FINAL

WORK PLAN
BROWNFIELDS SITE
INVESTIGATION/INTERIM REMEDIAL MEASURE

for

2530 HAMBURG TURNPIKE
LACKAWANNA, NY

April 2005

Prepared for

2530 Hamburg Turnpike LLC
Lackawanna, NY

by

Iyer Environmental Group, PLLC
Orchard Park, NY 14127

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2530 Hamburg Turnpike, Lackawanna, NY 14218

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WORK PLAN
BROWNFIELDS SITE SI/IRM
2530 Hamburg Turnpike, Lackawanna, NY 14218

1.0 INTRODUCTION AND PURPOSE

The 2530 Hamburg Turnpike LLC property is on a major state route leading into downtown Buffalo (see site location map on Figure 1). It is in the vicinity of the Bethlehem Steel facility, and is bordered to the west, east and south by Route 5 (Hamburg Turnpike), Albright Court and Dona Street, respectively. A vacant property lies to the immediate north of this property. This 1.3-acre property was purchased by Mr. Frank Mathews with the purpose of redeveloping it into a commercial gas station (see Drawing 1) that will serve the Western New York community and endeavor to revitalize an area designated as an Environmental Zone (both eligibility criteria A and B) by NYS ESD.

The contamination found on this property is the result of petroleum discharge well before the current ownership and as such the applicant is not liable for the cleanup of this contamination. There have been no activities during the applicant's ownership of the property that could have in any way contributed to the contamination. 2530 Hamburg Turnpike LLC is a volunteer applicant taking the initiative to cleanup this property before developing it for commercial use.

This Work Plan for a supplemental site Investigation and interim remedial measure (IRM) provides specific details on the proposed supplemental investigation and remedy to be undertaken at the site. The supplemental investigation is to address areas of the property not targeted in previous investigations and to assess the presence of any contamination related to potential past practices in the area. The remedy will consist of the removal of contaminated soil and groundwater associated with past use of the property as a gas station, and any other areas identified by the supplemental investigation. As such, this Work Plan and the drawings included herein may be adequate for the documentation and control of the project.

2.0 SITE DESCRIPTION AND HISTORY

A Transaction Screen Environmental Site Assessment (TSA) in February 2004 referenced historical records (see 1950 Sanborn map in Appendix A) indicating the use of the property as a gas station in the 1950s. The TSA also found a 1990 Phase I Report for the adjacent Bethlehem Steel facility that indicated another gas station at the northern edge of the property apparently owned by Atlantic Richfield.

A one story office building with a basement was constructed on the lot and used until recently by a credit union. This 1900-sf building was donated by Mr. Mathews to the church on Dona Street and was moved by him next to the church in November 2004. The basement has been backfilled with clean fill and graded. At this time, the entire lot is vacant with no structures of any kind.

Following the February 2004 Transaction Screen Assessment, a limited and focused subsurface soil investigation was funded in July 2004 by Mr. Mathews to better assess the likelihood of petroleum related contamination around the former gas station location.

After this investigation revealed volatile (VOC) and semivolatile (SVOC) organic contamination in the subsurface soils, Mr. Mathews authorized a supplemental subsurface soil and groundwater investigation at the site. This work was completed in August 2004. The results of these investigations are used to develop a remediation plan herein to alleviate the petroleum related contamination.

The adjacent properties, including the Bethlehem Steel site, have been the subject of various investigations in the past several years, and various types of contamination have been found in soils and groundwater. Given the long history of industrial and commercial use of properties in the area, there are potential concerns of the possible presence of other types of contaminants besides petroleum. A supplemental investigation program is therefore added herein to investigate the possible presence of contamination in soil and groundwater from historical practices in the area, including volatile and semivolatile organics, pesticides, PCBs and heavy metals.

3.0 SUMMARY OF ENVIRONMENTAL CONDITIONS

The property is relatively flat at an elevation of around 578' amsl. As part of the site investigations in April and July 2004, a total of 22 soil boring locations (see locations and analytical results in Drawing 1 and Appendix B) were completed within the southwest part of the property, around the area of the former gas station. Based on the results of the initial soils analysis and field screening, 11 of the borings were converted to temporary groundwater wells set to 15 ft. depths. The subsurface is characterized by sandy gravel, gravel (slag) and silty clay fill material to depth of approximately 16 ft. Groundwater was encountered at a depth of 8 to 9 ft.

Soil and groundwater samples from these locations were analyzed for volatile and semivolatile organics. Soil samples from 6 of the 22 locations had VOC and/or SVOC compounds exceeding the NYSDEC's TAGM-4046 values, while 5 of the 11 groundwater samples had VOCs exceeding the NYSDEC Class GA groundwater standards. A plume of contaminated was mapped out as a result of the July investigation as shown on Drawing 2.

4.0 WORK PLAN FOR SUPPLEMENTARY INVESTIGATION

4.1 Objectives

The area previously investigated was limited to the southwest part of the property, and a significant portion of this area will be designated for this interim remedial measure consisting of removal and off-site disposal of contaminated soils. The remainder of the property needs to be further assessed with respect to possible environmental contamination resulting from other operations in and around the property. Additional data is also needed to complete the assessment, remediation and closure of this property under the Brownfields Cleanup Program. The objectives of this investigation will therefore be as follows:

- Determine the extent of on site contamination, if any, beyond the limits of the previous investigation,
- Establish the groundwater table and obtain other hydrogeological data such as hydraulic conductivity and groundwater flow/velocity,

- Qualitatively assess exposure pathways and potential risks to human health and the environment, and
- Re-evaluate the proposed remedy for the petroleum contamination, and expand it as necessary to include any other areas of contamination.

4.2 Soils Sampling and Analysis

Soil samples will be collected from ground surface to 12 feet (or refusal, whichever comes first) below ground level using a direct push method with a truck or tractor mounted Geoprobe unit. The proposed locations of the soil borings are shown on Drawing 2. The Geoprobe uses a 4-foot long, 1-inch diameter stainless steel Shelby tube with a plastic sample liner. The Shelby tube is pushed into the ground and sample is collected within the plastic sleeve. After the soil boring is extracted from the ground, the sleeve is cut and the sample split in half along the axis. The soil samples will be visually inspected and characterized by a geologist.

The soil core will then be screened in the field with a photoionization detector (PID) that analyzes volatile organics in the air space around the soil samples. Prior to any intrusive field work, public underground utilities will be cleared in the sampling area through the Dig Safely New York program.

In the event elevated PID readings are observed, one sample with the highest PID reading will be sent to an off-site laboratory for analysis for TCL volatiles, including petroleum hydrocarbons. In addition, the soil core from each Geoprobe location will be composited and analyzed for SVOCs, PCBs, pesticides and TCL metals (including mercury). Analytical methods and QA/QC, including matrix duplicates and spikes, and field blanks and duplicates will be in accordance to NYSDEC's ASP protocols and USEPA methods, as applicable (see Table 1).

4.3 Monitoring Well Installation and Development

At least three groundwater monitoring wells are needed to establish the groundwater table and flow gradient. Given the plume of the known petroleum contamination, and potential migration of contaminants, four permanent monitoring wells are proposed at the locations shown on Drawing 2. Two wells will be located along the western property boundary, one on the southern boundary, and one in the northeast corner of the property. The locations and number of the wells may be modified depending on the results of the soil analysis.

The wells will be installed to a depth of 20 feet as shown on Figure 2, with a 2" diameter screen straddling the water table from the bottom up, and a PVC riser. The wells will have a lockable cap flush to the ground, and marked clearly so that they are not mistaken for gasoline UST fill pipes. The new wells and the existing temporary wells will be surveyed and water levels measured to establish a baseline water table elevation and groundwater flow gradient. Soil samples will be collected for characterization and analysis using split spoons and the screening procedure used for the soil borings above. After installation, the new and existing wells will be surveyed so as to facilitate water level measurements and establishment of groundwater flow gradients.

The new wells will be developed by purging up to five well volumes, and at least until the turbidity is less than 50 NTU as per NYSDEC guidelines for monitoring well development. Disposable bailers will be used for well development and for sample collection. During well development, field measurements (pH, specific conductivity, temperature and turbidity) will be measured and recorded in the field book.

4.4 Groundwater Sampling and Analysis

The wells will be sampled for the parameters detected in the soil samples. At this time, it is anticipated that the same parameters as the soils (i.e., VOCs, SVOCs, PCBs, pesticides and TCL metals) will also be analyzed in the groundwater samples as listed in Table 1. All samples will follow NYSDEC guidelines for sample packaging and shipment (in coolers with ice), chain of custody, and QA/QC requirements. Field measurements during sampling will include pH, specific conductivity and temperature.

4.5 QA/QC Plan

The soil and groundwater sampling will be conducted in accordance with accepted NYSDEC/USEPA guidelines, and all samples will be analyzed as per NYSDEC ASP requirements. QA/QC samples will include a field rinse blank (per event), field duplicate (one per 20 samples), and matrix spike/matrix spike duplicate (one per 20 samples). A NYSDOH ELAP-certified laboratory will be utilized for all analysis during the supplemental investigation, remedial construction and long-term monitoring. Category B deliverables will be provided for all samples. All analytical data will be evaluated according the Division of Environmental Remediation (DER) Data Usability Summary Report (DUSR) guidelines.

4.6 Health and Safety Plan (HASP)

A site-specific Health & Safety Plan (HASP) for the protection of on-site workers and other field personnel is attached to this Work Plan. It includes air quality monitoring during remedial construction as per New York State Department of Health requirements and the NYSDEC TAGM 4031 for the prevention of fugitive dust.

4.7 Report

The results of the supplemental investigation will be compiled in a report along with data evaluation, and a qualitative risk assessment for both on-site and off-site. The report will identify additional areas (if any) contaminated with petroleum hydrocarbons or hazardous substances. The Interim Remedial Measure Work Plan will be revised as necessary to incorporate other areas of contamination that require remediation and to ensure that this property is remediated to the satisfaction of the regulatory agencies.

5.0 REGULATORY CRITERIA

The NYSDEC has established goals for acceptable contamination levels in soils based on a combination of human health risk factors and potential groundwater impacts. These goals are applicable when considering the need for a remedial measure at contaminated sites.

The Brownfield Cleanup Program provides for a multi-track approach to the remediation of soil contamination. The NYSDEC is in the process of developing generic tables of soil cleanup goals from four tracks ranging from unrestricted use (Tracks 1) to different degrees of restricted use (Tracks 2, 3 and 4).

