23200 E	12500 E	21600 E	23700 E
Manganese - Total	ug/L	300	**4150**	**721**	**1400**	**783**	**1260**	**1190 EN**	95	64.4 EN	**361 EN**	**1130**	189	**532**	**885**	**399 EN**	**1740**	**1330 EN**	**1580 EN**	**2050 EN**	**582 EN**	**677 EN**	**453 EN**	**1710 EN**	**6940 E**	**1030 E**	95.8 E	**469 E**	82.6 E
Mercury - Total	ug/L	0.7	**0.215**	0.248	ND	**6.4**	ND	ND	ND	ND	0.265	ND	ND	ND	ND	ND	ND	**7.5**	ND	**5.3**	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel - Total	ug/L	100	**16.2**	ND	ND	**29.9**	ND	ND	ND	ND	ND	**23.5**	ND	**22**	**25.7**	**10.8 N**	**15.7**	**70.4 N**	**43.3 N**	**70.4 N**	**10.9 N**	**15.6 N**	**17 N**	**27.2 N**	**35.2**	ND	ND	ND	ND
Potassium - Total	ug/L	NV	**6850 N**	**9170 N**	**5950 N**	**7450 N**	**12500 N**	**51600 N**	**4650 N**	**9200 N**	**18600 N**	**26000 N**	**18500 N**	**63300 N**	**22300 N**	**16100 N**	**32300 N**	**12200 N**	**13400 N**	**20900 N**	**18300 N**	**30300 N**	**13100 N**	**59500 N**	**5290 E**	**47700 E**	**8280 E**	**20100 E**	**37700 E**
Selenium - Total	ug/L	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**11.5 N**	ND	ND	ND	ND	ND
Silver - Total	ug/L	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium - Total	ug/L	20000	ND	ND	ND	ND	**187000 E**	**171000**	**57000 E**	**140000**	**162000**	**267000**	ND	**481000**	ND	**325000**	ND	**22900**	**104000**	**209000**	**301000**	**296000**	**87000**	**112000**	**114000**	**604000**	**232000**	**204000**	**50700**
Thallium - Total	ug/L	0.5	**30.7**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**41.7 N**	**33.3**	ND	ND	ND	ND
Vanadium - Total	ug/L	NV	22.1	11.4	ND	34.3	6.6	12.6 N	5.1	ND	7.2 N	37.5	19.6	27.4	42.2	8.9 N	21.2	74.5 N	66.4 N	114 N	20.7 N	22.6 N	36.6 N	33.2 N	25	ND	ND	10.1	22.1
Zinc - Total	ug/L	2000	**107**	81.2	ND	1150	89.4	63.4 N	ND	59.3 N	78.8 N	125	250	99.1	132	64.8 N	95.9	474 N	421 N	471 N	69.2 N	112 N	119 N	109 N	113	23.2	ND	43.1	ND
Total Cyanide	mg/L	200	8.2	10.7	4.1	0.9	ND	0.14	0.022	ND	0.068	0.15	0.69	0.37	0.16	0.052	0.13	0.018	0.024	0.022	0.048	0.15	ND	0.035	4.9	ND	0.022	0.27	1

Notes: All results in ug/L

J=Estimated value

B=Analyte also detected in method blank

NV=No value reported in TOGS 1.1.1 guidance values

ND=Non detect

Bold text=Analyte detected at or above laboratory method detection limits

aded text= Exceedence of NYSDEC TOGS 1.1.1 groundwater guidance values

.ly analytes detected at or above laboratory method detection limits included on table

FIGURES

IMAGE	X-REF	OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
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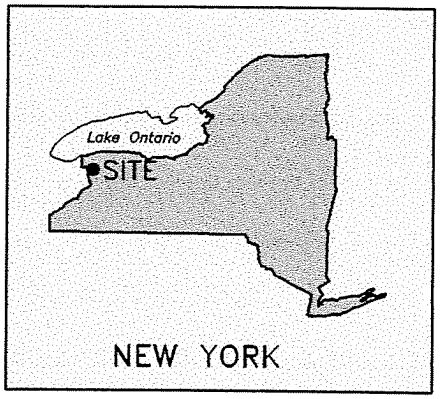
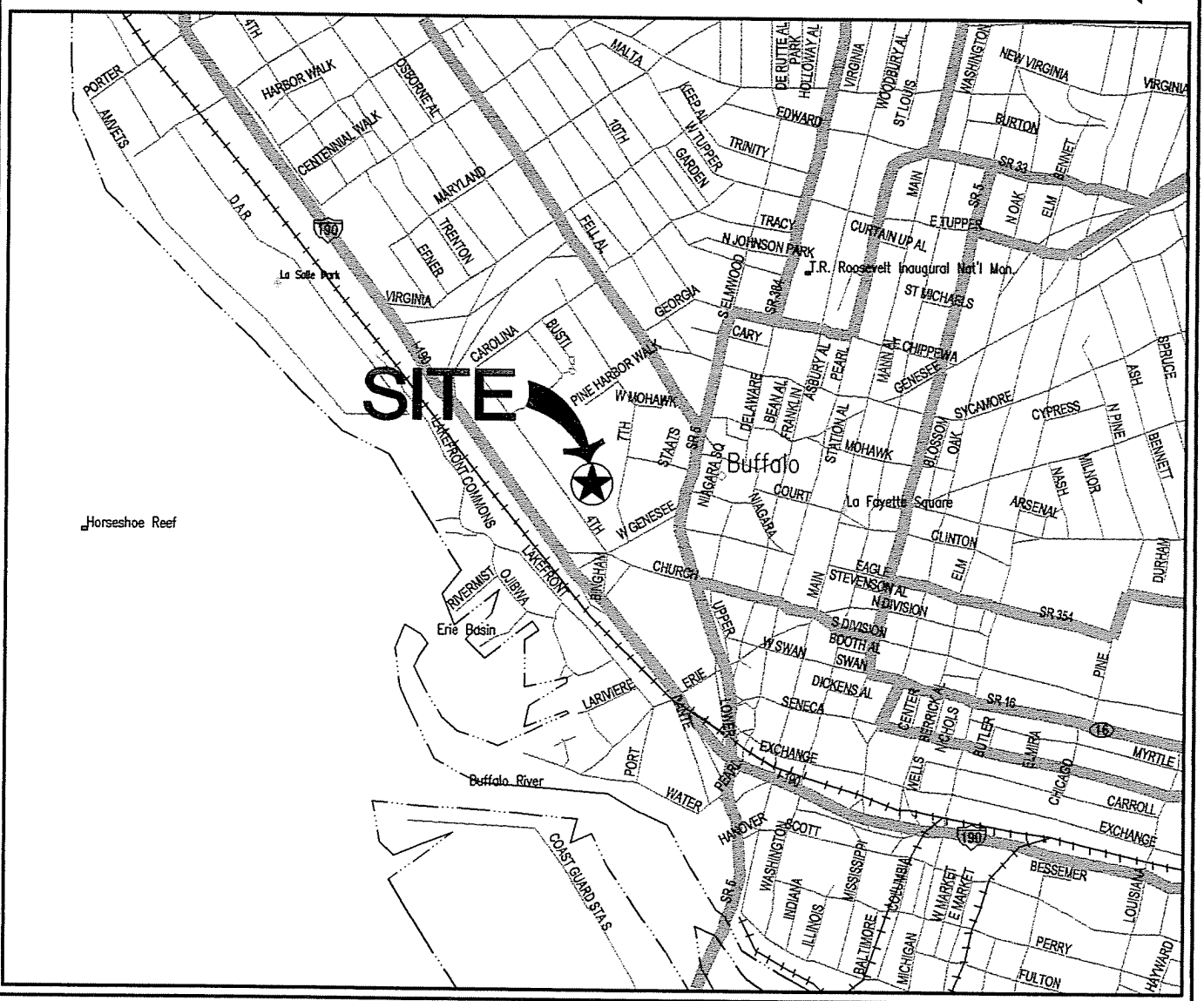




SCALE 1:15,625

REFERENCE:

MAP FROM DELORME'S MAP EXPERT, FREEPORT, MAINE.

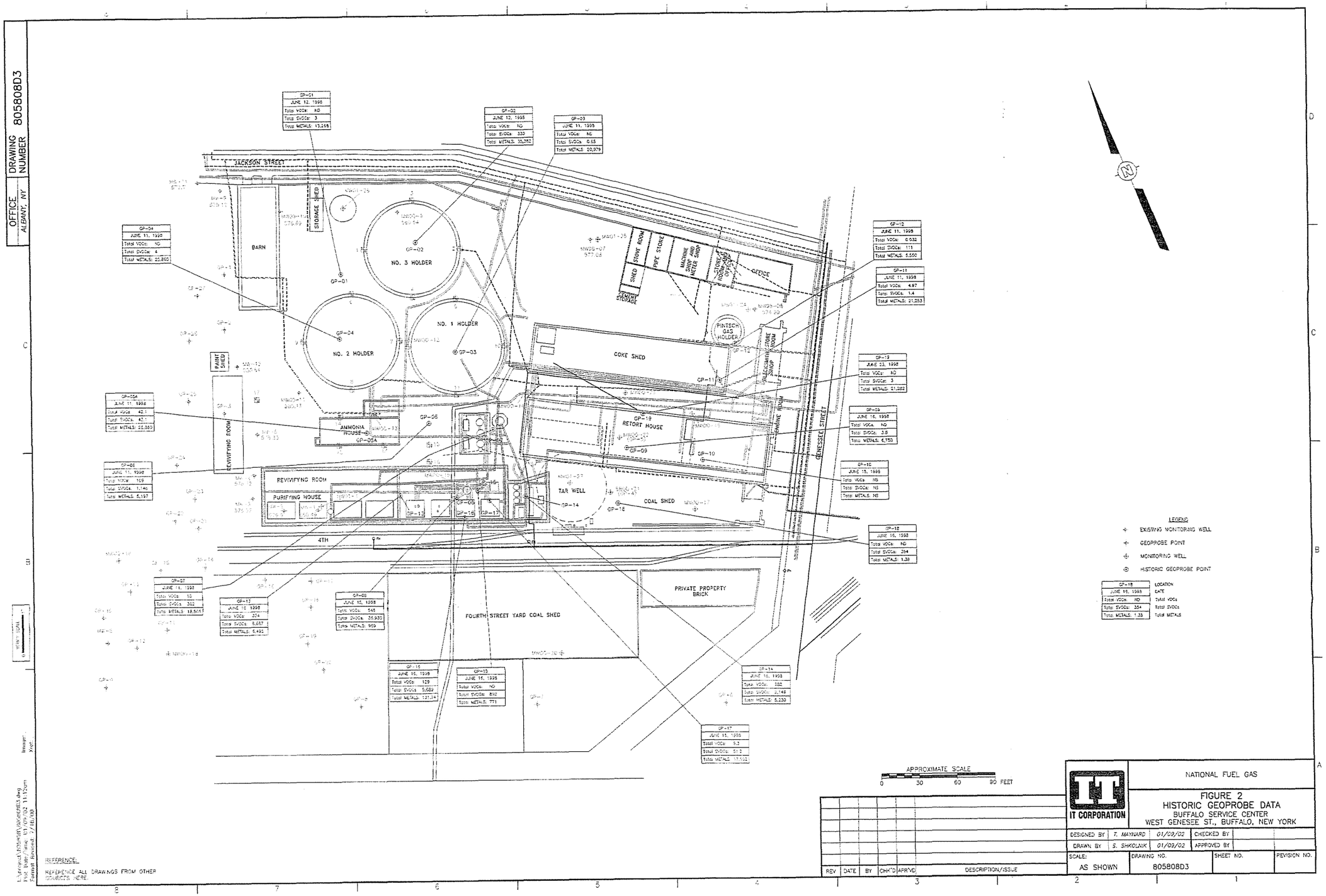
IT CORPORATION

NATIONAL FUEL GAS

FIGURE 1
SITE LOCATION MAP
BUFFALO SERVICE CENTER
WEST GENESEE STREET
BUFFALO, NEW YORK

PLOT DATE: 01/09/02
FORMAT REVISION 3/25/99

OFFICE ALBANY, NY | DRAWING NUMBER 805808D3



REFERENCE:

REFERENCE ALL DRAWINGS FROM OTHER SOURCES HERE.