The intent of this remedial effort is to clean up this property to unrestricted use (Track 1). The generic soil cleanup tables will be applicable with no institutional or engineering controls, and no land or groundwater restrictions. At this time, the soil cleanup goals in the NYSDEC's TAGM 4046 will be assumed for planning purposes.

Any excavation and off-site disposal of the contaminated soils will be compliant with the Resource Conservation and Recovery Act (RCRA) and the Toxic Substances Control Act (TSCA).

6.0 WORK PLAN FOR INTERIM REMEDIAL MEASURE

This proposed remedy is developed based on the results of the soil and groundwater investigations completed by the owner in April and July, 2004. This remedy will be expanded as necessary to include additional areas of contamination that may be discovered as part of the supplemental investigation described in this Work Plan. The overall objective of this interim remedial measure is to remediate this site to the Track 1 requirements under the Brownfields program.

6.1 Extent of Contamination

As discussed in Section 3, the highest levels of petroleum contamination exceeding the NYSDEC's TAGM 4046 cleanup goals were found in the area designated as (A) on Drawing 3. The contamination appears to be at depths greater than 2 feet and in the associated groundwater. Relatively lower levels of contamination were found in area (B) while area (C) appears to be free of contamination.

6.2 Description of Remedy

The proposed interim remedial measure is to excavate all contaminated soils exceeding the TAGM 4046 cleanup goal for petroleum compounds. It is anticipated that area (A) shaded as (A) on Drawing 3 would constitute the bulk of the soil contamination. The highly contaminated soil in area (A) will be excavated and disposed at a permitted solid waste disposal facility. Area (B) on Drawing 3 will be excavated if necessary in incremental amounts based on field screening with a PID. Additional areas of soil excavation will depend on the field screening and the results of the supplemental investigation. All soils with PID readings greater than 10 ppm will be excavated and disposed off-site.

Initially, the top clean layer of the soil will be screened with a PID and stockpiled on the property for use subsequently as backfill if the PID reading is less than 10 ppm. The highly contaminated subsurface soil in Area A will then be excavated for off-site disposal. Further excavation beyond the limits of area (A) on Drawing 3 will be done in 2-foot increments so as to trace the plume of contamination that would have migrated from the original source area. It is anticipated that only a limited excavation will be required in area (B). Area (C) appears to be free of petroleum contamination based on

previous results. If the supplemental investigation described herein shows otherwise, this area will also be targeted for remediation.

6.3 Mobilization and Staging

A staging area with a small office trailer will be set up in a clean area for on-site personnel. The site of the former building (see Drawing 3) will be used to stockpile clean soil for backfill. An HDPE liner will be placed in the stockpile area before any soil placement. All equipment will be decontaminated when leaving the site. Dust control measures (e.g., wetting of dry surfaces in the work areas) will be implemented to prevent off-site migration of contaminated airborne particulates.

6.4 Soil Excavation and Off-Site Disposal

All excavation will be carried out with a backhoe large enough to reach a depth of up to 16 feet. The walls of the excavation will be adequately sloped or stepped to prevent cave-ins and washouts, and to allow access for excavators into the excavation. To the extent possible and depending on access, the contaminated soils will be excavated and directly loaded on to dump trucks for off-site disposal. Otherwise the contaminated soils will be stockpiled near the excavation over a plastic liner and then loaded on to the dump truck. The dump trucks will be lined and covered during transport to the disposal facility. The excavation walls and bottom will be sampled for volatile organics (and other parameters as warranted) to confirm that the remedial objectives have been met. The stockpile area will be sampled after all site work is completed to confirm there is no residual contaminated. Confirmatory soil samples will be collected in accordance with NYSDEC requirements for spacing

At this time, the total volume of soil requiring off-site disposal is estimated to be 3,000 to 4,000 cubic yards. Prior to off-site disposal, the soil will be sampled and analyzed for disposal parameters to confirm that the soil is non-hazardous. Subject to this confirmation, the contaminated soil will be hauled by licensed waste haulers to a permitted solid waste landfill (probably the Tonawanda Landfill in Tonawanda, NY).

6.5 Excavation Water Treatment and Disposal

Excavation of the soils to the known depths of contamination will most likely result in groundwater exfiltration into the excavation. A recent RFI Report for the Bethlehem Steel site shows the groundwater table across the street to be 2 to 3 feet below ground at an elevation of 576' above sea level, and a gradual slope towards Lake Erie. At the site, the water table appears to be around 6 to 8 feet below ground level (there is no survey data on the wells). Any excavation could therefore result in a significant amount of water entering the excavation from the street side.

This excavation water will be pumped into a storage tank where it will be allowed to settle, and then treated in an on-site treatment consisting of two bag filter and two activated carbon canisters in series, and treated water will be discharge to the sanitary sewer. A permit will be obtained from Erie County prior to discharge, and the treated water will meet the permit requirements.

Contaminated excavation water will be pumped into an on-site storage tank (20,000 gallon capacity) so as to allow the solids to settle. The settled supernatant from the tank will pass through a treatment system consisting of two bag filters and two activated

carbon drums in series. The rated capacity of the treatment system will be 15 gpm. The treated water will be discharged to the sanitary sewer near the site. A discharge permit will be obtained from Erie County prior to such discharge.

6.6 Backfill

The excavation will be backfilled with clean fill from an off-site source, properly sampled and tested to ensure that it is appropriate for use at this site. Clean backfill may be stockpiled at the site in advance of the remediation work so as to take advantage of its availability and lower cost. After backfilling, the site will be regarded and prepared for its development as a gas station.

6.7 Engineering Evaluation of the Remedy

Besides off-site disposal, available options for remediation of the soils include in-situ (e.g., soil vapor extraction) and ex-situ (e.g., thermal desorption) on-site treatment processes. The groundwater associated with the soils is also contaminated. Besides pump and treat, available in-situ options for groundwater include air sparging and dual phase extraction. Given the depth of soil contamination and its association with groundwater, remediating one may inherently result in the remediation of the other media (e.g., removing groundwater from low level contamination areas).

The in-situ treatment options are generally cost effective for areas with large volumes of soil and groundwater contamination and where remediation times can extend to a year or more. At times, the in-situ processes may not reach all areas of contamination which then reoccurs at one or more monitoring points.

Excavation of contaminated soils will essentially remove the source and may eliminate the need for extensive long-term monitoring. Also, by excavating first in the hot spot areas and allowing the groundwater to drain into the excavation, the surrounding areas of low level contamination can also be targeted. Confirmatory sampling would be required in these surrounding areas to ensure that the residual contamination is within acceptable levels.

Excavation/off-site disposal of contaminated soil, and pumping/treatment of groundwater from the excavation can facilitate the redevelopment and commercialization of the property by summer 2005 more easily than the other options.

6.8 Reporting

During remedy construction, daily field reports will be developed and provided to the NYSDEC. Within 90 days after completion of remediation, a final construction report will be submitted with details of the implemented remedy, as-built drawings, and a long-term monitoring plan. The report and drawings will be certified by a professional engineer.

7.0 INSTITUTIONAL CONTROLS

No institutional controls are anticipated following remediation of the site since all contaminated soils exceeding the TAGM 4046 cleanup values will be excavated and disposed off-site.

8.0 O&M AND LONG-TERM MONITORING

Long-term monitoring will include routine water level measurements and sampling of groundwater at the four monitoring wells. The samples will be analyzed for petroleum compounds and any other parameters found to be of concern based on the supplemental investigation. The sampling and analysis will be performed in accordance with NYSDEC ASP.

9.0 SCHEDULE

Subject to NYSDEC approval, the following schedule is anticipated:

- Work Plan Development — December/February 2005
- Supplemental Investigation — May/June 2005
- Supplemental Investigation — June 2005
- Interim Remedial Measure — July/September 2005
- Remedial Construction Report — November 2005

10.0 PROJECT ORGANIZATION

The proposed project organization chart is presented as Figure 3. Resumes of key personnel are included in Appendix D.

BROWNFIELDS SITE
2530 Hamburg Turnpike, Lackawanna, NY 14218
INTERIM REMEDIAL MEASURE SELECTION REPORT

1. PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

The selected remedy will meet the overall objective of minimizing human contact with the contaminants, and significantly reduce contaminant loadings to the groundwater. Removal of contaminated soils from the source areas will prevent any off-site migration.

2. STANDARDS, CRITERIA, & GUIDANCE (SCG)

Applicable regulatory criteria are discussed in Section 5 of the Work Plan. This interim remedial measure will allow unrestricted use of the property in the future as per Track 1 requirements in the Brownfields Cleanup Program. The site will be remediated to meet the NYSDEC's recommended objectives for soil cleanup (TAGM 4046). In addition any groundwater contamination associated with the soils will be collected in the excavation, treated and discharged to a sanitary sewer under a permit from Erie County.

3. SHORT-TERM EFFECTIVENESS & IMPACTS

Besides protection of the environment in the long-term, it is equally important to ensure the safety of workers and protect public during remediation. Based on an estimated 4,000 cubic yards of contaminated soil, the proposed remedy will take around three months including mobilization and demobilization. Excavation and transportation of the soils has the potential to create fugitive emissions and possibly odor. Dust control measures (e.g. wetting of excavated surfaces) will be implement to prevent fugitive emissions on the site. The dump trucks will be covered before leaving the site. Site work and trucking hours will be limited to weekdays (7 Am to 5 PM) to minimize any impact on the neighborhood. Traffic will be directed by a monitor to ensure public safety.

4. LONG-TERM EFFECTIVENESS & PERMANENCE

Excavation of the contaminated soils from the site is a long-term and permanent solution since the source of the contaminants will be removed. Human exposure and contaminant migration will be permanently eliminated by the excavation of contaminated soils and treatment of the groundwater in the excavation. After completion of the remedy, it is anticipated that the site will be returned to unconditional use with no significant threats to the community or the environment.

5. REDUCTION OF TOXICITY, MOBILITY, OR VOLUME

At this time it is estimated that 4,000 cubic yards of contaminated soil and associated groundwater will be removed. The selected remedy will result in a significant reduction in the volume of contaminated materials since the soils will be excavated. The impact to groundwater is mostly from contact with the contaminated soils which will be permanently removed from the site. The excavated soils will be disposed at a solid waste facility which will reduce the mobility of contaminants to the environment. The groundwater will be treated with carbon filters and the used carbon disposed off-site.

6. IMPLEMENTABILITY

The proposed remedy can be easily implemented with light commercial equipment. Adequate protection of workers and the surrounding population can be maintained throughout the duration of the remediation. The site is easily accessed from a major state route and utilities (power, water) are readily available on site. Given the aerial extent and depth (16' to 18') of excavation, measures (e.g., stepped walls) will be taken to allow equipment access into the excavation. The treatment system for the excavation water can be easily set up and operated on the site. All necessary local permits can be obtained prior to start of site work. Long-term O&M will consist of routine monitoring of the groundwater to confirm the effectiveness of the remedy.

7. COST EFFECTIVENESS

The selected interim remedial measure represents the most cost-effective approach based on the cost of the remedy and the ability of the owner to return the site to commercial use within this year. Other options, including in-situ treatment of soils, would extend the duration of the remedy well beyond next year. There are no annual O&M costs associated with this remedy except for routine site monitoring.

WORK PLAN
BROWNFIELDS SITE
INVESTIGATION/INTERIM REMEDIAL MEASURE
2530 HAMBURG TURNPIKE, LACKAWANNA, NY

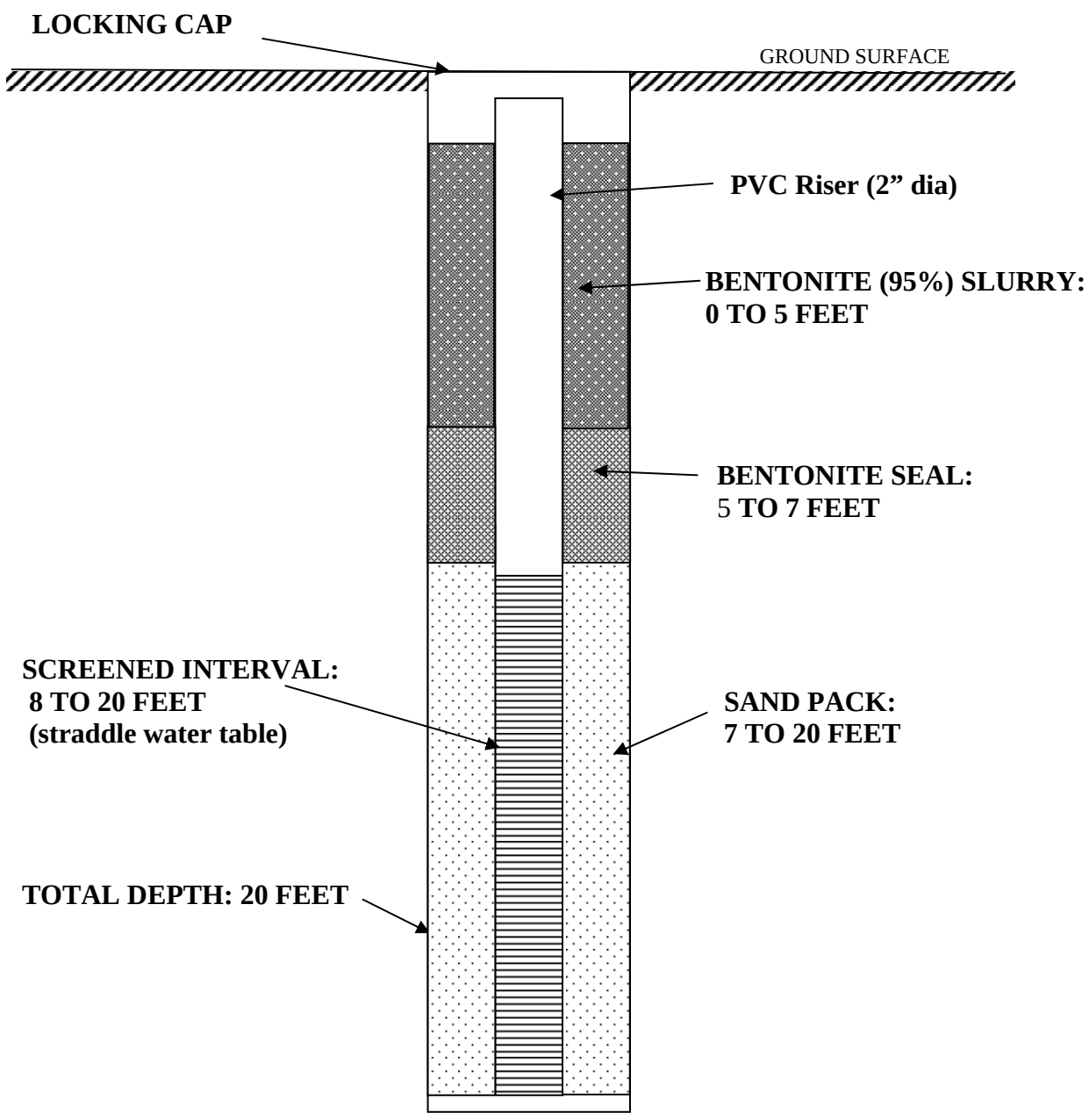
FIGURES

2530 HAMBURG TURNPIKE, LACKAWANNA, NY

SITE LOCATION MAP

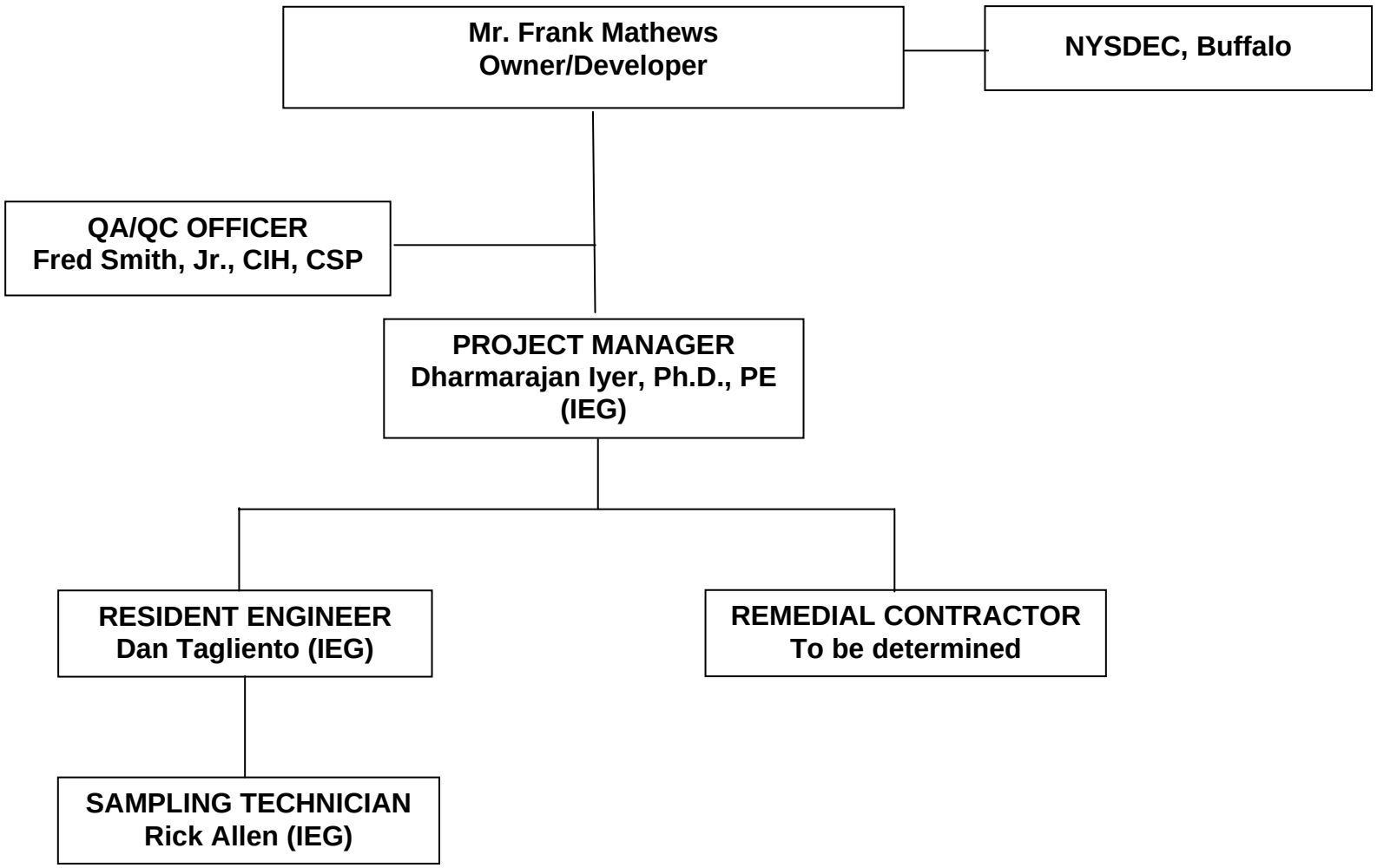
FIGURE 1

IEG



Drawing not to scale

2530 HAMBURG TURNPIKE SI/IRM	**FIGURE 2**
MONITORING WELL DETAILS	**IEG**



2530 HAMBURG TURNPIKE – SI/IRM

PROJECT ORGANIZATION CHART

FIGURE 3

IEG

WORK PLAN
BROWNFIELDS SITE
INVESTIGATION/INTERIM REMEDIAL MEASURE
2530 HAMBURG TURNPIKE, LACKAWANNA, NY

TABLES

TABLE 1
2530 HAMBURG TURNPIKE - BROWNFIELDS REMEDIATION
PROPOSED SAMPLING AND ANALYSIS PROGRAM

ANALYTICAL PARAMETER	SOIL		GROUNDWATER		
	# OF SAMPLES	MS/MSD	# OF SAMPLES	MS/MSD	TRIP BLANK
TCL Volatile Organics	11	2	4	2	1
TCL Semivolatile Organics	11	2	4	2	-
Petsicides/PCBs	11	2	4	2	-
TAL Metals	11	2	4	2	-

Note: See Drawing 2 for proposed soil and monitoring well locations

WORK PLAN
BROWNFIELDS SITE
INVESTIGATION/INTERIM REMEDIAL MEASURE
2530 HAMBURG TURNPIKE, LACKAWANNA, NY

DRAWINGS

TURNPIKE-IEG.dwg 11/25/04-1 KAA

HAMBURG TURNPIKE (WIDTH VARIES) (R.O.W.)