REV	DATE	BY	CHK'D	APRV'D	DESCRIPTION/ISSUE

IT CORPORATION

NATIONAL FUEL GAS

FIGURE 2
HISTORIC GEOPROBE DATA
BUFFALO SERVICE CENTER
WEST GENESEE ST., BUFFALO, NEW YORK

DESIGNED BY	T. MAYNARD	01/09/02	CHECKED BY		
DRAWN BY	S. SHKOLNIK	01/09/02	APPROVED BY		

SCALE:	DRAWING NO.	SHEET NO.	REVISION NO.
AS SHOWN	805808D3		

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Format Revised: 7/16/100

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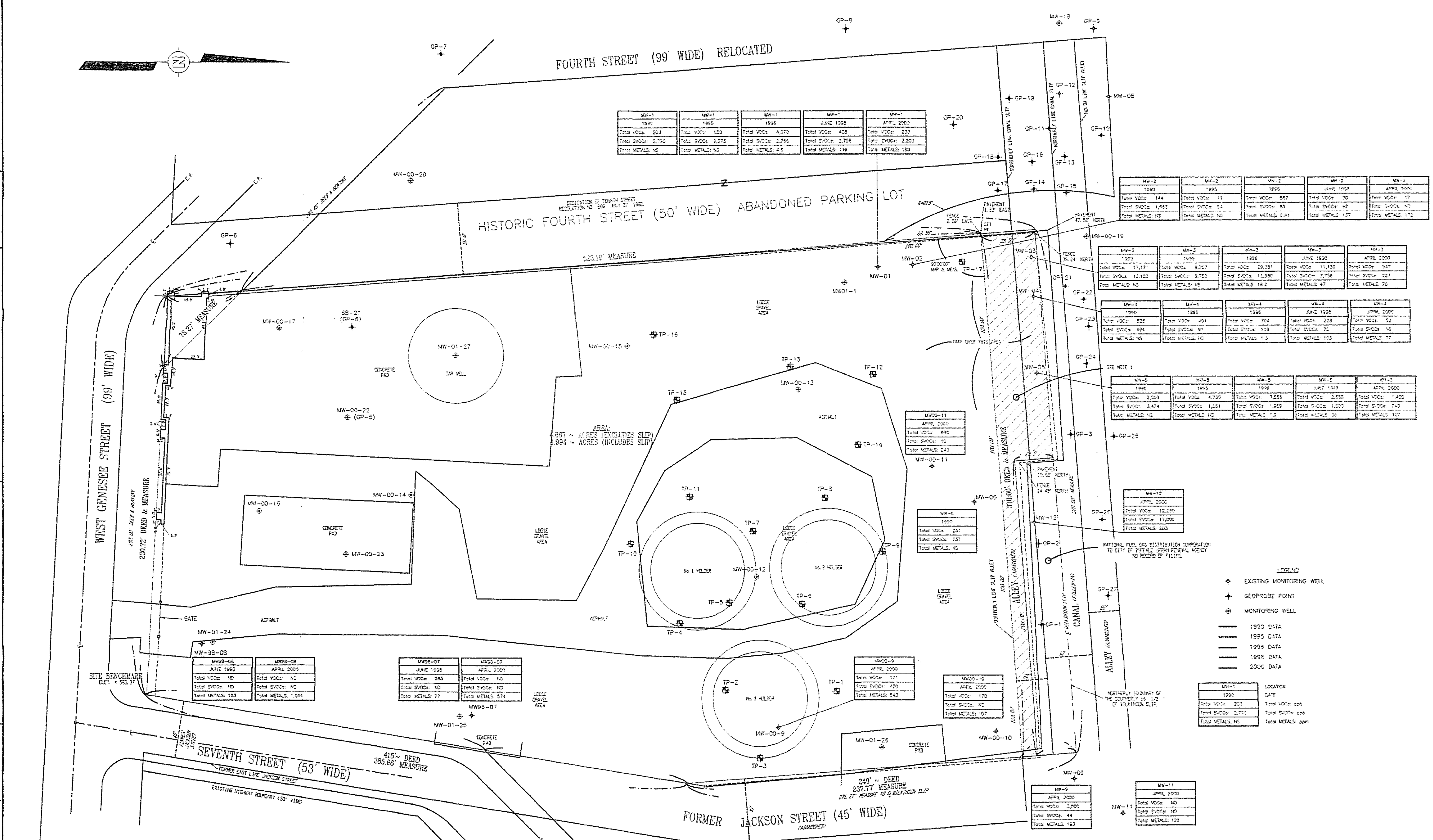

REFERENCE:
BASE MAP SOURCE: NIAGARA BOUNDARY AND MAPPING SERVICES L.S.P.C.

OFFICE: ALBANY, NY
DRAWING NUMBER: 784306D21

NATIONAL FUEL GAS

IT CORPORATION

FIGURE 3
HISTORIC MONITORING WELL DATA
BUFFALO SERVICE CENTER
WEST GENESEE ST., BUFFALO, NEW YORK

DESIGNED BY	T. MAYNARD	01/09/02	CHECKED BY
DRAWN BY	S. SHKOLNIK	01/09/02	APPROVED BY
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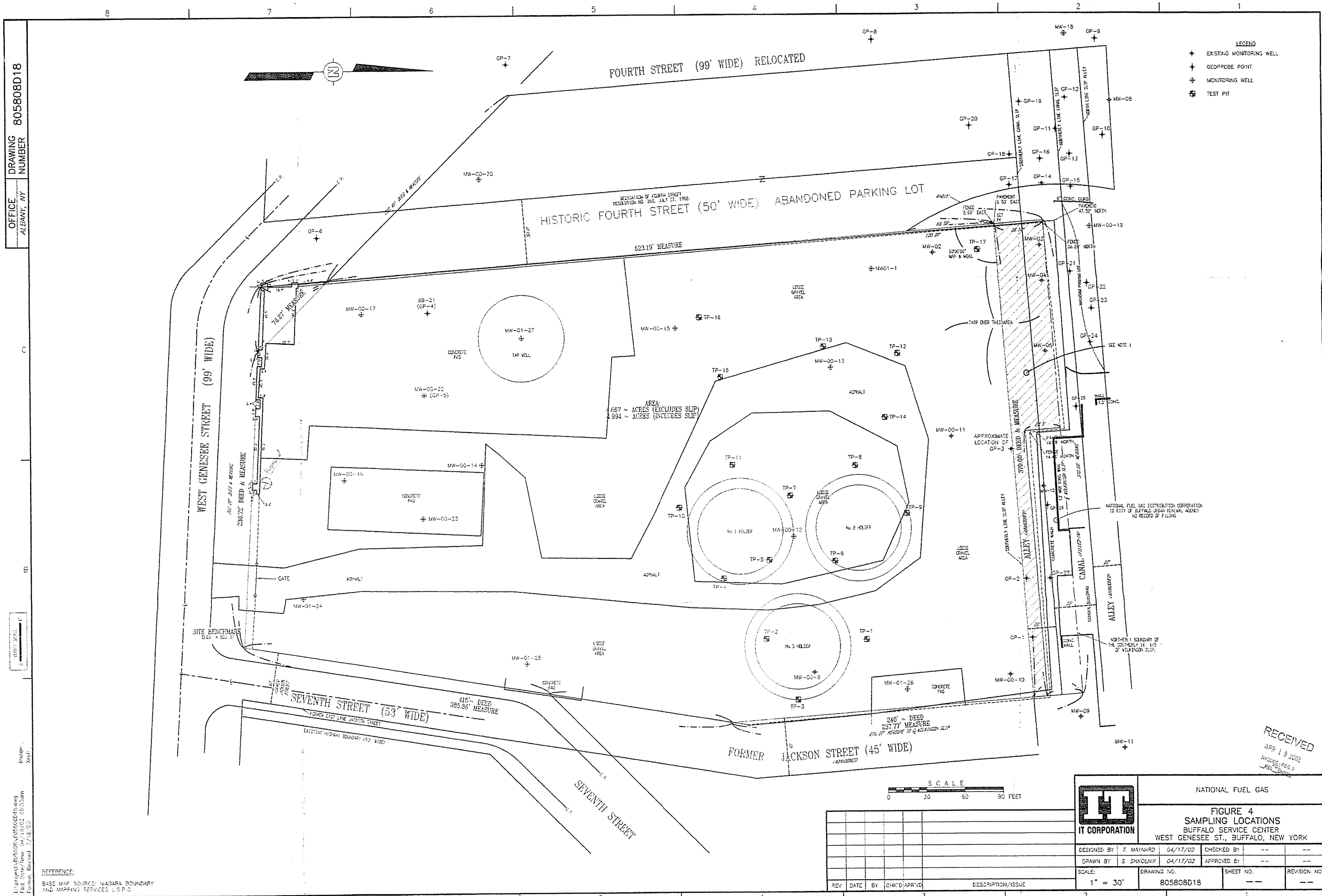
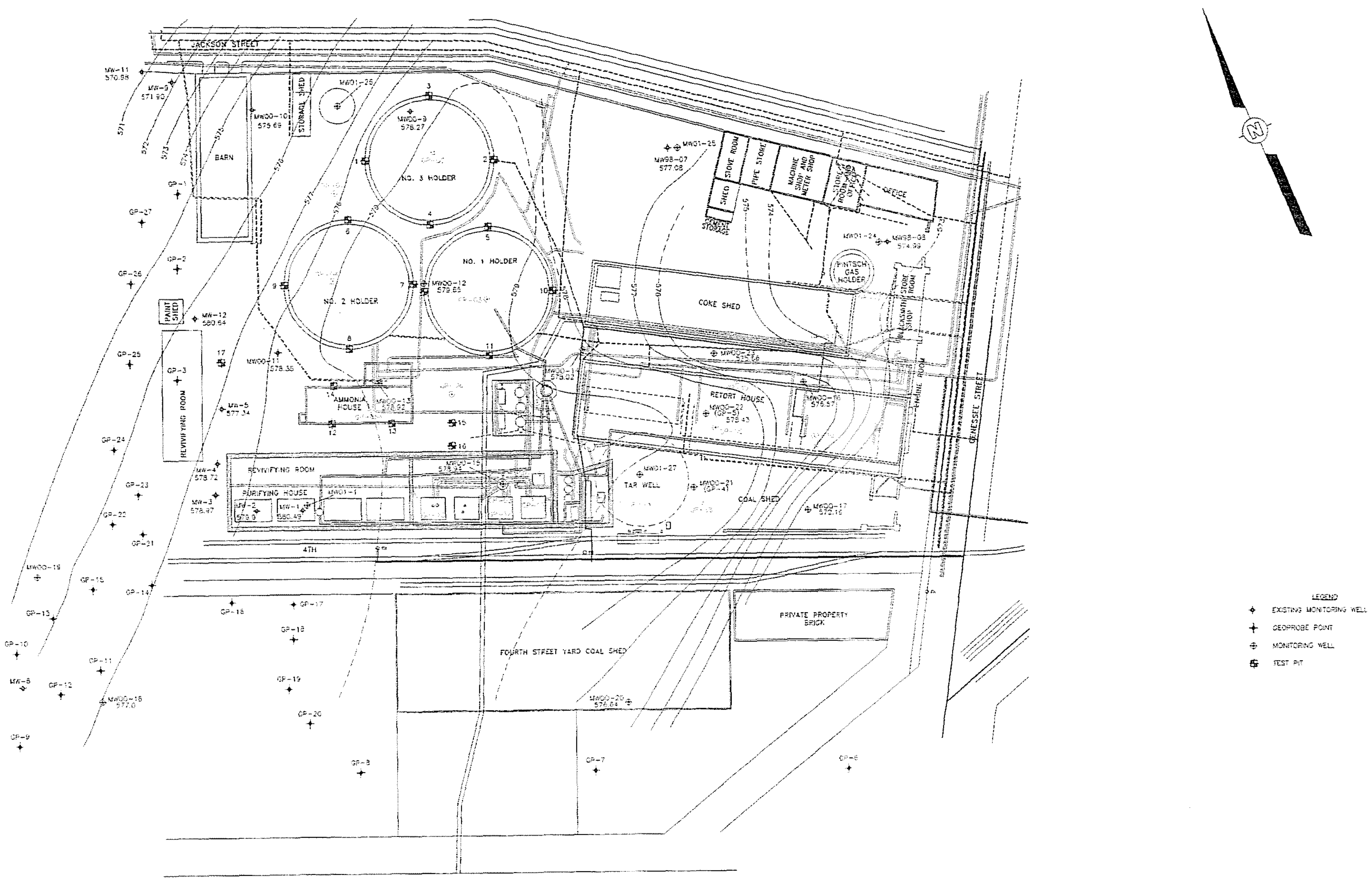

OFFICE ALBANY, NY
DRAWING NUMBER 80580BD18
FOURTH STREET (99' WIDE) RELOCATED
HISTORIC FOURTH STREET (50' WIDE) ABANDONED PARKING LOT
623.19' MEASURE
WEST GENESEE STREET (99' WIDE)
SEVENTH STREET (53' WIDE)
SEVENTH STREET
FORMER JACKSON STREET (45' WIDE)
415'± DEED 385.85' MEASURE
240' ~ DEED 237.77' MEASURE
370.00' DEED & MEASURE
AREA: 4.667 ~ ACRES (EXCLUDES SLIP) 4.994 ~ ACRES (INCLUDES SLIP)
SITE BENCHMARK
GATE
ASPHALT
CONCRETE PAD
LEDGE GRAVEL AREA
TAP WELL
No. 1 HOLDER
No. 2 HOLDER
No. 3 HOLDER
ALLEY
CANAL
APPROXIMATE LOCATION OF GP-3
SEE NOTE 1
NATIONAL FUEL GAS DISTRIBUTION CORPORATION TO CITY OF BUFFALO URBAN RENEWAL AGENCY AS RECORD OF FILING
LEGEND
EXISTING MONITORING WELL
GEOPROBE POINT
MONITORING WELL
TEST PIT
RECEIVED APR 19 2002
SCALE 0 30 60 90 FEET
REFERENCE:
BASE MAP SOURCE: NIAGARA BOUNDARY AND MAPPING SERVICES L.S.P.C.
IT CORPORATION
NATIONAL FUEL GAS
FIGURE 4
SAMPLING LOCATIONS
BUFFALO SERVICE CENTER
WEST GENESEE ST., BUFFALO, NEW YORK
DESIGNED BY T. MAYNARD 04/17/02
DRAWN BY S. SHKOLNIK 04/17/02
CHECKED BY --
APPROVED BY --
SCALE: 1" = 30'
DRAWING NO. 805808D18
SHEET NO. --
REVISION NO. --
REV DATE BY CHK'D APPR'VD DESCRIPTION/ISSUE

OFFICE ALBANY, NY | DRAWING NUMBER 80580BD4



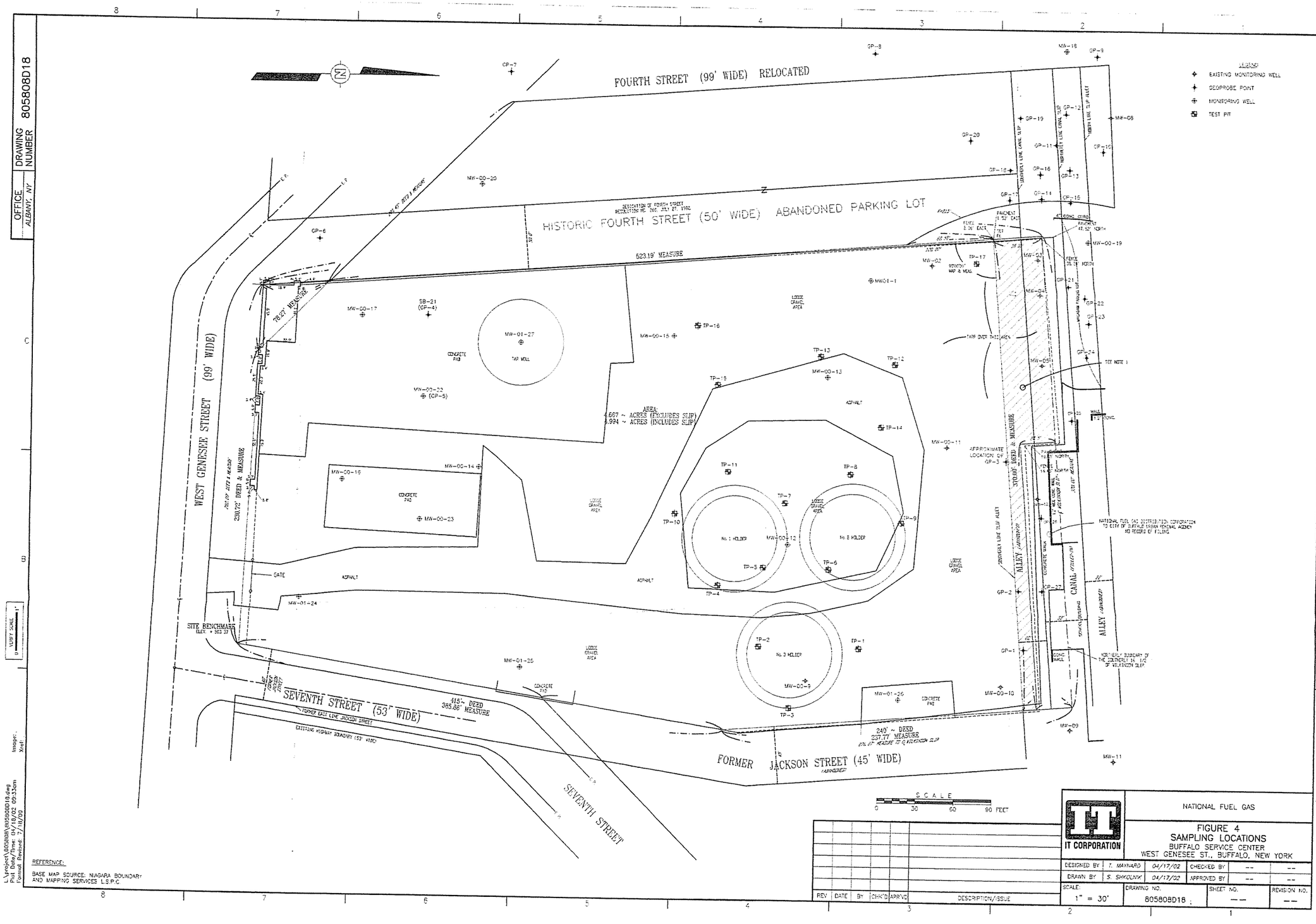
APPROXIMATE SCALE 0 30 60 90 FEET

REFERENCE:
BASE MAP SOURCE: NIAGARA BOUNDARY AND MAPPING SERVICES L.S.P.C.

IT CORPORATION	NATIONAL FUEL GAS	
	FIGURE 5 GROUNDWATER CONTOUR MAP BUFFALO SERVICE CENTER WEST GENESEE ST., BUFFALO, NEW YORK	
DESIGNED BY	D. STOLL	01/09/02	CHECKED BY
DRAWN BY	S. SHKOLNIK	01/09/02	APPROVED BY
SCALE: 1" = 30'	DRAWING NO. 80580BD4	SHEET NO.	REVISION NO.

REV	DATE	BY	CHK'D	APRV'D	DESCRIPTION/ISSUE

OFFICE ALBANY, NY | DRAWING NUMBER 805808D18



REFERENCE:

BASE MAP SOURCE: NIAGARA BOUNDARY AND MAPPING SERVICES L.S.P.C.

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Format Revised: 7/10/00
Image:
Xref:

REV	DATE	BY	CHK'D	APPVD	DESCRIPTION/ISSUE

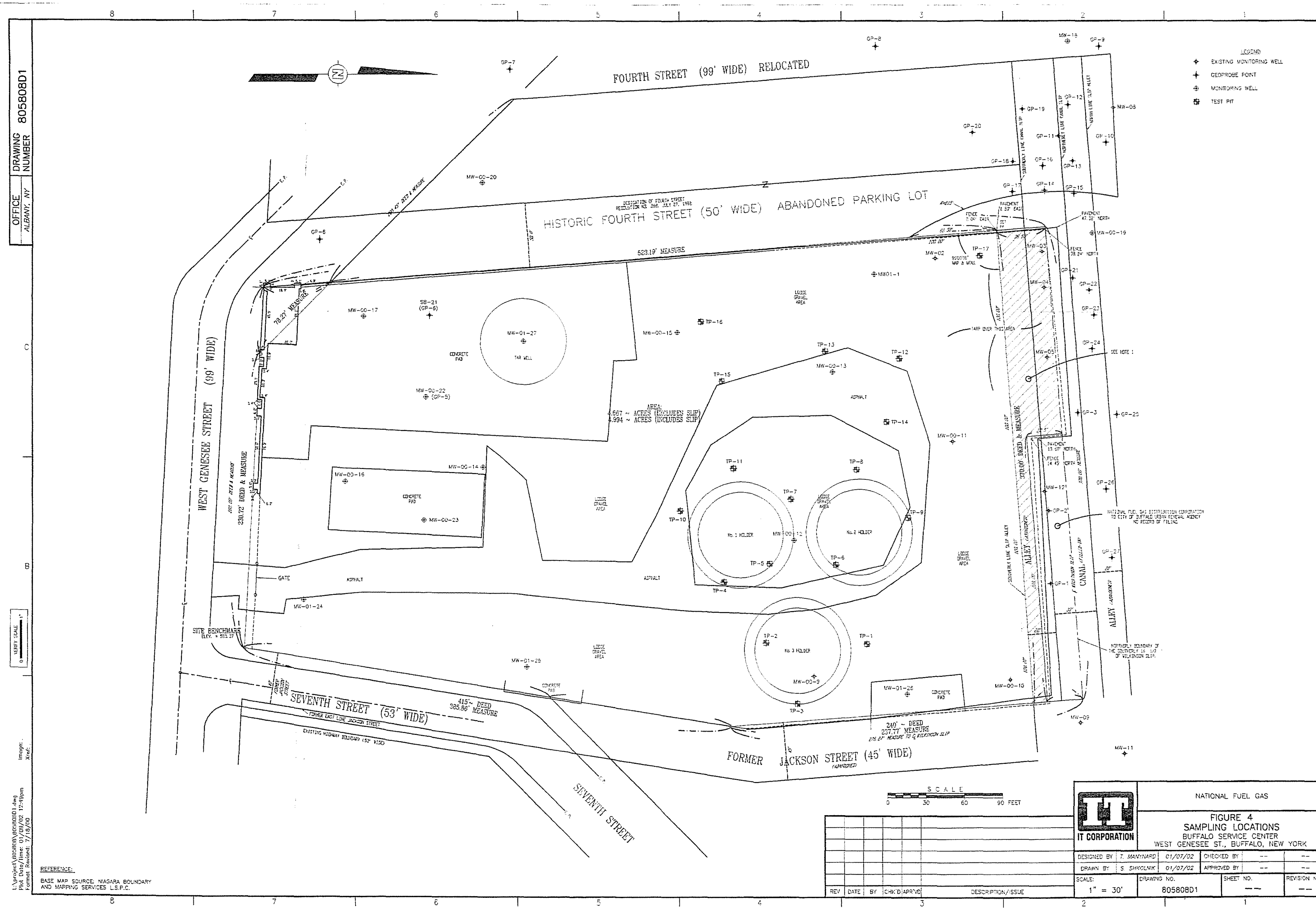
IT CORPORATION

NATIONAL FUEL GAS

FIGURE 4
SAMPLING LOCATIONS
BUFFALO SERVICE CENTER
WEST GENESEE ST., BUFFALO, NEW YORK

DESIGNED BY	T. MAYNARD	04/17/02	CHECKED BY	--	--
DRAWN BY	S. SHKOLNIK	04/17/02	APPROVED BY	--	--

SCALE:	DRAWING NO.	SHEET NO.	REVISION NO.
1" = 30'	805808D18	--	--

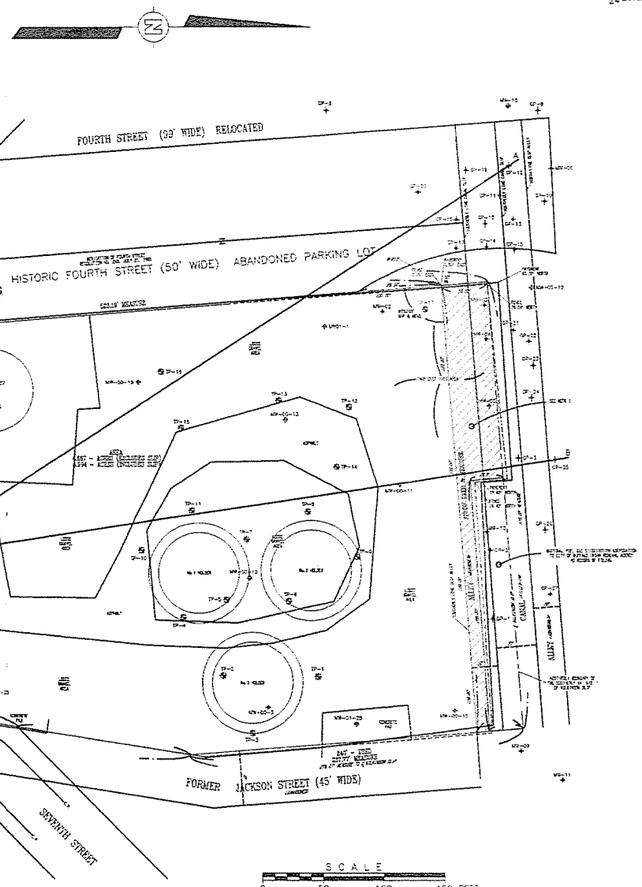


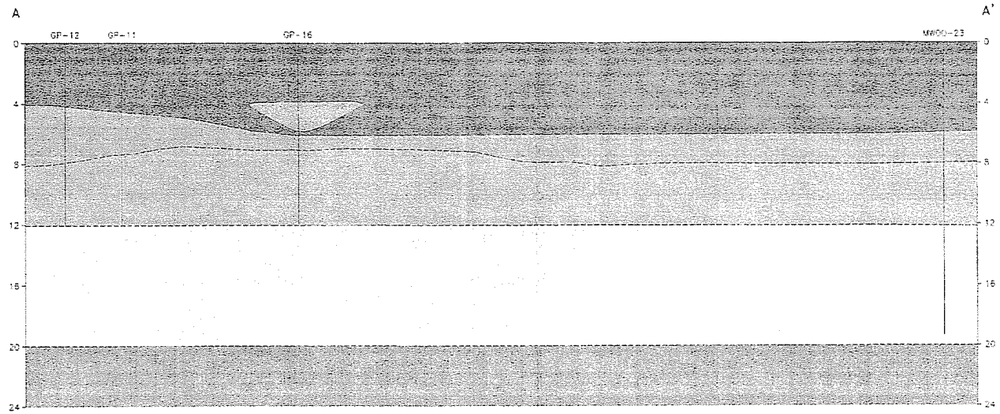
OFFICE
ALBANY, NY
DRAWING NUMBER
805808D1
FOURTH STREET (99' WIDE) RELOCATED
HISTORIC FOURTH STREET (50' WIDE)
ABANDONED PARKING LOT
523.19' MEASURE
WEST GENESEE STREET (99' WIDE)
330.72' DEED & MEASURE
SEVENTH STREET (53' WIDE)
415'± DEED
385.86' MEASURE
FORMER JACKSON STREET (45' WIDE)
240' ± DEED
237.77' MEASURE
SEVENTH STREET
370.00' DEED & MEASURE
ALLEY
CANAL
ALLEY
AREA:
4.667 ± ACRES (EXCLUDES SLIP)
4.994 ± ACRES (INCLUDES SLIP)
No. 1 HOLDER
No. 2 HOLDER
No. 3 HOLDER
TAR WELL
CONCRETE PAD
ASPHALT
LOOSE GRAVEL AREA
GATE
SITE BENCHMARK
SEE NOTE 1
LEGEND
EXISTING MONITORING WELL
GEOPROBE POINT
MONITORING WELL
TEST PIT
SCALE
0 30 60 90 FEET
REV | DATE | BY | CHK'D | APPR'D | DESCRIPTION/ISSUE
IT CORPORATION
NATIONAL FUEL GAS
FIGURE 4
SAMPLING LOCATIONS
BUFFALO SERVICE CENTER
WEST GENESEE ST., BUFFALO, NEW YORK
DESIGNED BY T. MAYNARD 01/07/02
DRAWN BY S. SHKOLNIK 01/07/02
CHECKED BY --
APPROVED BY --
SCALE: 1" = 30'
DRAWING NO. 805808D1
SHEET NO. --
REVISION NO. --
REFERENCE:
BASE MAP SOURCE: NIAGARA BOUNDARY AND MAPPING SERVICES L.S.P.C.