RT. #5

ALBRIGHT COURT (50' R.O.W.)

DONA STREET (50' R.O.W.)

2530

FUTURE PUMP ISLAND

(BUILDING MOVED TO CHURCH OFF SITE)

FUTURE BUILDING

EXISTING BUS STATION

(EXISTING BLACKTOP) (TO BE REMOVED)

OLD GASOLINE TANKS (REMOVED)

OLD FILLING STATION

EX. 6" WATER

EX. GAS

CONC. WALK

EX. 6" SAN. LATERAL

EX. 3" WATER

UTEL

EX. 12" PERF. HDPE

EX. DI. RIM 576.20 INV. 12" 573.21 (N&E)

EX. SAN. MH. RIM 577.01 8" INV. 566.57 (N) 8" INV. 566.47 (SE)

EX. 12" STORM

EX. 8" SAN.

EX. STORM

EX. 10" SAN.

EX. GA

30' 0 30'

SCALE: 1"= 30'

LEGEND

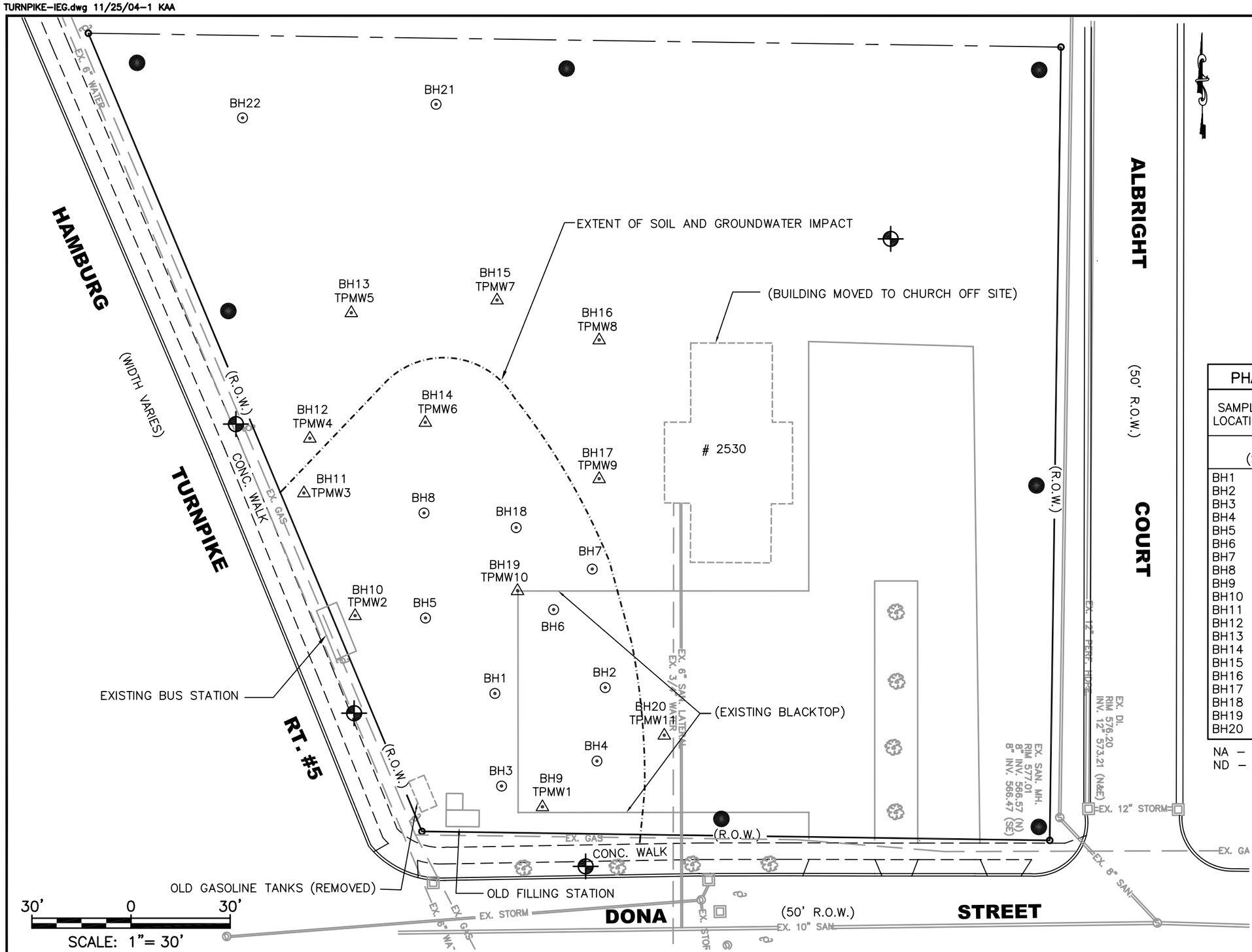
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- HYDRANT
- UTILITY POLE
- CATCH BASIN
- TREE
- 619.40 EXISTING SPOT ELEVATION

IEG IYER ENVIRONMENTAL GROUP

2530 HAMBURG TURNPIKE – BROWNFIELD REMEDIATION
SITE LAYOUT/PROPOSED REDEVELOPMENT

DRAWING 1

TURNPIKE-IEG.dwg 11/25/04-1 KAA



LEGEND

- PROPOSED MONITORING WELL
- PROPOSED GEOPROBE SOIL SAMPLE
- PIEZOMETER (2004)
- BOREHOLE (2004)
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- HYDRANT
- UTILITY POLE
- CATCH BASIN
- TREE

PHASE II INVESTIGATION RESULTS (2004)

SAMPLE LOCATION	TOTAL BTEX	TOTAL STARS 8021	SAMPLE LOCATION	TOTAL BTEX	TOTAL STARS 8021
BORINGS (SOIL, mg/Kg)			PIEZOMETERS (WATER, mg/L)		
BH1	NA	NA	BH1	--	--
BH2	ND	0.0	BH2	--	--
BH3	1.3	15.9	BH3	--	--
BH4	ND	0.0	BH4	--	--
BH5	12.4	34.3	BH5	--	--
BH6	NA	NA	BH6	--	--
BH7	0.2	0.7	BH7	--	--
BH8	53.8	207.2	BH8	--	--
BH9	0.1	0.4	BH9-TPMW1	0.2	0.5
BH10	0.9	1.7	BH10-TPMW2	2.6	3.3
BH11	1.3	2.8	BH11-TPMW3	3.0	4.0
BH12	ND	ND	BH12-TPMW4	ND	ND
BH13	ND	ND	BH13-TPMW5	ND	ND
BH14	0.0	0.5	BH14-TPMW6	ND	0.0
BH15	ND	ND	BH15-TPMW7	ND	ND
BH16	NA	NA	BH16-TPMW8	ND	ND
BH17	ND	0.0	BH17-TPMW9	ND	ND
BH18	0.0	0.8	BH18	--	--
BH19	0.5	1.4	BH19-TPMW10	0.2	0.4
BH20	NA	NA	BH20-TPMW11	ND	ND

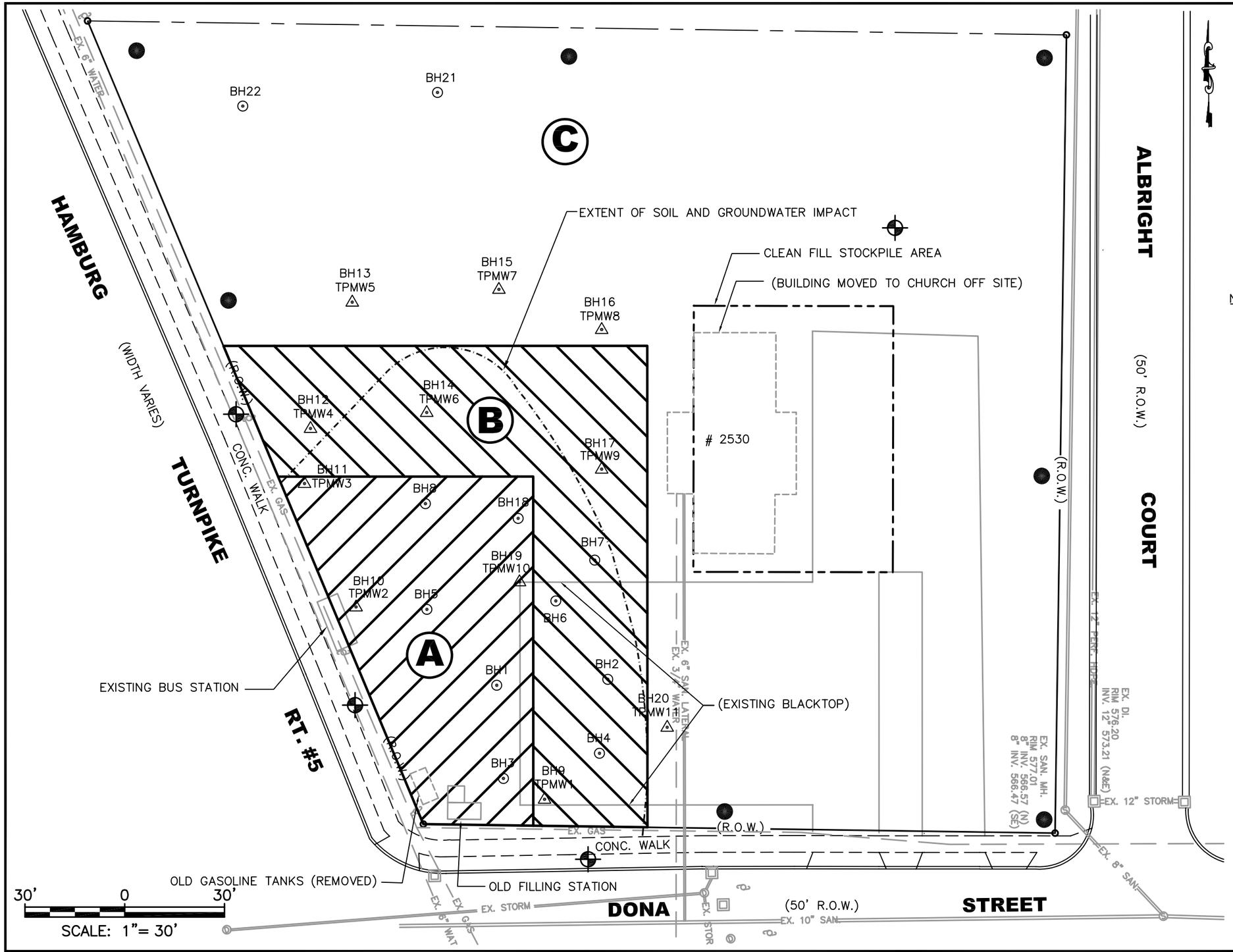
NA - NOT ANALYZED
ND - NOT DETECTED

IEG IYER ENVIRONMENTAL GROUP

2530 HAMBURG TURNPIKE - BROWNFIELDS REMEDIATION
PREVIOUS/PROPOSED SAMPLING PLAN

DRAWING 2

TURNPIKE-IEG.dwg 11/25/04-1 KAA



LEGEND

- PROPOSED MONITORING WELL
- PROPOSED GEOPROBE SOIL SAMPLE
- PIEZOMETER (2004)
- BOREHOLE (2004)
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- HYDRANT
- UTILITY POLE
- CATCH BASIN