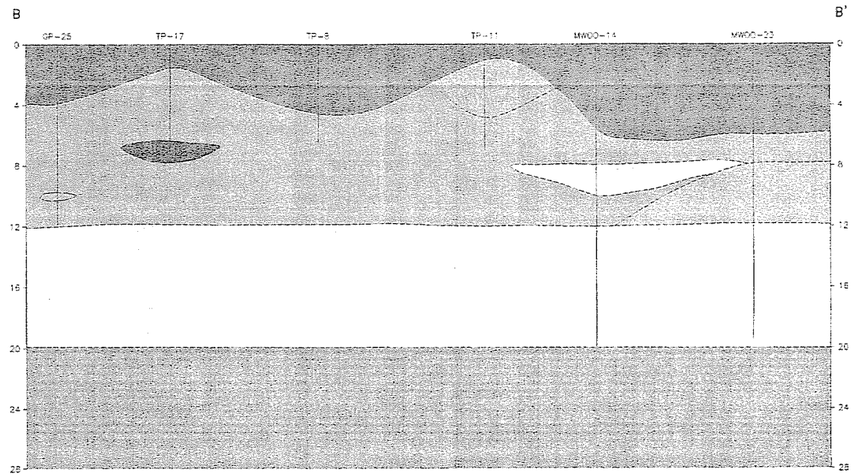
OFFICE ALBANY, NY | DRAWING NUMBER 805808D5

LEGEND

- EXISTING MONITORING WELL
- GEOPROBE POINT
- MONITORING WELL
- TEST PIT
- CLAY DOMINATED
- DARK – BROWN SANDS (MEDIUM) – SOME GROUND, TRACE WOOD TRACE BRICK
- COARSE SAND & GRAVEL
- SILTS
- BROWN SANDS (FINE) – SOME SILTS
- MEDIUM SANDS
- BEDROCK
- ---- ESTIMATED CONTACT







APPROXIMATE HORIZONTAL SCALE
0 30 60 90 FEET

APPROXIMATE VERTICAL SCALE
0 4 8 12 FEET

REFERENCE:

BASE MAP SOURCE: NIAGARA BOUNDARY AND MAPPING SERVICES L.S.P.C.

REV	DATE	BY	CHK'D	APRV'D	DESCRIPTION/ISSUE

IT CORPORATION

NATIONAL FUEL GAS

FIGURE 6
GEOLOGIC CROSS SECTIONS
BUFFALO SERVICE CENTER
WEST GENESEE ST., BUFFALO, NEW YORK

DESIGNED BY	T. MANYMARD	01/09/02	CHECKED BY	--	--
DRAWN BY	S SHKOLNIK	01/09/02	APPROVED BY	--	--

SCALE:	DRAWING NO.	SHEET NO.	REVISION NO.
1" = 50'	805808D5	---	---

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Format Revised: 7/15/00
Image:
Xref:

OFFICE ALBANY, NY | DRAWING NUMBER 805808D6

FOURTH STREET (99' WIDE) RELOCATED

DEDICATION OF FOURTH STREET RESOLUTION NO. 288, JULY 27, 1892

HISTORIC FOURTH STREET (50' WIDE) ABANDONED PARKING LOT

583.19' MEASURE

WEST GENESEE STREET (99' WIDE)

78.27' MEASURE

280.72' DEED & MEASURE

SEVENTH STREET (53' WIDE)

415'± DEED
385.86' MEASURE

FORMER EAST LINE JACKSON STREET

EXISTING HIGHWAY BOUNDARY (53' WIDE)

SEVENTH STREET

FORMER JACKSON STREET (45' WIDE) ABANDONED

240'± DEED
237.77' MEASURE
81% OF MEASURE TO N WILKINSON SLIP

570.00' DEED & MEASURE

ALLEY (ABANDONED)

CANAL (FILLED IN)

N WILKINSON SLIP

NORTHERLY BOUNDARY OF THE SOUTHERLY 15 1/2' OF WILKINSON SLIP

NATIONAL FUEL GAS DISTRIBUTION CORPORATION TO CITY OF BUFFALO URBAN RENEWAL AGENCY NO RECORD OF FILING

SITE BENCHMARK
ELEV. = 583.37

GATE

ASPHALT

CONCRETE PAD

LARGE GRAVEL AREA

MW-01-27 TAR WELL

No. 1 HOLDER

No. 2 HOLDER

No. 3 HOLDER

TARP OVER THIS AREA

SEE NOTE 1

AREA
4.667 ± ACRES (EXCLUDES SLIP)
4.994 ± ACRES (INCLUDES SLIP)

TP-15A (12-16)
Carbon Disulfide 1600
Methylene Chloride 190
Benzene 280

TP-15C (5-7.5)
Benzene 15000
Ethylbenzene 22000
Toluene 9400
Total Xylenes 325000

TP-17 (6.5-7)
O-Butanone 52
Acetone 220

TP-5 (5-7)
Benzene 63

TP-4 (6-8.5)
Benzene 120

TP-3 (7-8)
Methylene Chloride 7.8

TP-16 (1.5-4) ND
TP-14 (7-7.5) ND
TP-11 (6-7) ND
TP-8 (5-8.5) ND
TP-12 (5.5-8) ND
TP-7 (3.5-4) ND
TP-9 (5-8) ND
TP-6 (5-7) ND
TP-2 (8') ND
TP-1 (4-7) ND

LEGEND
- EXISTING MONITORING WELL
- GEOPROBE POINT
- MONITORING WELL
- TEST PIT

Sample ID: TP-15A (12-16')
Compound: Carbon Disulfide
Concentration (ug/kg): 1600

SCALE
0 30 60 90 FEET

REFERENCE:
BASE MAP SOURCE: NIAGARA BOUNDARY AND MAPPING SERVICES L.S.P.C.

REV	DATE	BY	CHK'D	APP'VD	DESCRIPTION/ISSUE

IT CORPORATION

NATIONAL FUEL GAS

FIGURE 7
VOLATILE ORGANIC COMPOUNDS IN TEST PIT SOILS
BUFFALO SERVICE CENTER
WEST GENESEE ST., BUFFALO, NEW YORK

DESIGNED BY	T. MANYNARD	01/08/02	CHECKED BY	--	--
DRAWN BY	S. SMOLNIK	01/08/02	APPROVED BY	--	--

SCALE:	DRAWING NO.	SHEET NO.	REVISION NO.
1" = 30'	805808D6	--	--

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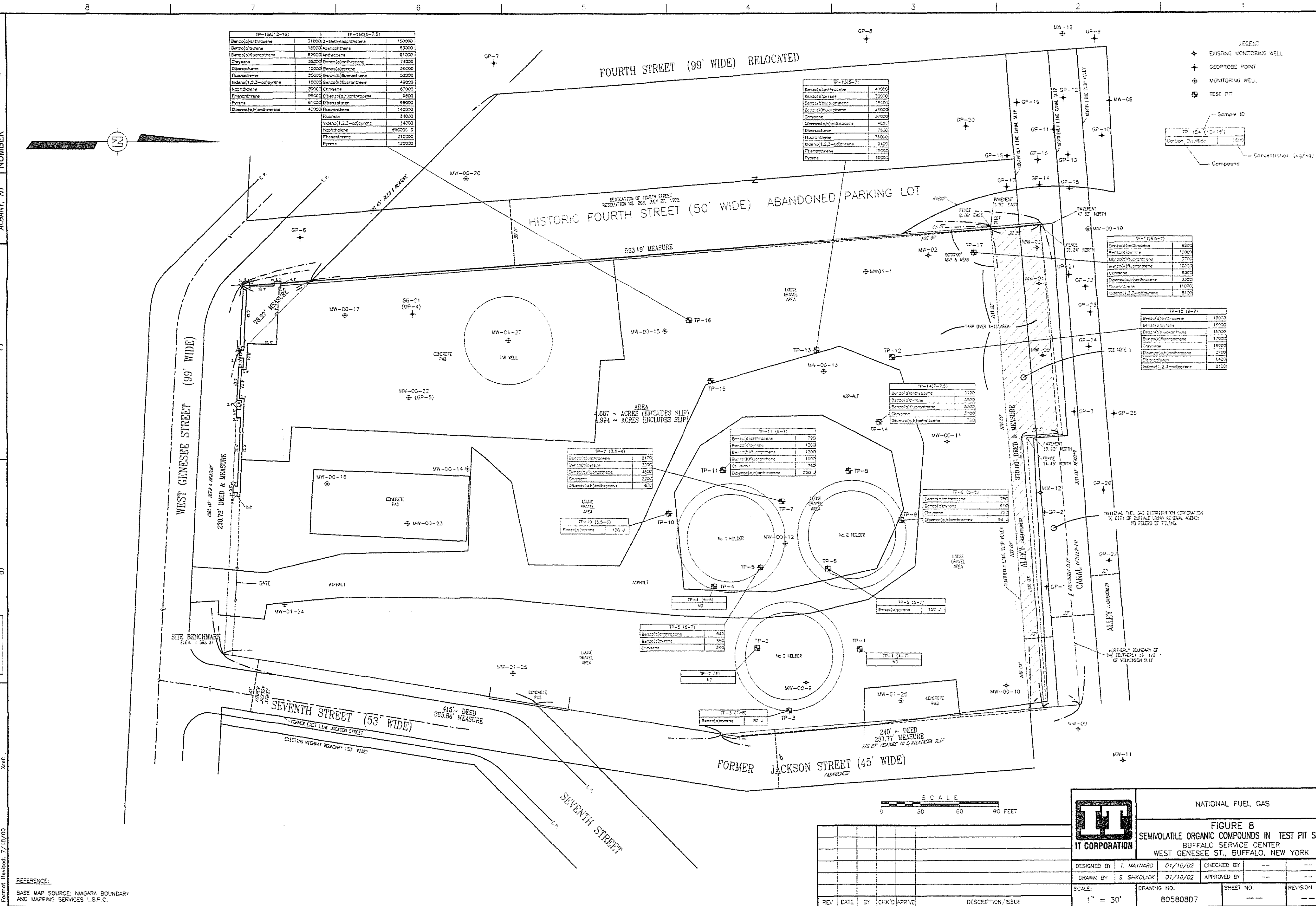
Last Revised: 7/18/00

Image:
Xref:

OFFICE: ALBANY, NY
DRAWING NUMBER: 80580807



TP-15A(12-16)	
Benzo(a)anthracene	31000
Benzo(a)pyrene	18000
Benzo(b)fluoranthene	52000
Chrysene	35000
Dibenzofuran	15000
Fluoranthene	85000
Indeno(1,2,3-cd)pyrene	18000
Naphthalene	39000
Phenanthrene	95000
Pyrene	61000
Dibenzo(a,h)anthracene	42000

TP-15D(5-7.5)	
2-Methylnaphthalene	150000
Acenaphthene	63000
Anthracene	61000
Benzo(a)anthracene	74000
Benzo(a)pyrene	56000
Benzo(b)fluoranthene	52000
Benzo(k)fluoranthene	49000
Chrysene	67000
Dibenzo(a,h)anthracene	8600
Dibenzofuran	66000
Fluoranthene	140000
Fluorene	84000
Indeno(1,2,3-cd)pyrene	14000
Naphthalene	690000 D
Phenanthrene	210000
Pyrene	120000

TP-13(5-7)	
Benzo(a)anthracene	40000
Benzo(a)pyrene	30000
Benzo(b)fluoranthene	25000
Benzo(k)fluoranthene	29000
Chrysene	37000
Dibenzo(a,h)anthracene	4500
Dibenzofuran	7900
Fluoranthene	76000
Indeno(1,2,3-cd)pyrene	9400
Phenanthrene	79000
Pyrene	60000

TP-17(5.5-7)	
Benzo(a)anthracene	9200
Benzo(a)pyrene	12000
Benzo(b)fluoranthene	2700
Benzo(k)fluoranthene	10000
Chrysene	6300
Dibenzo(a,h)anthracene	3300
Fluoranthene	11000
Indeno(1,2,3-cd)pyrene	5100

TP-12 (6-7)	
Benzo(a)anthracene	19000
Benzo(a)pyrene	16000
Benzo(b)fluoranthene	15000
Benzo(k)fluoranthene	17000
Chrysene	19000
Dibenzo(a,h)anthracene	2700
Dibenzofuran	6400
Indeno(1,2,3-cd)pyrene	8100

TP-14(7-7.5)	
Benzo(a)anthracene	3100
Benzo(a)pyrene	3300
Benzo(b)fluoranthene	5300
Chrysene	3100
Dibenzo(a,h)anthracene	760

TP-11 (6-7)	
Benzo(a)anthracene	790
Benzo(a)pyrene	1300
Benzo(b)fluoranthene	1200
Benzo(k)fluoranthene	1100
Chrysene	760
Dibenzo(a,h)anthracene	250 J

TP-7 (3.5-4)	
Benzo(a)anthracene	2100
Benzo(a)pyrene	3300
Benzo(b)fluoranthene	4500
Chrysene	2200
Dibenzo(a,h)anthracene	670

TP-9 (5-5)	
Benzo(a)anthracene	750
Benzo(a)pyrene	610
Chrysene	720
Dibenzo(a,h)anthracene	96 J

TP-10 (5.5-6)	
Benzo(a)pyrene	130 J

TP-4 (5-5)
ND

TP-6 (5-7)	
Benzo(a)pyrene	150 J

TP-5 (5-7)	
Benzo(a)anthracene	640
Benzo(a)pyrene	580
Chrysene	560

TP-2 (6)
ND

TP-1 (4-7)
ND

TP-3 (7-8)	
Benzo(a)pyrene	82 J

REFERENCE:
BASE MAP SOURCE: NIAGARA BOUNDARY AND MAPPING SERVICES L.S.P.C.

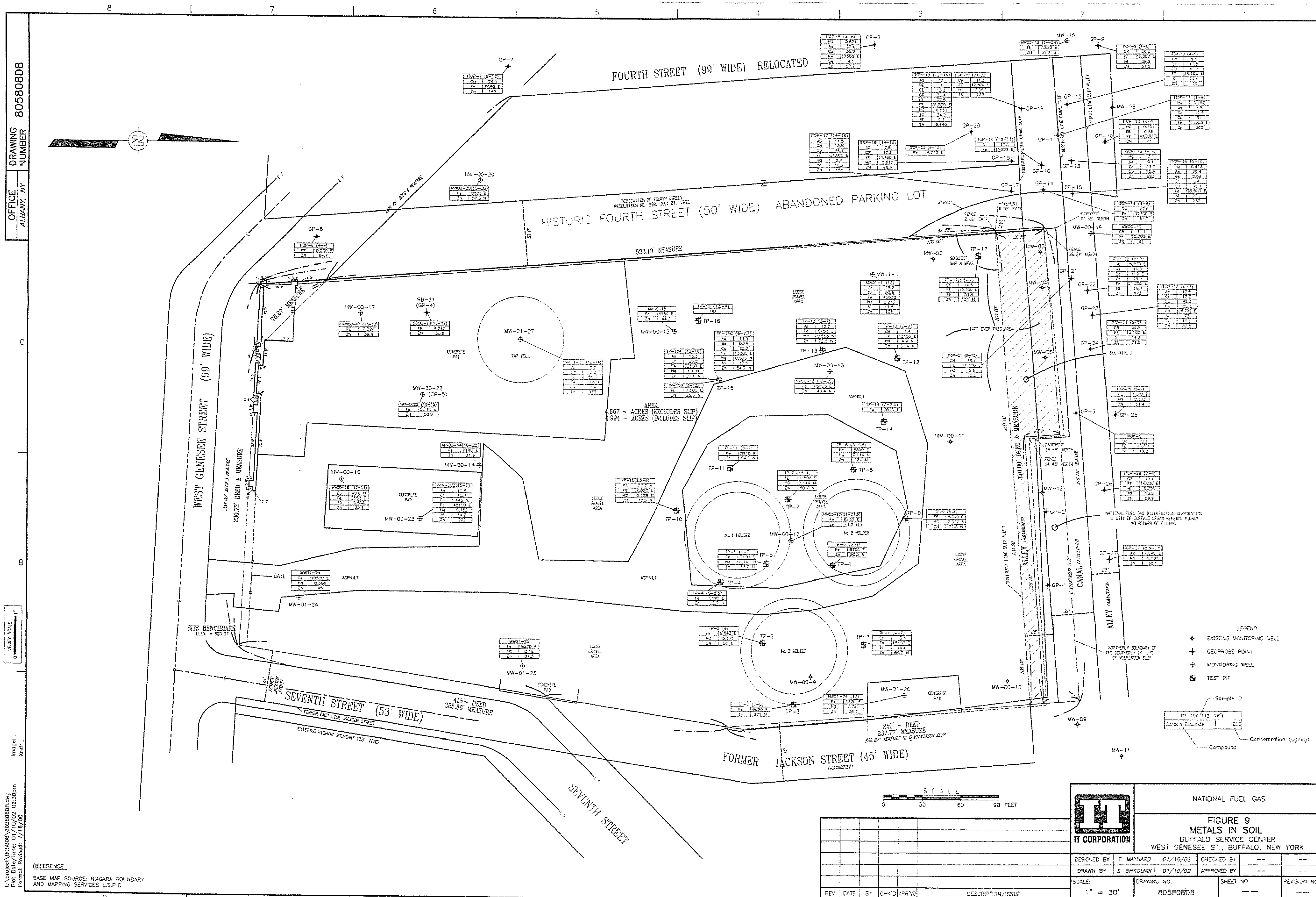
IT CORPORATION

NATIONAL FUEL GAS

FIGURE 8
SEMIVOLATILE ORGANIC COMPOUNDS IN TEST PIT SOIL
BUFFALO SERVICE CENTER
WEST GENESEE ST., BUFFALO, NEW YORK

DESIGNED BY	T. MAYNARD	01/10/02	CHECKED BY	--	--
DRAWN BY	S. SHKOLNIK	01/10/02	APPROVED BY	--	--
SCALE: 1" = 30'	DRAWING NO. 80580807		SHEET NO. --	REVISION NO. --	

REV	DATE	BY	CHK'D	APP'VD	DESCRIPTION/ISSUE



OFFICE: ALBANY, NY
DRAWING NUMBER: 805808D8

IT CORPORATION

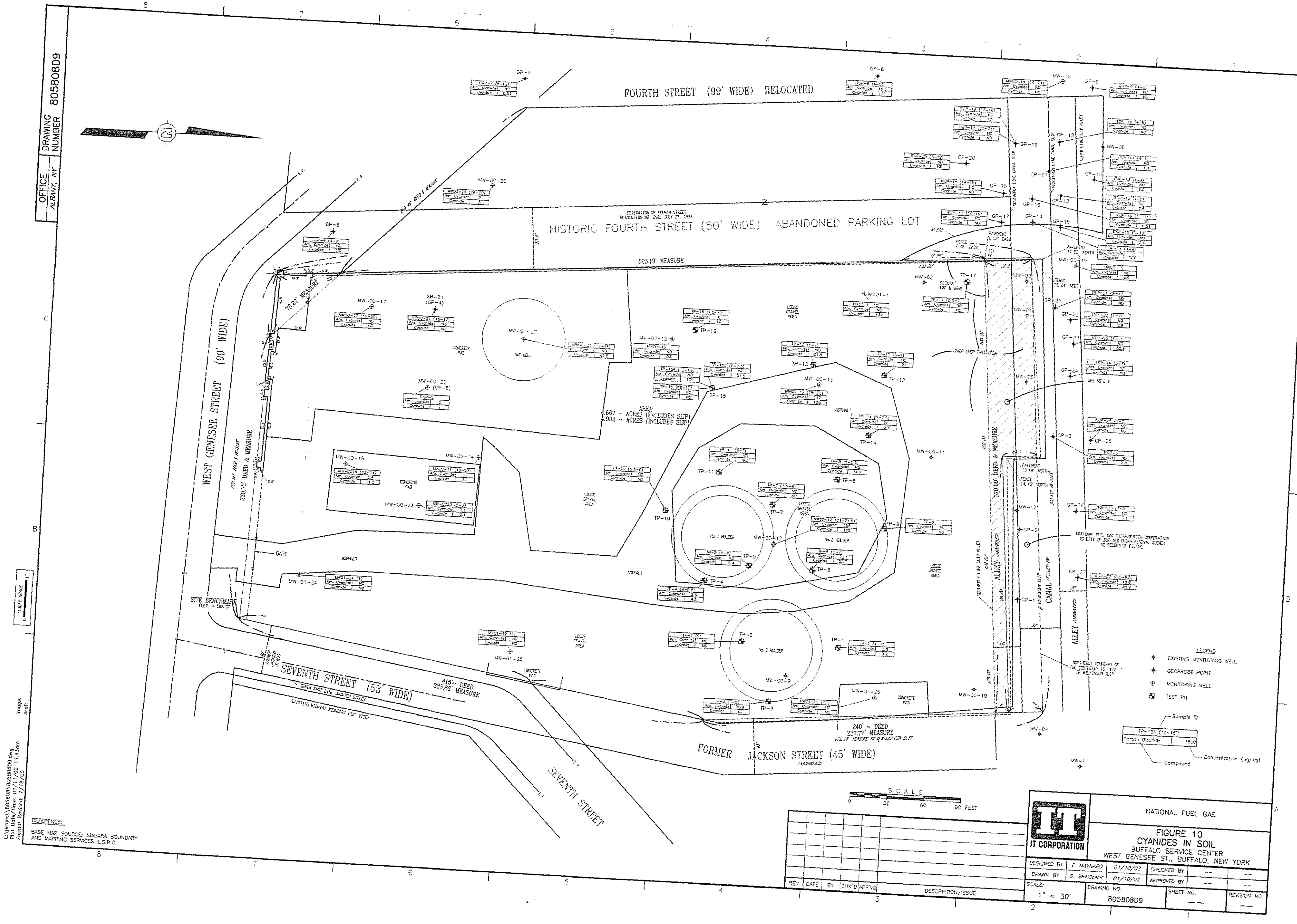
NATIONAL FUEL GAS

FIGURE 9
METALS IN SOIL
BUFFALO SERVICE CENTER
WEST GENESEE ST., BUFFALO, NEW YORK

DESIGNED BY	T. MAYNARD	01/10/02	CHECKED BY	--	--
DRAWN BY	S. SMOLNIK	01/10/02	APPROVED BY	--	--
SCALE: 1" = 30'	DRAWING NO. 805808D8		SHEET NO. --		REVISION NO. --

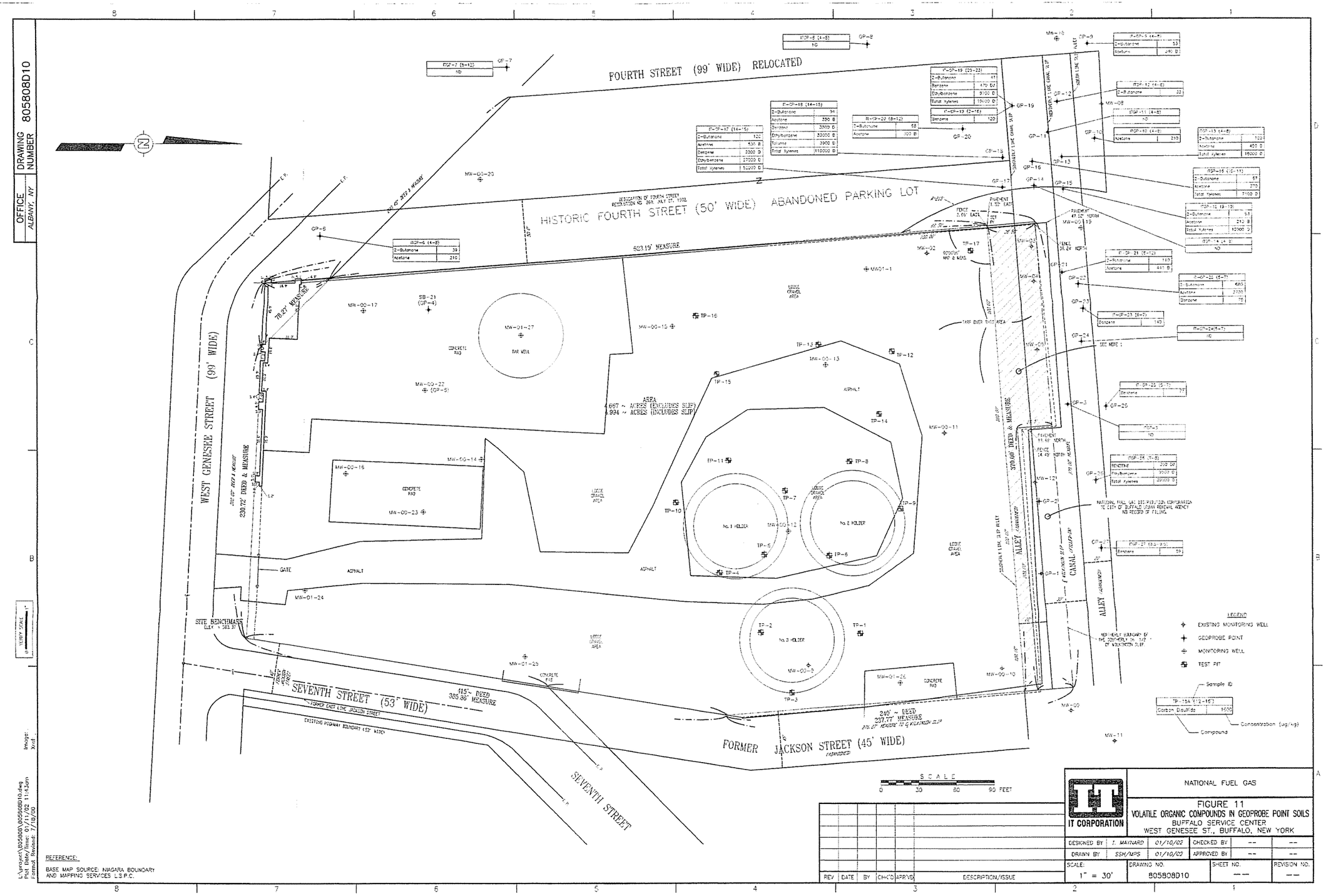
REV | DATE | BY | CHK'D | APPR'D | DESCRIPTION/ISSUE

REFERENCE:
BASE MAP SOURCE: NIAGARA BOUNDARY AND MAPPING SERVICES L.S.P.C.