NOTES:

1. SPECIFIC AREAS OF EXCAVATION OF CONTAMINATED SOIL ARE AS FOLLOWS (OR AS DIRECTED IN THE FIELD BY THE ENGINEER/NYSDEC):
   - (i) AREA MARKED A WITH KNOWN CONTAMINATION EXCEEDING NYSDEC GUIDANCE VALUES WILL BE EXCAVATED FIRST, FOLLOWED BY CONFIRMATORY SAMPLING OF THE EXCAVATION LIMITS. DEPTH OF EXCAVATION WILL BE BASED ON FIELD SCREENING FOR VOLATILE ORGANICS WITH PID AND CONFIRMATORY SAMPLING.
   - (ii) AREA MARKED B WITH LOW TO NON-DETECT LEVELS OF CONTAMINANTS (BELOW NYSDEC GUIDANCE VALUES) WILL BE THEN BE EXCAVATED IN INCREMENTS BASED ON FIELD PID SCREENING AND CONFIRMATORY SAMPLING.
   - (iii) AREA MARKED C (REMAINING PROPERTY) WILL BE TESTED FOR POTENTIAL CONTAMINATION AND REMEDIATED AS NECESSARY.
2. THE TOP 0 TO 4 FEET WILL BE EXCAVATED IN INCREMENTS AND FIELD SCREENED WITH A PID, AND IF NO CONTAMINATION IS OBSERVED, THE EXCAVATED MATERIAL WILL BE STOCKPILED ON SITE FOR USE AS BACKFILL.
3. FOUR NEW MONITORING WELLS WILL BE INSTALLED TO A DEPTH OF 18' AT LOCATIONS SHOWN AND SCREENED FROM 8' TO 18'. INSTALLATION PROCEDURES AND WELL DETAILS ARE PROVIDED IN THE RAWP.
4. THE EXISTING PIEZOMETERS AND THE NEW MONITORING WELLS WILL BE USED TO MEASURE GROUNDWATER LEVELS AND TO ESTABLISH GROUNDWATER FLOW DIRECTIONS.
5. THE EXISTING PIEZOMETERS WILL BE ABANDONED AFTER COMPELETION OF THIS REMEDIAL ACTION.
6. THE SOIL SAMPLES FROM THE PROPOSED NEW SOIL SAMPLING LOCATIONS WILL BE COLLECTED, COMPOSITED (AS APPLICABLE) AND ANALYZED FOR PARAMETERS AS PER THE RAWP.
7. GROUNDWATER FROM THE PROPOSED NEW MONITORING WELLS WILL BE SAMPLED AND ANALYZED FOR PARAMETERS AS PER THE RAWP.
8. THE EXCAVATED AREAS WILL BE BACKFILLED WITH CLEAN FILL FROM ONSITE (IF AVAILABLE) AND FROM A KNOWN OFF-SITE SOURCE.