OFFICE ALBANY, NY
DRAWING NUMBER 80580809
FOURTH STREET (99' WIDE) RELOCATED
HISTORIC FOURTH STREET (50' WIDE) ABANDONED PARKING LOT
WEST GENESEE STREET (99' WIDE)
SEVENTH STREET (53' WIDE)
SEVENTH STREET
FORMER JACKSON STREET (45' WIDE)
SITE BENCHMARK
No. 1 HOLDER
No. 2 HOLDER
No. 3 HOLDER
TAR WELL
ASPHALT
LOOSE GRAVEL AREA
CONCRETE PAD
GATE
ALLEY
CANAL
LEGEND
EXISTING MONITORING WELL
GEOPROBE POINT
MONITORING WELL
TEST PIT
Sample ID
TP-15A (12-16')
Carbon Disulfide 1500
Compound
Concentration (ug/kg)
SCALE
0 30 60 90 FEET
REFERENCE:
BASE MAP SOURCE: NIAGARA BOUNDARY AND MAPPING SERVICES L.S.P.C.
IT CORPORATION
NATIONAL FUEL GAS
FIGURE 10
CYANIDES IN SOIL
BUFFALO SERVICE CENTER
WEST GENESEE ST., BUFFALO, NEW YORK
DESIGNED BY T. MAYNARD 01/10/02
DRAWN BY S. SHKOLNIK 01/10/02
CHECKED BY --
APPROVED BY --
SCALE: 1" = 30'
DRAWING NO. 80580809
SHEET NO. --
REVISION NO. --
REV DATE BY CHK'D APPR'D DESCRIPTION/ISSUE

OFFICE ALBANY, NY | DRAWING NUMBER 805808D10



REFERENCE:

BASE MAP SOURCE: NIAGARA BOUNDARY AND MAPPING SERVICES L.S.P.C.

REV	DATE	BY	CHK'D	APP'VD	DESCRIPTION/ISSUE

IT CORPORATION

NATIONAL FUEL GAS

FIGURE 11
VOLATILE ORGANIC COMPOUNDS IN GEOPROBE POINT SOILS
BUFFALO SERVICE CENTER
WEST GENESEE ST., BUFFALO, NEW YORK

DESIGNED BY	T. MAYNARD	01/10/02	CHECKED BY	--	--
DRAWN BY	SSH/MPS	01/10/02	APPROVED BY	--	--

SCALE:	DRAWING NO.	SHEET NO.	REVISION NO.
1" = 30'	805808D10	---	---

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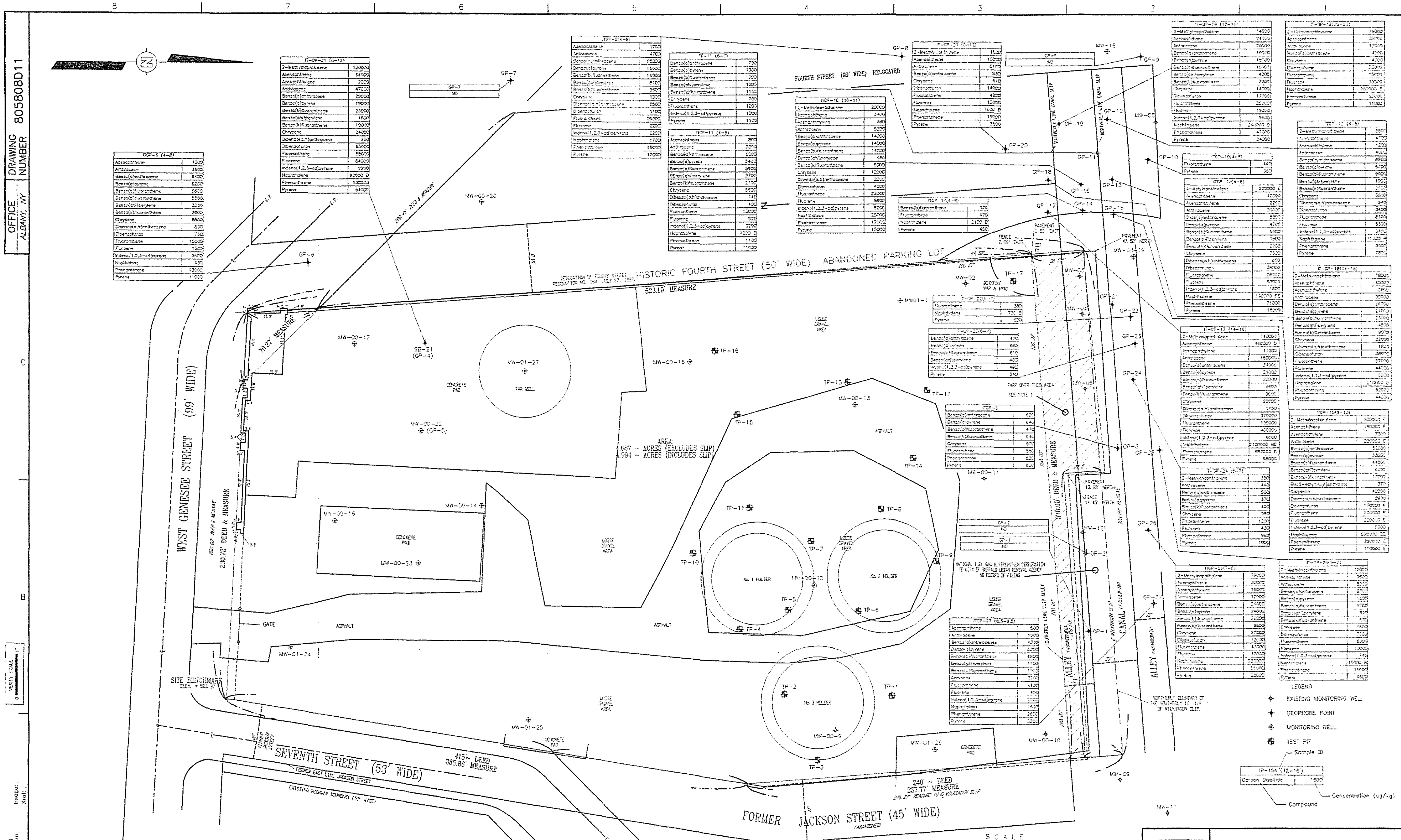


IT CORPORATION

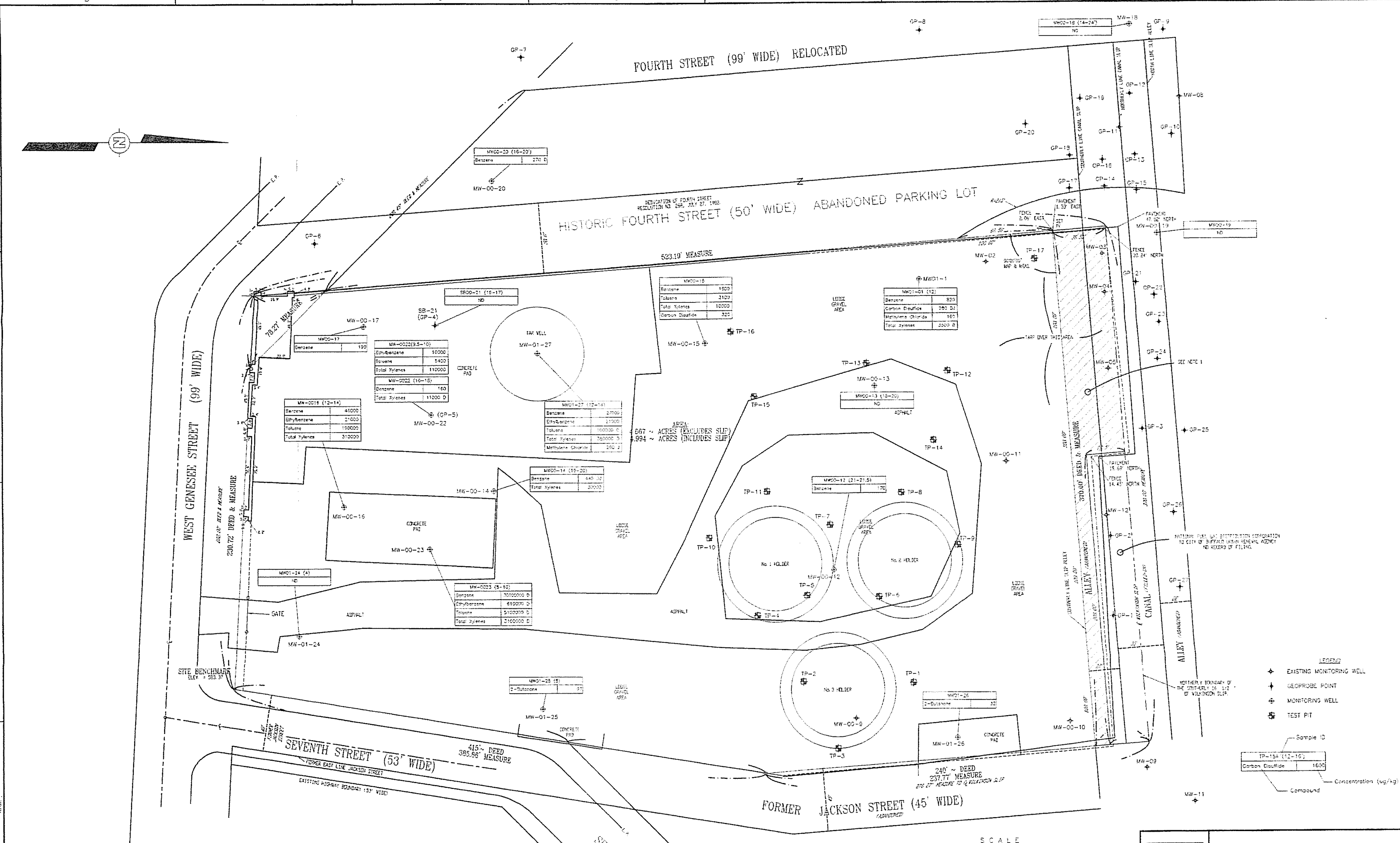
NATIONAL FUEL GAS

FIGURE 12
SEMIVOLATILE ORGANIC COMPOUNDS IN GEOPROBE POINT SOIL
BUFFALO SERVICE CENTER
WEST GENESEE ST., BUFFALO, NEW YORK

DESIGNED BY	T. MAYNARD	01/10/02	CHECKED BY	--	--
DRAWN BY	S. SHKOLNIK	01/10/02	APPROVED BY	--	--

SCALE:	DRAWING NO.	SHEET NO.	REVISION NO.
1" = 30'	805808D11	--	--

REV	DATE	BY	CHK'D	APPR'D	DESCRIPTION/ISSUE



REFERENCE:
BASE MAP SOURCE: NIAGARA BOUNDARY AND MAPPING SERVICES L.S.P.C.