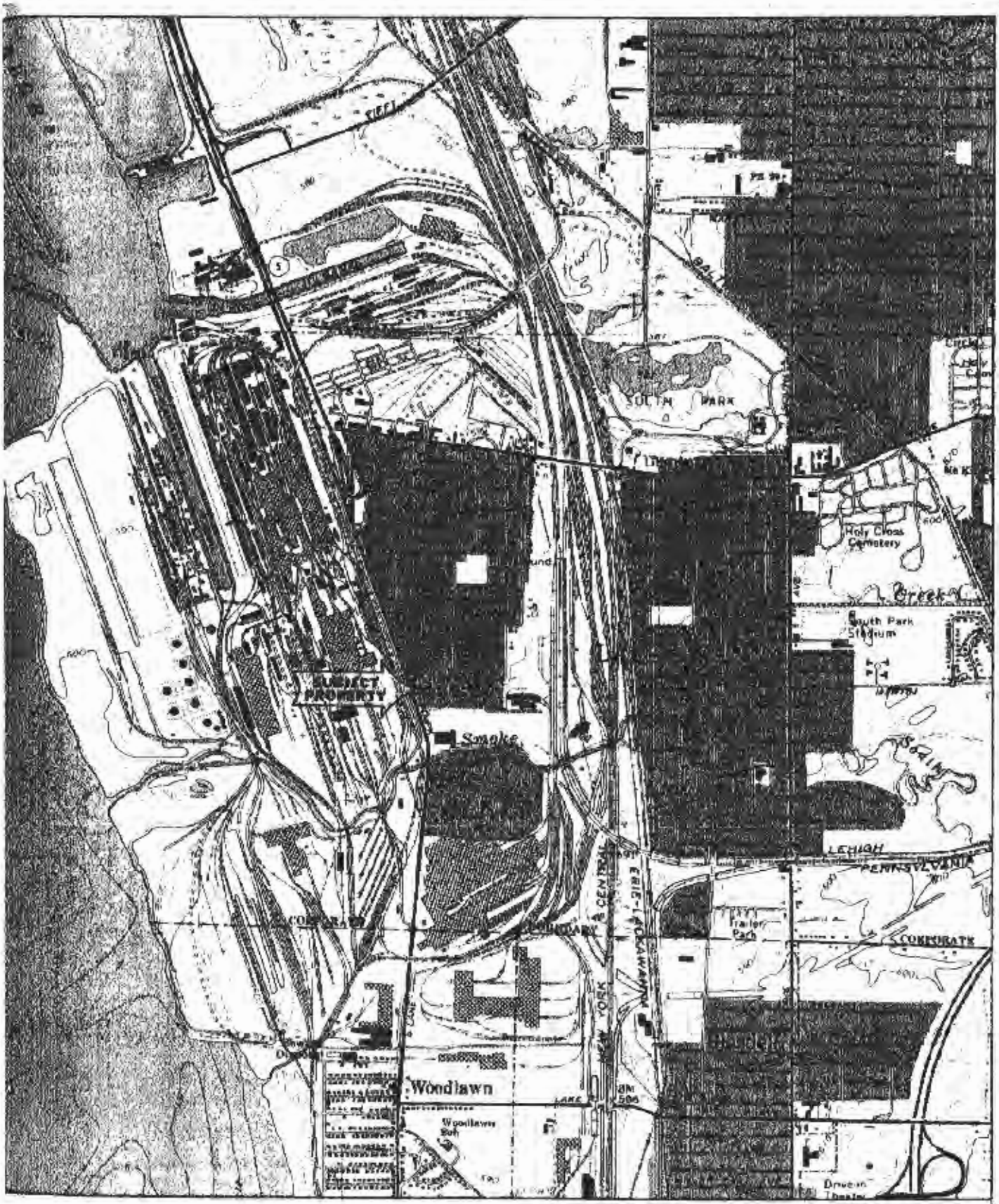
IEG IYER ENVIRONMENTAL GROUP

2530 HAMBURG TURNPIKE – BROWNFIELDS REMEDIATION
PROPOSED REMEDIATION PLAN

DRAWING 3

WORK PLAN
BROWNFIELDS SITE
INVESTIGATION/INTERIM REMEDIAL MEASURE
2530 HAMBURG TURNPIKE, LACKAWANNA, NY

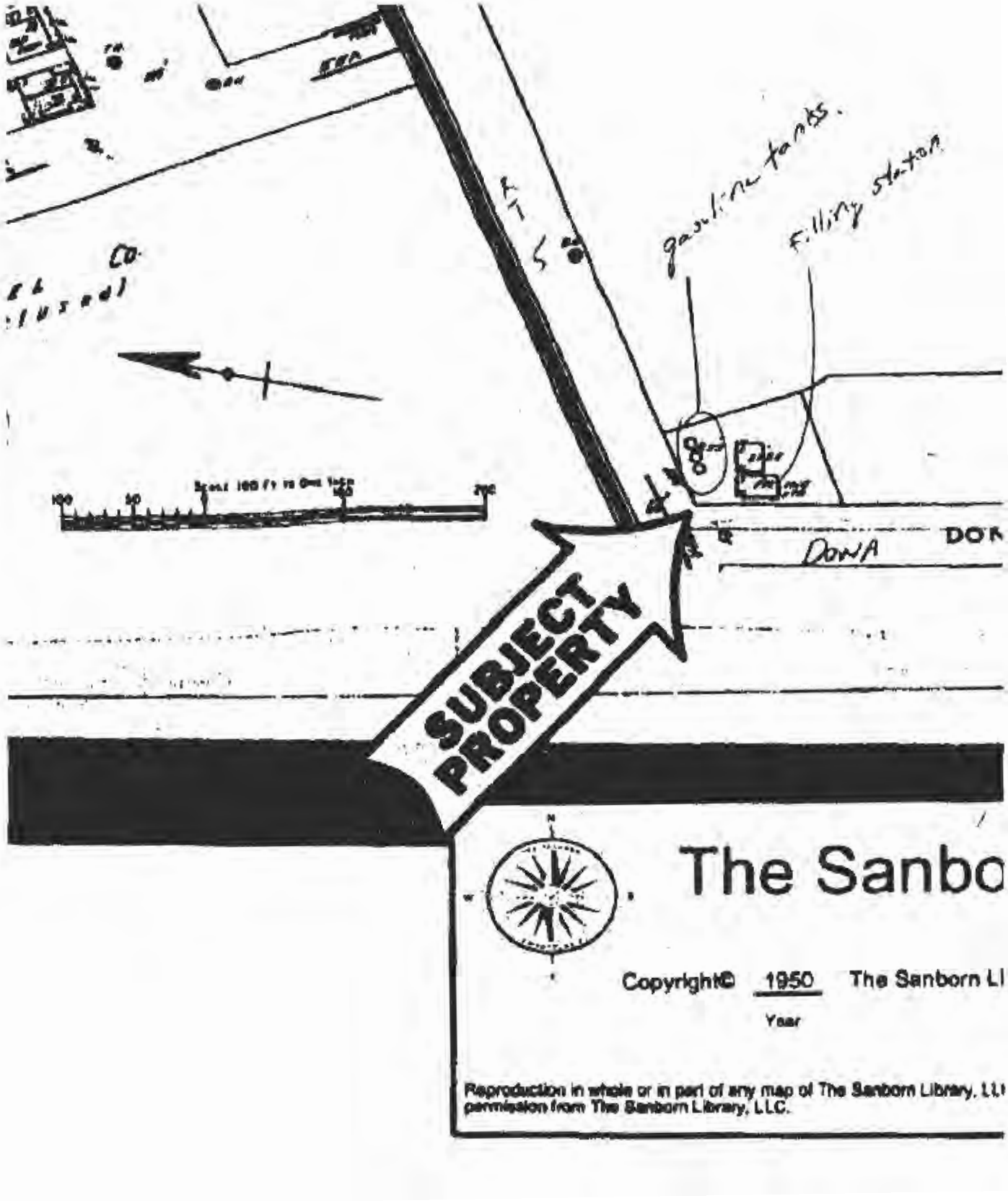
APPENDIX A
MAPS FROM PREVIOUS INVESTIGATIONS



Name: BUFFALO SE
Date: 4/26/2004
Scale: 1 inch equals 2000 feet

Location: 042° 49' 10.9" N 078° 50' 30.5" W
Caption: Figure 1: Site Location Map

FROM


gasoline tanks.
Filling station
DOWA
SUBJECT PROPERTY
The Sanbo
Copyright© 1950 The Sanborn Li
Year
Reproduction in whole or in part of any map of The Sanborn Library, LL
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WORK PLAN
BROWNFIELDS SITE
INVESTIGATION/INTERIM REMEDIAL MEASURE
2530 HAMBURG TURNPIKE, LACKAWANNA, NY

APPENDIX B
ANALYTICAL DATA FROM PREVIOUS INVESTIGATIONS

Sample Analysis

Following labeling of the laboratory-supplied sample containers, selected soils were placed on ice. The samples were then submitted, under standard chain-of-custody, to a New York State Department of Health (NYSDOH) approved laboratory, for analysis in accordance with United States Environmental Protection Agency (USEPA) SW-846 Methods 8260 [STARS list plus 10 Tentatively Identified Compounds (TICs)] for VOCs and 8270 [STARS list plus 20 TICs] for VOCs and S-VOCs, respectively.

The following table summarizes the specific analytical testing performed and their respective sample locations.

Sample Location	Analytical Testing Performed
BH2 (14-16 ft. bgs)	8260 STARS List + 10 TICs
BH3 (2-4 ft. bgs)	8260 STARS List + 10 TICs / 8270 STARS List + 20 TICs
BH4 (4-6 ft. bgs)	8260 STARS List + 10 TICs
BH5 (6-8 ft. bgs)	8260 STARS List + 10 TICs
BH7 (14-16 ft. bgs)	8260 STARS List + 10 TICs
BH8 (6-8 ft. bgs)	8260 STARS List + 10 TICs / 8270 STARS List + 20 TICs

Results of Field Investigation

Eight boreholes (BH1 through BH8) were completed in accessible areas associated with the former UST area of Station No. 2 as identified by the historic Sanborn maps (See Figure 2). A total of 55 soil samples were collected for geologic description. The boreholes generally encountered miscellaneous sandy gravel (slag), gravel (slag) and silty clay fill material to depths of approximately 16 ft. bgs. Apparent groundwater was encountered in all the test borings at approximately 11 ft. bgs.

PID measurements were above total ambient air background VOC measurements (i.e., 0.0 parts per million, ppm) in all the samples collected. These elevated concentrations ranged from 0.3 parts per million (ppm) to 1,903 ppm (BH3, 6-8 ft. bgs). Petroleum-type odors were detected in every test boring location. A suspect petroleum-type sheen was also observed in BH1, BH5, and BH8. In LCS' experience, the PID measurements and field observations suggest some petroleum impact.

Refer to the attached subsurface logs for soil classification for each sample interval, field observations and PID measurements.

Analytical Testing Results

The soil samples collected and analyzed detected the following analytes. The respective concentrations as well as applicable regulatory guidance values are also listed for comparison. Analytes not detected are not shown.

Soil - VOC Analysis by 8260 (STARS list+10 TICs)

Compound	BH2 (14-16 ft. bgs) µg/kg	BH3 (2-4 ft. bgs) µg/kg	BH4 (4-6 ft. bgs) µg/kg	BH5 (6-8 ft. bgs) µg/kg	BH7 (14-16 ft. bgs) µg/kg	BH8 (6-8 ft. bgs) µg/kg	STARS Memo #1 Guidance Values µg/kg	NYSDEC Guidance Value µg/kg
benzene	<10	**15**	<10	[redacted]	<8	**43**	14	60 or MDL
toluene	<10	29	<10	**139**	17	**376**	100	1,500
ethylbenzene	<10	**372**	<10	4,140	48	[redacted]	100	5,500
m,p-xylene	<20	**832**	<20	[redacted]	**114**	[redacted]	100	1,200*
o-xylene	<10	75	<10	[redacted]	21	[redacted]	100	1,200*
isopropylbenzene	<10	**108**	<10	**371**	52	**532**	100	2,300
n-propylbenzene	<10	**245**	<10	**795**	92	[redacted]	100	3,700
1,3,5-trimethylbenzene	<10	**342**	<10	1,150	41	[redacted]	100	3,300
tert-butylbenzene	<10	<10	<10	<10	<8	<10	100	10,000**
1,2,4-trimethylbenzene	23	[redacted]	19	[redacted]	**185**	[redacted]	100	10,000**
sec-butylbenzene	<10	49	<10	90	31	**234**	100	10,000**
n-butylbenzene	<10	**253**	<10	**364**	40	**1,020**	100	10,000**
p-isopropyltoluene	<10	44	<10	82	<8	**132**	100	10,000**
naphthalene	<10	**230**	<10	**554**	21	**1,010**	200	13,000
TICs	296	6,109	653	[redacted]	5,187	5,571	NA	10,000**

µg/kg = micrograms per kilogram

NYSDEC Guidance Values = Division Technical and Administrative Guidance Memorandum No. 4046 (TAGM 4046); Determination of Soil Cleanup Objectives and Cleanup levels and addendum (August, 2001).

* NYSDEC guidance value is the sum of m,p-xylene and o-xylene.

** As per TAGM 4046 individual and sum of VOCs not listed (tentatively identified compounds (TICs)) must be less than or equal to 10,000 µg/kg.

< = Analyte was not detected at the detection level indicated.

NA = Not Applicable

MDL = Method Detection Limit

Bold = Analyte detected above STARS Memo #1 Guidance Values

[redacted] = Analyte detected above NYSDEC TAGM 4046-94 (Revised August 2001) Recommended Soil Cleanup Objectives.

Total BTEX	ND	1323	ND	12367	200	53,773			ppb
Total STARs	23	15892	19	34,273	683	207201			

Soil - SVOC Analysis by 8270 STARS list + 20 TICs

Compound	BH3 (2-4 ft. bgs) µg/kg	BH8 (6-8 ft. bgs) µg/kg	STARS Memo #1 Guidance Values µg/kg	NYSDEC Guidance Value µg/kg
naphthalene	<67	372	200	13,000
benzo (a) anthracene	[redacted]	<67	0.04	224 or MDL
benzo (b) fluoranthene	[redacted]	<67	0.04	220 or MDL
benzo (k) fluoranthene	[redacted]	<67	0.04	220 or MDL
benzo (g, h, i) perylene	**236**	<67	0.04	50,000**
benzo (a) pyrene	[redacted]	<67	0.04	61 or MDL
chrysene	[redacted]	<67	0.04	400
dibenzo (a, h) anthracene	[redacted]	<67	1,000	14.3 or MDL
fluoranthene	836	<67	1,000	50,000**
fluorene	95	<67	1,000	50,000**
indeno (1, 2, 3-cd) pyrene	**249**	<67	04 [4]	3,200
phenanthrene	433	<67	1,000	50,000**
pyrene	686	<67	1,000	50,000**
Total Estimated TICs	21,960 J	4,020 J	NA	500,000**

µg/kg = micrograms per kilogram

NYSDEC Guidance Values = Division Technical and Administrative Guidance Memorandum No. 4046 (TAGM 4046): Determination of Soil Cleanup Objectives and Cleanup levels and addendum (August, 2001).

** As per TAGM 4046, individual non-cardinogenic SVOCs must be ≤ 50,000 µg/kg and total SVOCs not listed (tentatively identified compounds, TICs) must be ≤ 500,000 µg/kg.

J = This value is estimated

MDL = Method Detection Limit

NA = Not Analyzed

Bold = Analyte detected above STARS Memo #1 Guidance Value

[redacted] = Analyte detected above NYSDEC TAGM 4046-94 (Revised August 2001) Recommended Soil Cleanup Objectives.

Conclusion

Based on the results of the investigation completed, impacted soils (i.e., soils exhibiting petroleum-type odors or sheening, and/or resulted in elevated analytical results for specific analytes) were discovered in several locations on-site, as summarized below.

Borehole	Petroleum-type odors	Petroleum-type sheen	Analytical Testing Performed	Analytical Results above STARS	Analytical Results above TAGM
BH1	11-16 ft. bgs	12-16 ft. bgs	None	NA	NA
BH2	13-16 ft. bgs	None	VOCs	None	None
BH3	2-16 ft. bgs	None	VOCs, SVOCs	VOCs, SVOCs	VOCs, SVOCs
BH4	4-6 and 14-16 ft. bgs	None	VOCs	None	None
BH5	4-16 ft. bgs	8-16 ft. bgs	VOCs	VOCs	VOCs
BH6	14-16 ft. bgs	None	None	NA	NA
BH7	14-16 ft. bgs	None	VOCs	VOCs	VOCs
BH8	4-16 ft. bgs	12-16 ft. bgs	VOCs, SVOCs	VOCs	None

NA = Not Analyzed

Based on the analytical results of this investigation, VOC-impacted soils and SVOC-impacted were discovered on-site. This study is subject to the limitations located within the appendix.

Recommendations

A copy of this report should be provided to the NYSDEC for their review. Prior to initiation of any remedial activities, further investigation is recommended to assess groundwater for impact and to better determine the extent of on-site contamination. Any study should include additional borings proximate to Station No. 1 to assess whether that station resulted in some of the observed impact noted on-site that was not identified in the previous study. LCS can provide a cost estimate for completion of any additional work required.

Thank you for allowing LCS to service your environmental needs. If you have any questions or require additional information, please do not hesitate to call our office.

Sincerely,

Jeffrey M. Rowley
Geologist

Reviewed by:

Douglas B. Reid
VP, Environmental Services
Environmental Scientist

Attachments

Soil - SVOC Analysis by 8270 (STARS list + 20 TICs)

Compound	BH10 (8-10 ft. bgs) µg/kg	STARS Memo #1 Guidance Values µg/kg	NYSDEC Guidance Value µg/kg
Total Estimated TICs	1,200 J	NA	500,000**

µg/kg = micrograms per kilogram
NYSDEC Guidance Values = Division Technical and Administrative Guidance Memorandum No. 4046 (TAGM 4046): Determination of Soil Cleanup Objectives and Cleanup levels and addendum (August, 2001).
** As per TAGM 4046, individual non-carcinogenic SVOCs must be ≤ 50,000 µg/kg and total SVOCs not listed (tentatively identified compounds, TICs) must be ≤ 500,000 µg/kg.
J = This value is estimated.
NA = Not Applicable

Groundwater - SVOC Analysis by (8270 STARS list)

Compound	TPMW1 µg/L	TPMW10 µg/L	NYSDEC Groundwater Standard µg/L
Phenanthrene	<2	[redacted]	50

µg/L = micrograms per liter
NYSDEC Groundwater Standards = 6NYCRR Part 703, June 1998.
[redacted] = Analyte detected at a concentration above NYSDEC Class GA Groundwater standards.

Discussion

Waste Stream Technology, Inc. provided the following comments regarding the analysis they performed on the above listed soil and groundwater samples.

"Upon examination of the analysis and samples... it is obvious that certain samples could well be contaminated with petroleum product but are not amenable to analysis by conventional New York State DEC STARS methodology.

Samples of particular concern are sample TPMW10 and TPMW1. Sample TPMW10 has both visible floating free (petroleum?) product and (petroleum?) product stuck to the sides of the volatile vial. The chromatograms for both samples have raised baselines that are indicative of probable petroleum impact. Unfortunately the raised baseline of the chromatogram indicates possible detector saturation and possible false negatives for target compounds. There for I (Waste Stream Technology, Inc.) would recommend sample TPMW10 be analyzed for Total Extractable Hydrocarbons and Diesel Range Organics. Upon further study of the chromatograms and tentatively identified compounds I (Waste Stream Technology, Inc.) believe the following samples suspect [for] petroleum impact of non-target compound nature: BH10 (8-10), BH11 (8-10), BH14 (8-10), BH18 (6-8), BH19 (12-14)."

Soil - VOC Analysis by 8260 (STARS list+10 TICs)

Compound	BH9 (14-16 ft. bgs) µg/kg	BH10 (8-10 ft. bgs) µg/kg	BH11 (8-10 ft. bgs) µg/kg	BH12 (4-6 ft. bgs) µg/kg	BH13 (6-8 ft. bgs) µg/kg	BH14 (8-10 ft. bgs) µg/kg	BH15 (4-6 ft. bgs) µg/kg	BH17 (15-15.75 ft. bgs) µg/kg	BH18 (6-8 ft. bgs) µg/kg	BH19 (12-14 ft. bgs) µg/kg	STARS Memo #1 Guidance Values µg/kg	NYSDEC Guidance Value µg/kg
benzene	12	**44**	17	<10	<8	<10	<10	<10	<9	35	14	60 or MDL
toluene	<9	34	39	<10	<8	<10	<10	<10	<9	21	100	1,500
ethylbenzene	17	**525**	**868**	<10	<8	20	<10	<10	11	**237**	100	5,500
m,p-xylene	51	**323**	**336**	<20	<17	<20	<20	<20	<17	**201**	100	1,200*
o-xylene	<9	16	46	<10	<8	<10	<10	<10	<9	23	100	1,200*
isopropylbenzene	30	74	**166**	<10	<8	52	<10	<10	125	**151**	100	2,300
n-propylbenzene	62	**176**	**308**	<10	<8	**129**	<10	<10	**268**	**257**	100	3,700
1,3,5-trimethylbenzene	64	**167**	**291**	<10	<8	**109**	<10	<10	<9	61	100	3,300
tert-butylbenzene	<9	<9	<10	<10	<8	<10	<10	<10	<9	<10	100	10,000**
1,2,4-trimethylbenzene	137	19	93	<10	<8	<10	<10	12	<9	**218**	100	10,000**
sec-butylbenzene	<9	18	41	<10	<8	28	<10	<10	119	41	100	10,000**
n-butylbenzene	28	79	**162**	<10	<8	76	<10	<10	**238**	**103**	100	10,000**
p-isopropyltoluene	<9	12	42	<10	<8	19	<10	<10	17	<10	100	10,000**
naphthalene	12	**228**	**413**	<10	<8	**98**	<10	<10	<9	17	200	13,000
TICs	2,160 J	7,850 J	[redacted]	513 J	130 J	[redacted]	86 J	112 J	8,010 J	[redacted]	NA	10,000**

13400 J 12350 J 10480 J

µg/kg = micrograms per kilogram

NYSDEC Guidance Values = Division Technical and Administrative Guidance Memorandum No. 4046 (TAGM 4046): Determination of Soil Cleanup Objectives and Cleanup levels and addendum (August, 2001).

* NYSDEC guidance value is the sum of m,p-xylene and o-xylene.

** As per TAGM 4046 individual and sum of VOCs not listed (tentatively identified compounds (TICs)) must be less than or equal to 10,000 µg/kg.

< = Analyte was not detected at the detection level indicated.

NA = Not Applicable

MDL = Method Detection Limit

Bold = Analyte detected above STARS Memo #1 Guidance Values

[redacted] = Analyte detected above NYSDEC TAGM 4046-94 (Revised August 2001) Recommended Soil Cleanup Objectives.

Total BTEX	80	942	1306	ND	ND	20	ND	ND	11	517	ppb
Total STARS	413	1715	2822	ND	ND	531	ND	12	778	1365	ppb

July 2004

Groundwater - VOC Analysis by 8260 (STARS list)

Compound	TPMW1 µg/L	TPMW2 µg/L	TPMW3 µg/L	TPMW4 µg/L	TPMW5 µg/L)	TPMW6 µg/L	TPMW7 µg/L	TPMW8 µg/L	TPMW9 µg/L	TPMW10 µg/L	TPMW11 µg/L	NYSDEC Groundwater Standard µg/L
benzene				<1	<1	<1	<1	<1	<1		<1	1
toluene				<1	<1	<1	<1	<1	<1		<1	5
ethylbenzene				<1	<1	<1	<1	<1	<1		<1	5
m,p-xylene				<2	<2	<2	<2	<2	<2		<2	5
o-xylene	3			<1	<1	<1	<1	<1	<1		<1	5
Isopropylbenzene				<1	<1		<1	<1	<1		<1	5
n-propylbenzene				<1	<1		<1	<1	<1		<1	5
1,3,5-trimethylbenzene				<1	<1	<1	<1	<1	<1		<1	5
tert-butylbenzene	5	<10	<10	<1	<1	<1	<1	<1	<1	<10	<1	5
1,2,4-trimethylbenzene				<1	<1	<1	<1	<1	<1		<1	5
sec-butylbenzene		<10	<10	<1	<1	4	<1	<1	<1	<10	<1	5
p-isopropyltoluene		<10	<10	<1	<1	<1	<1	<1	<1	<10	<1	5
n-butylbenzene				<1	<1	4	<1	<1	<1		<1	5
naphthalene	4			<1	<1	3	<1	<1	<1	<10	<1	10

µg/L = micrograms per liter

NYSDEC Groundwater Standards = 6NYCRR Part 703, June 1998.

[redacted] = Analyte detected at a concentration above NYSDEC Class GA Groundwater standards.