IT CORPORATION

NATIONAL FUEL GAS

FIGURE 13
VOLATILE ORGANIC COMPOUNDS IN SOIL BORING AND MONITORING WELL
BUFFALO SERVICE CENTER
WEST GENESEE ST., BUFFALO, NEW YORK

DESIGNED BY: T. MAYNARD	01/10/02	CHECKED BY	--
DRAWN BY: SSH/MPS	01/10/02	APPROVED BY	--
SCALE: 1" = 30'	DRAWING NO. 805808D12	SHEET NO. --	REVISION NO. --

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION/ISSUE

OFFICE ALBANY, NY | DRAWING NUMBER 805808D12

OFFICE ALBANY, NY

DRAWING NUMBER 805808D13

FOURTH STREET (99' WIDE) RELOCATED

HISTORIC FOURTH STREET (50' WIDE) ABANDONED PARKING LOT

DEDICATION OF FOURTH STREET RESOLUTION NO. 268, JULY 27, 1982

523.19' MEASURE

WEST GENESEE STREET (99' WIDE)

SEVENTH STREET (53' WIDE)

FORMER JACKSON STREET (45' WIDE)

SEVENTH STREET

EXISTING HIGHWAY BOUNDARY (33' WIDE)

FORMER EAST LINE JACKSON STREET

230.72' DEED & MEASURE

415'± DEED 385.66' MEASURE

240' ± DEED 237.77' MEASURE

370.00' DEED & MEASURE

78.27' MEASURE

20.00' DEED & MEASURE

SITE BENCHMARK ELEV. = 585.37

AREA: 4.667 ± ACRES (EXCLUDES SLIP) 4.994 ± ACRES (INCLUDES SLIP)

LEGEND

- EXISTING MONITORING WELL
- GEOPROBE POINT
- MONITORING WELL
- TEST PIT

Sample ID

TP-15A (12-16')

Carbon Disulfide 1600

Concentration (ug/Kg)

Compound

MW-0022 (9.5-10)		MW-0022 (15-16)	
2-Methylnaphthalene	530000	Benzo(a)anthracene	6200
Acenaphthene	190000	Benzo(a)pyrene	8700
Benzo(a)anthracene	160000	Benzo(b)fluoranthene	17000
Benzo(a)pyrene	160000	Chrysene	9100
Benzo(b)fluoranthene	120000	Dibenzo(a,h)anthracene	1600
Benzo(ghi)perylene	54000	Dibenzofuran	11000
Benzo(k)fluoranthene	150000	Indeno(1,2,3-cd)pyrene	3500
Chrysene	170000	Naphthalene	120000 D
Dibenzo(a,h)anthracene	37000		
Dibenzofuran	210000		
Fluoranthene	450000		
Fluorene	240000		
Indeno(1,2,3-cd)pyrene	53000		
Naphthalene	2600000 D		
Phenanthrene	790000		
Pyrene	370000		
Acenaphthylene	7000		

MW00-22 (10P-13)	
Acenaphthene	420
Anthracene	1200
Benzo(a)anthracene	3200
Benzo(a)pyrene	2800
Benzo(b)fluoranthene	3500
Benzo(ghi)perylene	1200
Benzo(k)fluoranthene	2500
Chrysene	3200
Dibenzo(a,h)anthracene	490
Fluoranthene	7200
Indeno(1,2,3-cd)pyrene	1200
Phenanthrene	5800
Pyrene	5700

MW-0016 (12-14)	
2,4-Dimethylphenol	53000
2-Methylnaphthalene	450000
2-Methylphenol	150000
4-Methylphenol	450000
Acenaphthene	53000
Acenaphthylene	130000
Anthracene	150000
Benzo(a)anthracene	130000
Benzo(a)pyrene	97000
Benzo(b)fluoranthene	64000
Benzo(ghi)perylene	94000
Chrysene	110000
Dibenzo(a,h)anthracene	15000
Dibenzofuran	170000
Fluoranthene	280000
Fluorene	260000
Indeno(1,2,3-cd)pyrene	28000
Naphthalene	1300000 D
Phenanthrene	490000
Phenol	5700
Pyrene	220000

MW-0023 (5-7)	
2-Methylnaphthalene	14000000 D
Acenaphthene	1200000
Acenaphthylene	3000000
Anthracene	2900000
Benzo(a)anthracene	2000000
Benzo(a)pyrene	2100000
Benzo(b)fluoranthene	960000
Benzo(ghi)perylene	790000
Benzo(k)fluoranthene	1200000
Chrysene	2000000
Dibenzo(a,h)anthracene	240000
Dibenzofuran	3100000
Fluoranthene	3200000
Fluorene	3400000
Indeno(1,2,3-cd)pyrene	450000
Naphthalene	50000000 D
Phenanthrene	13000000 D
Pyrene	6700000

MW00-20(19-20)	
Benzo(a)anthracene	660
Benzo(a)pyrene	670
Chrysene	480

MW00-14 (18-20)	
Naphthalene	650

MW01-27 (12-14)	
Benzo(a)anthracene	7800
Benzo(a)pyrene	6400
Benzo(b)fluoranthene	8000
Benzo(k)fluoranthene	8500
Chrysene	7700
Dibenzo(a,h)anthracene	1300
Dibenzofuran	5000
Indeno(1,2,3-cd)pyrene	3700
Naphthalene	65000 E

MW00-17 (18-20')	
ND	

SB-0021 (15-17')	
ND	

MW00-19	
2,4-Dimethylphenol	1800
2-Methylnaphthalene	2100
2-Methylphenol	2600
4-Methylphenol	623
Acenaphthene	1400
Anthracene	1300
Benzo(a)anthracene	670
Benzo(a)pyrene	420
Benzo(b)fluoranthene	590
Dibenzofuran	1400
Fluoranthene	2300
Naphthalene	23000
Phenanthrene	4600
Phenol	2400
Pyrene	1700

MW00-13 (18-20)	
Fluorene	470
Phenanthrene	540

MW00-12 (21-21.5)	
Naphthalene	400

MW01-24(4')	
Benzo(a)anthracene	11000
Benzo(a)pyrene	12000
Benzo(b)fluoranthene	6800
Benzo(k)fluoranthene	13000
Chrysene	11000
Dibenz(a,h)anthracene	2200
Indeno(1,2,3-cd)pyrene	6400

MW01-25 (8')	
Benzo(a)anthracene	2600
Benzo(a)pyrene	2400
Benzo(b)fluoranthene	1600
Benzo(k)fluoranthene	1600
Chrysene	1900

MW01-26 (12')	
2-Methylnaphthalene	26000 D
Acenaphthene	6400
Benzo(a)anthracene	22000
Benzo(a)pyrene	14000
Benzo(b)fluoranthene	16000
Benzo(k)fluoranthene	16000
Chrysene	20000
Dibenzo(a,h)anthracene	2800
Dibenzofuran	21000
Fluoranthene	53000
Indeno(1,2,3-cd)pyrene	8100
Naphthalene	170000 D
Phenanthrene	85000 D

MW01-1 (12')	
2-Methylnaphthalene	1700000
2-Methylphenol	270000
4-Methylphenol	600000
Acenaphthene	1300000
Acenaphthylene	3700000
Anthracene	3600000
Benzo(ghi)perylene	2100000
Benzo(a)pyrene	2000000
Benzo(b)fluoranthene	1700000
Benzo(ghi)perylene	750000
Benzo(k)fluoranthene	1600000
Chrysene	2400000
Fluoranthene	3500000
Dibenzofuran	5400000
Fluorene	6300000
Fluorene	3300000
Indeno(1,2,3-cd)pyrene	890000
Naphthalene	40000000
Phenanthrene	8400000
Phenol	510000
Pyrene	4700000

REFERENCE:

BASE MAP SOURCE: NIAGARA BOUNDARY AND MAPPING SERVICES L.S.P.C.

SCALE 0 30 60 90 FEET

IT CORPORATION

NATIONAL FUEL GAS

FIGURE 14

SEMIVOLATILE ORGANIC COMPOUNDS IN SOIL BORING AND MONITORING WELL

BUFFALO SERVICE CENTER

WEST GENESEE ST., BUFFALO, NEW YORK

DESIGNED BY	T. MAYNARD	01/10/02	CHECKED BY	--	--
DRAWN BY	S. SHKOLNIK	01/10/02	APPROVED BY	--	--

SCALE:	DRAWING NO.	SHEET NO.	REVISION NO.
1" = 30'	805808D13	---	---

REV	DATE	BY	CHK'D	APRV'D	DESCRIPTION/ISSUE

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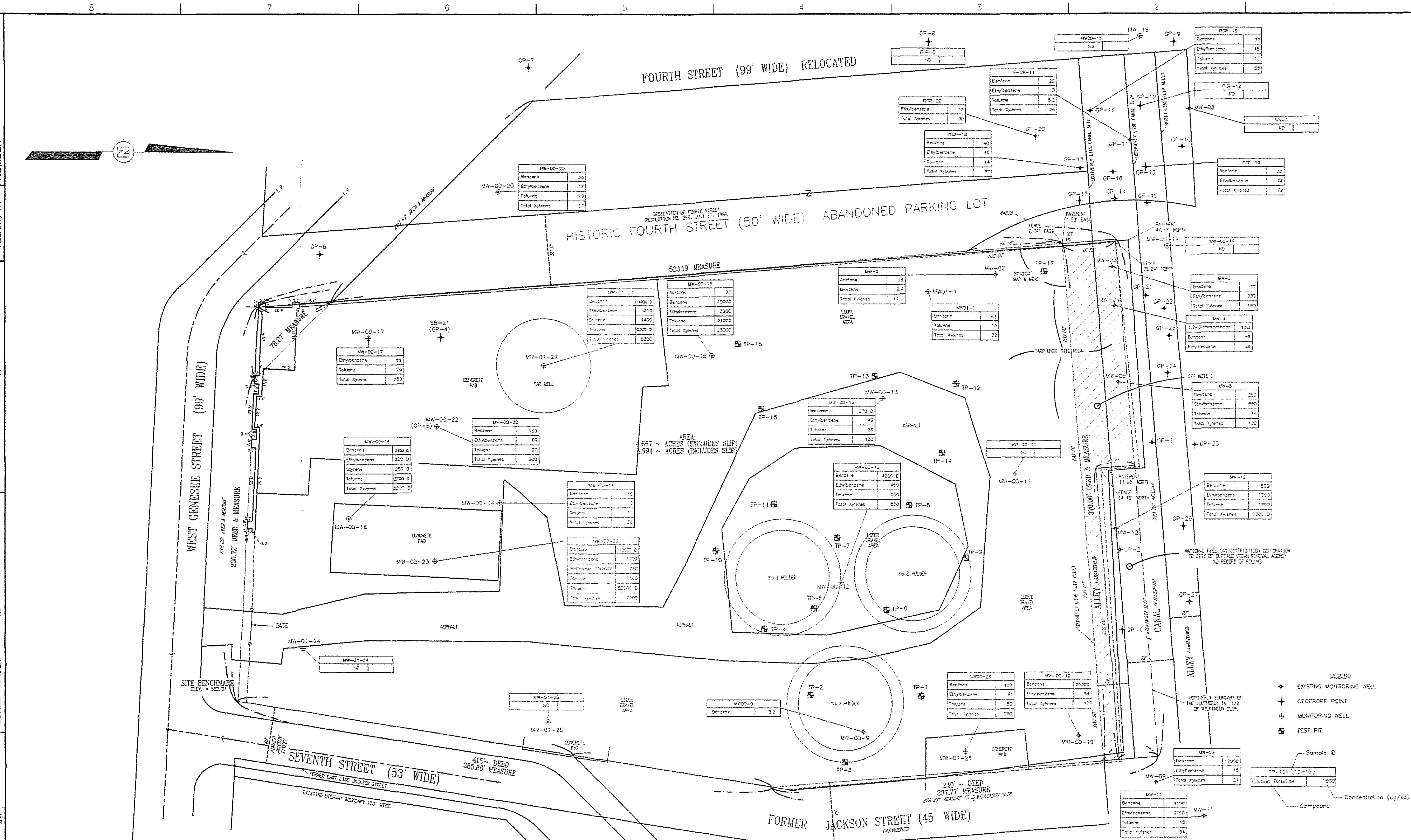
Format Revised: 7/10/00

Image: Mod:

OFFICE	DRAWING NUMBER
ALBANY, NY	805808D14



NATIONAL FUEL GAS

IT CORPORATION

FIGURE 15
VOLATILE ORGANIC COMPOUNDS IN WATER
BUFFALO SERVICE CENTER
WEST GENESEE ST., BUFFALO, NEW YORK

DESIGNED BY	T. MAYNARD	01/10/02	CHECKED BY	--	--
DRAWN BY	S. SHKOLNIK	01/10/02	APPROVED BY	--	--
SCALE: 1" = 30'	DRAWING NO. 805808D14		SHEET NO. --		REVISION NO. --

REV	DATE	BY	CHK'D	APP'D	DESCRIPTION/ISSUE

REFERENCE:
BASE MAP SOURCE: NIAGARA BOUNDARY AND MAPPING SERVICES L.S.P.C.

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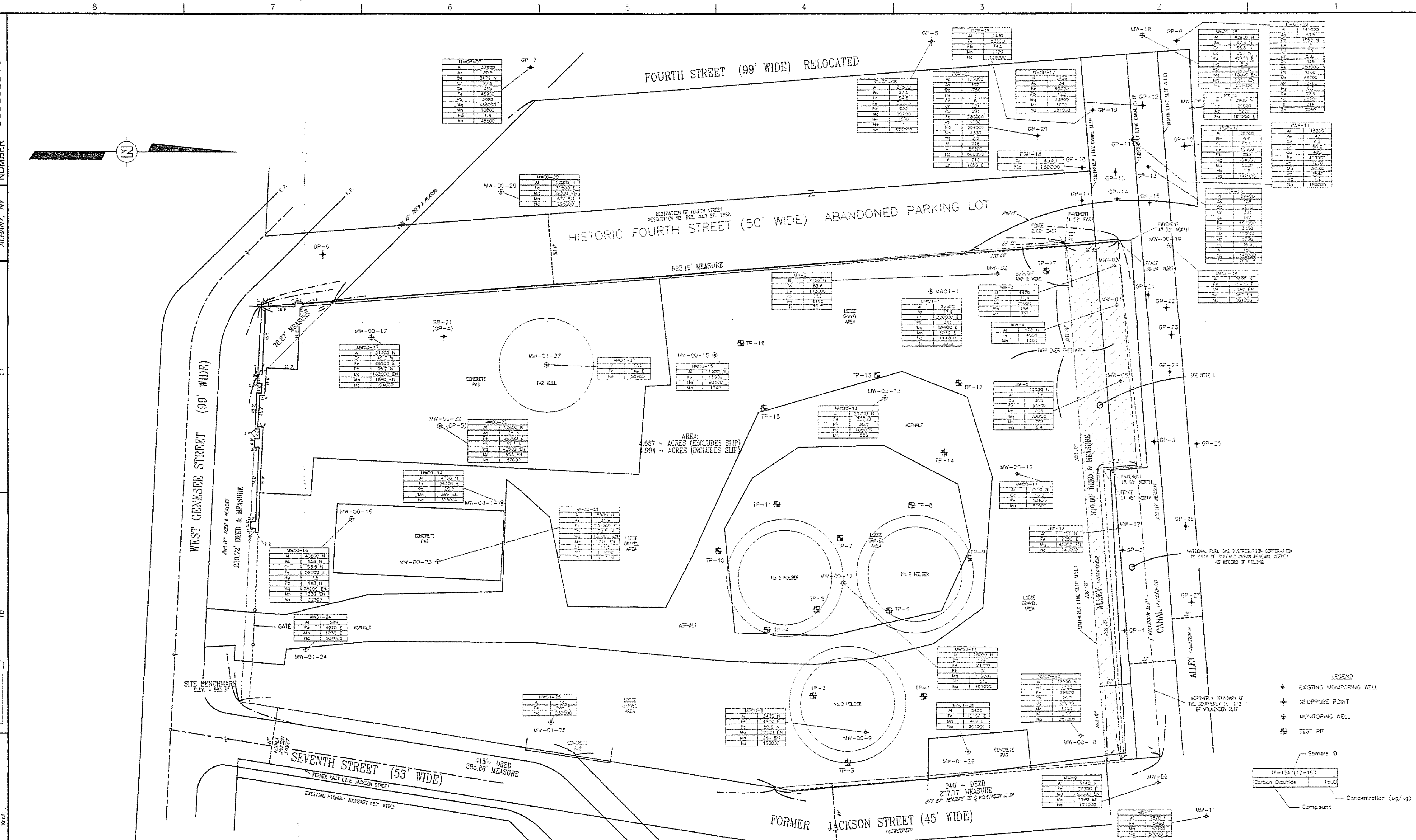
Format Revised 7/18/00



REFERENCE:
BASE MAP SOURCE: NIAGARA BOUNDARY AND MAPPING SERVICES L.S.P.C.

OFFICE: ALBANY, NY
DRAWING NUMBER: 805808D16

IT CORPORATION

NATIONAL FUEL GAS

FIGURE 17
METALS IN WATER
BUFFALO SERVICE CENTER
WEST GENESEE ST., BUFFALO, NEW YORK

DESIGNED BY	T. MAYNARD	01/12/02	CHECKED BY	--	--
DRAWN BY	S. SHKOLNIK	01/12/02	APPROVED BY	--	--
SCALE: 1" = 30'	DRAWING NO. 805808D16		SHEET NO. --	REVISION NO. --	

REV	DATE	BY	CHK'D	APPR'VD	DESCRIPTION/ISSUE

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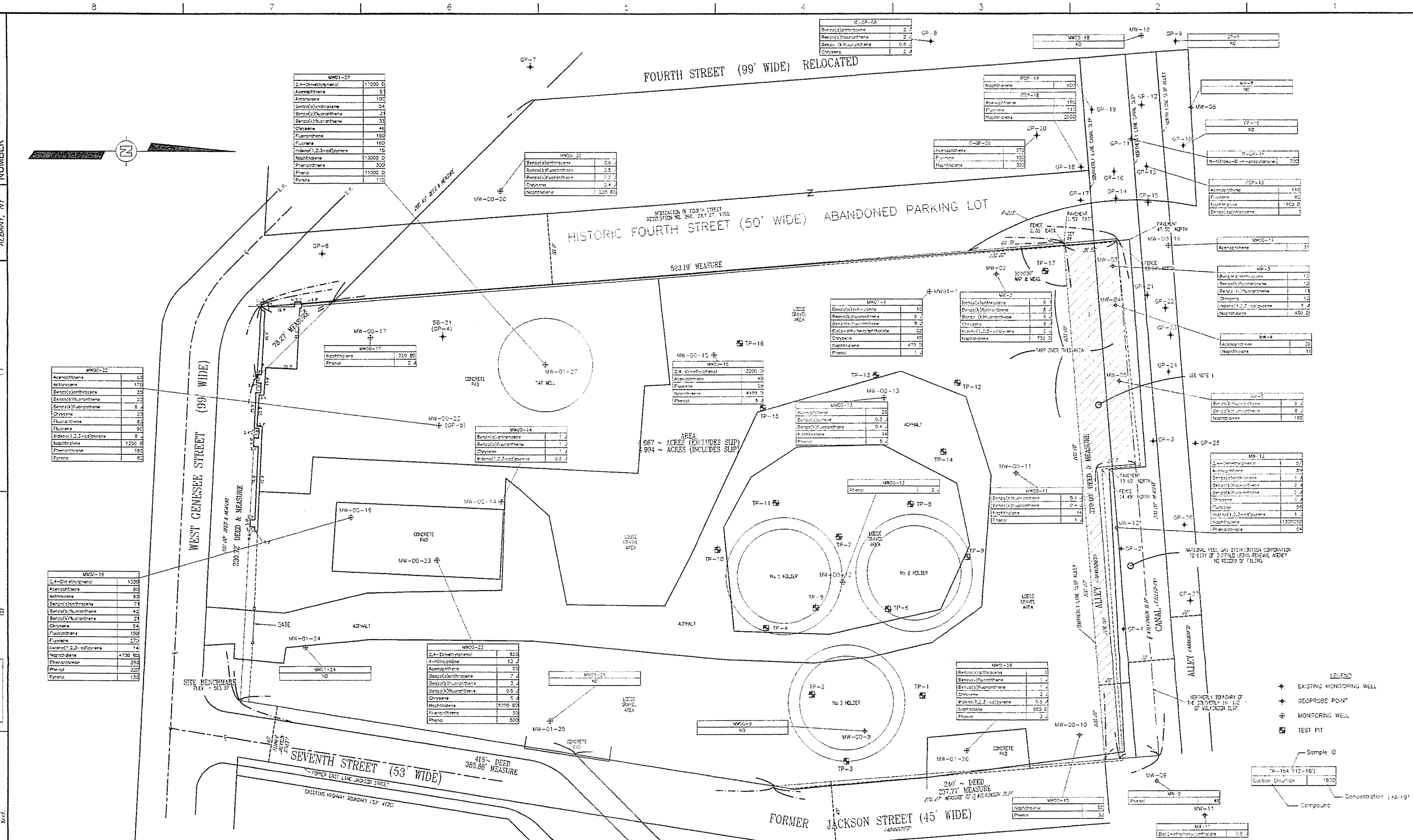
Plot Date/Time: 01/12/02 01:29pm
Format Revised: 7/18/00



OFFICE ALBANY, NY

DRAWING NUMBER 805808D15

REFERENCE:
BASE MAP SOURCE: NIAGARA BOUNDARY AND MAPPING SERVICES L.S.P.C.

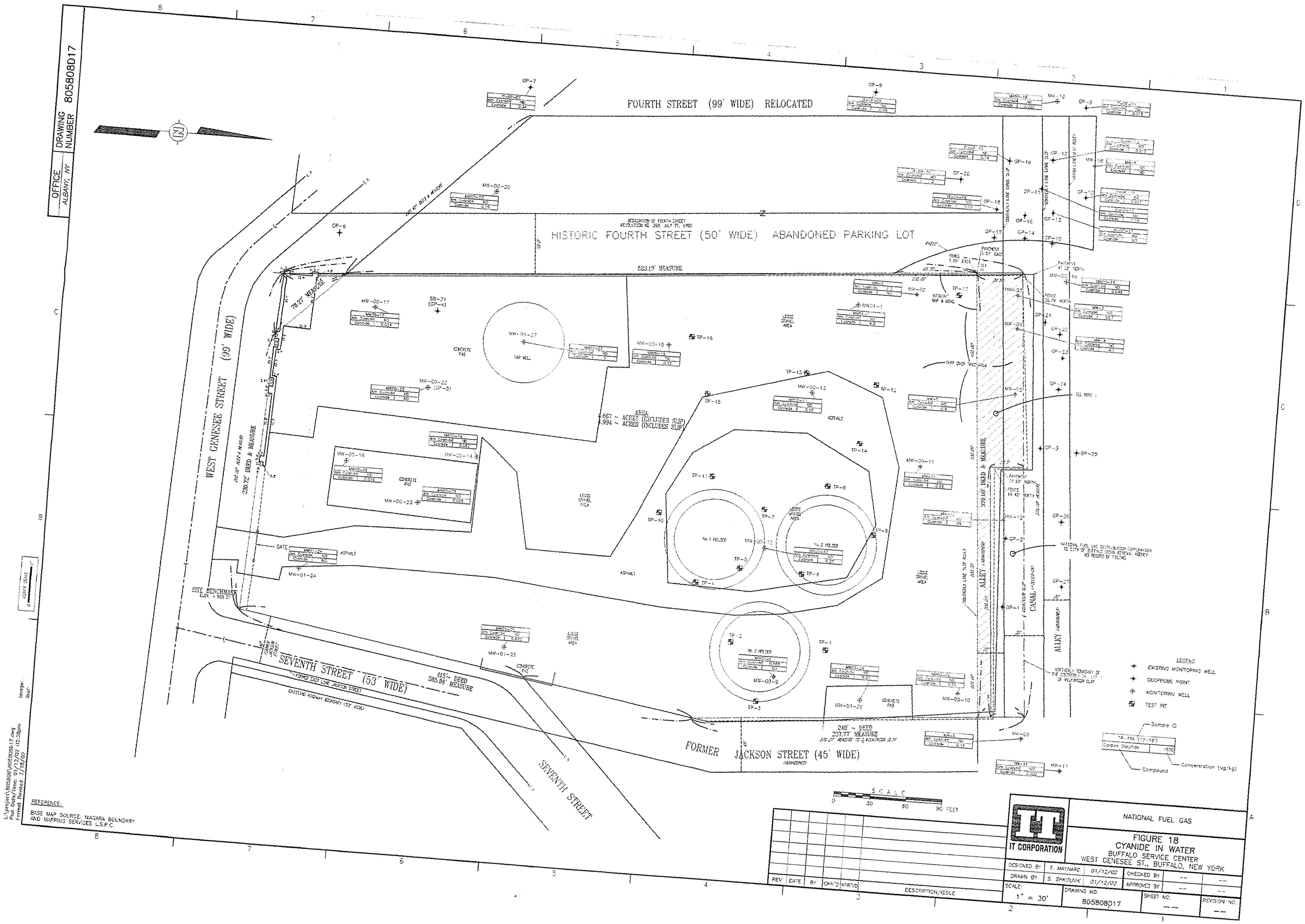
IT CORPORATION

NATIONAL FUEL GAS

FIGURE 16
SEMIVOLATILE ORGANIC COMPOUNDS IN WATER
BUFFALO SERVICE CENTER
WEST GENESEE ST., BUFFALO, NEW YORK

DESIGNED BY T. MAYNARD	01/11/02	CHECKED BY	--
DRAWN BY S. SHKOLNIK	01/11/02	APPROVED BY	--
SCALE: 1" = 30'	DRAWING NO. 805808D15	SHEET NO. --	REVISION NO. --

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION/ISSUE


OFFICE ALBANY, NY
DRAWING NUMBER 805808D17
FOURTH STREET (99' WIDE) RELOCATED
HISTORIC FOURTH STREET (50' WIDE) ABANDONED PARKING LOT
WEST GENESEE STREET (99' WIDE)
SEVENTH STREET (53' WIDE)
SEVENTH STREET
FORMER JACKSON STREET (45' WIDE)
ALLEY
CANAL
SITE BENCHMARK
CONCRETE PAD
ASPHALT
LOOSE GRAVEL AREA
LEGEND
EXISTING MONITORING WELL
GEOPROBE POINT
MONITORING WELL
TEST PIT
Sample ID
Compound
Concentration (ug/kg)
SCALE
0 30 60 90 FEET
REFERENCE:
BASE MAP SOURCE, NIAGARA BOUNDARY AND MAPPING SERVICES L.S.P.C.
REV DATE BY CHK'D APP'D DESCRIPTION/ISSUE
IT CORPORATION
NATIONAL FUEL GAS
FIGURE 18
CYANIDE IN WATER
BUFFALO SERVICE CENTER
WEST GENESEE ST., BUFFALO, NEW YORK
DESIGNED BY T. MAYNARD 01/12/02
DRAWN BY S. SHKOLNIK 01/12/02
CHECKED BY -- --
APPROVED BY -- --
SCALE: 1" = 30'
DRAWING NO. 805808D17
SHEET NO. --
REVISION NO. --