177 2621 3015 ND 213

474 3328 3955 26 398

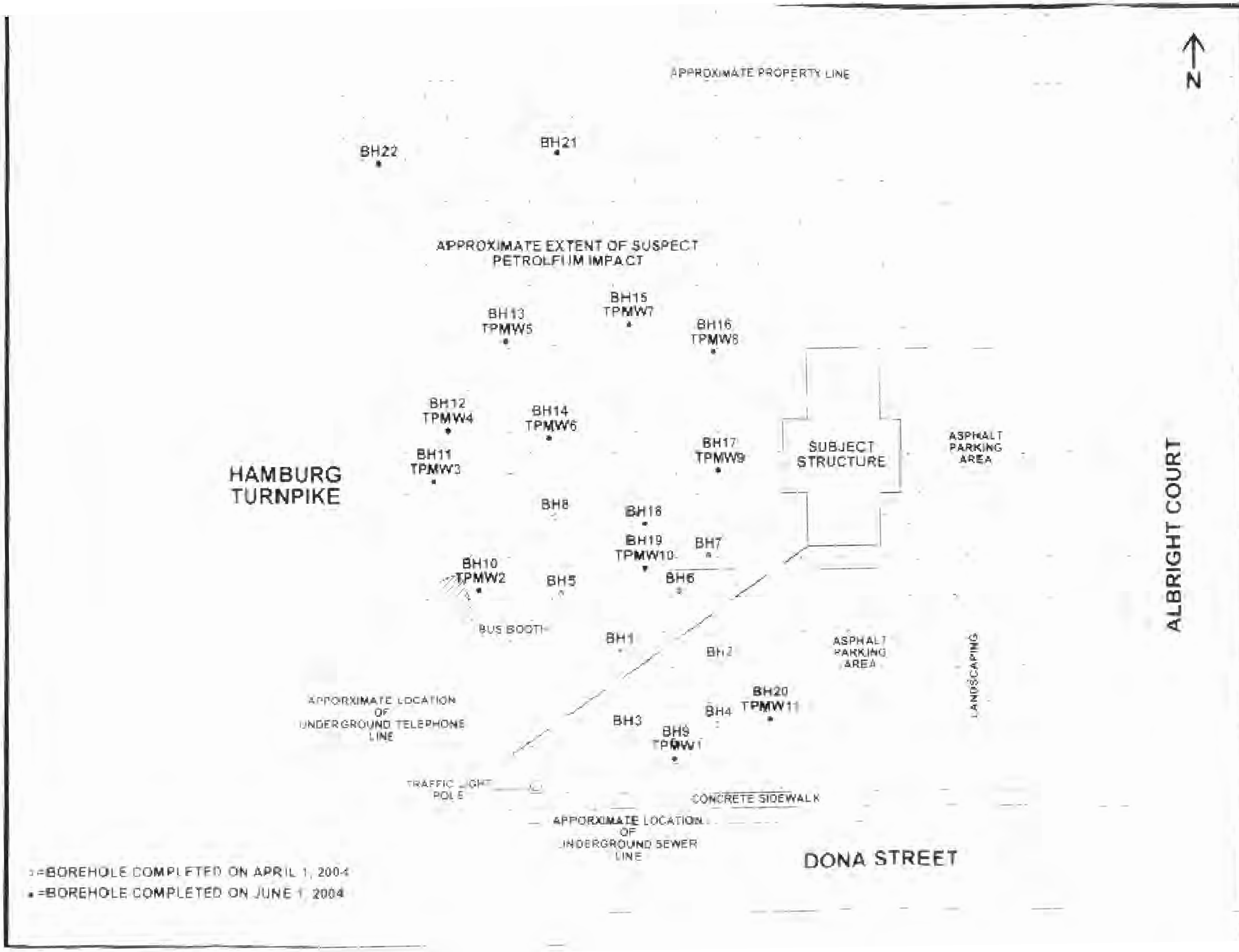
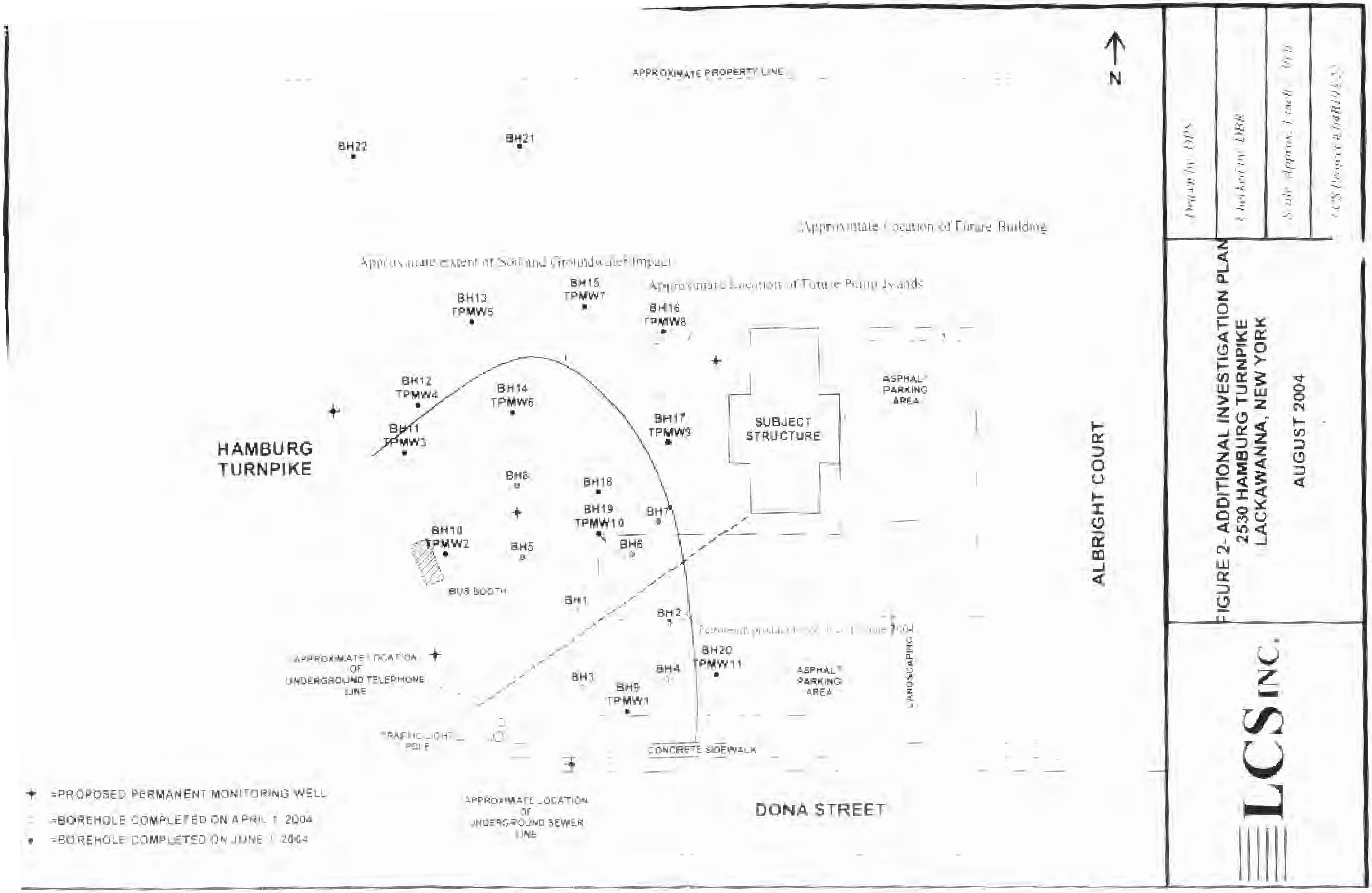


FIGURE 2- SITE INVESTIGATION PLAN
2530 HAMBURG TURNPIKE
LACKAWANNA, NEW YORK

JUNE 2004

Drawn by: DPS
Checked by: DBR
Scale: Approx. 1 inch = 50 ft
LCS Project # 04B1045.21

LCS INC.



APPROXIMATE PROPERTY LINE
N
BH22
BH21
Approximate Location of Future Building
Approximate extent of Soil and Groundwater Impact
Approximate Location of Future Pump Islands
BH15
TPMW7
BH13
TPMW5
BH16
TPMW8
BH12
TPMW4
BH14
TPMW6
ASPHALT
PARKING
AREA
BH17
TPMW9
SUBJECT
STRUCTURE
BH11
TPMW3
HAMBURG
TURNPIKE
BH8
BH18
BH19
TPMW10
BH7
BH10
TPMW2
BH5
BH6
BUS BOOTH
BH1
BH2
BH20
TPMW11
APPROXIMATE LOCATION
OF
UNDERGROUND TELEPHONE
LINE
BH4
BH3
BH9
TPMW1
ASPHALT
PARKING
AREA
LANDSCAPING
TRAFFIC LIGHT
POLE
CONCRETE SIDEWALK
ALBRIGHT COURT
=PROPOSED PERMANENT MONITORING WELL
=BOREHOLE COMPLETED ON APRIL 1, 2004
=BOREHOLE COMPLETED ON JUNE 1, 2004
APPROXIMATE LOCATION
OF
UNDERGROUND SEWER
LINE
DONA STREET
FIGURE 2- ADDITIONAL INVESTIGATION PLAN
2530 HAMBURG TURNPIKE
LACKAWANNA, NEW YORK
AUGUST 2004
LCS INC.

WORK PLAN
BROWNFIELDS SITE
INVESTIGATION/INTERIM REMEDIAL MEASURE
2530 HAMBURG TURNPIKE, LACKAWANNA, NY

APPENDIX C
BORING LOGS/DETAILS
FOR TEMPORARY WELLS

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Turnpike, Lackawanna, New York | PROJECT No.: 04B193.22

CLIENT: M&T Bank | WELL/BORING No.: BH1

DATE STARTED: 4/01/04 | DATE COMPLETED: 4/01/04 | RECORDED BY: JMR

GROUNDWATER DEPTH WHILE DRILLING: ~11 ft. bgs | AFTER COMPLETION: NA

WEATHER: ~35F, Cloudy | DRILL RIG: Geoprobe | DRILLER: BMS Drilling

DRILL SIZE/TYPE: Macro-core | SAMPLE HAMMER: WEIGHT NA | FALL NA

Sample No.	PID/HNu Reading (ppm)	Depth (Feet)	Type *	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	5.4	0-4	U	-	-	15	0-3.5ft: Blackish brown gravelly sand (coarse, medium, fine, medium dense, moist)
2	0.7	4-6	U	-	-	20	3.5-4.5ft: Brown sand (fine, dense, moist)
3	0.7	6-8	U	-	-	20	4.5-12ft: Grayish black silty clay (low plasticity, stiff to soft, moist to wet)
4	0.5	8-10	U	-	-	20	12-16ft: Grayish blue (slag) (angular to sub-angular, coarse, fine, loose, wet)
5	1.0	10-12	U	-	-	20	
6	27.6	12-16	U	-	-	15	

NOTES: NA = Not Applicable

ft. bgs = feet below ground surface

Fill to ~16 ft. bgs

Slight to strong petroleum-type odors @ ~11-16 ft. bgs

Petroleum-type sheen detected @~12-16 ft. bgs

*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P - PISTON TUBE C - CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Turnpike, Lackawanna, New York
PROJECT No. 04B193.22
CLIENT: M&T Bank
WELL/BORING No. BH2
DATE STARTED: 4/01/04 DATE COMPLETED: 4/01/04 RECORDED BY: JMR
GROUNDWATER DEPTH WHILE DRILLING: ~11 ft. bgs AFTER COMPLETION: NA
WEATHER: ~35F, Cloudy DRILL RIG: Geoprobe DRILLER: BMS Drilling
DRILL SIZE/TYPE: Macro-core SAMPLE HAMMER: WEIGHT NA FALL NA

Sample No.	PID/HNu Reading (ppm)	Depth (Feet)	Type *	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	0.3	0-4	U	-	-	10	0-0.4ft: Asphalt
2	0.7	4-6	U	-	-	20	0.4-4.5ft: Blackish brown gravelly sand (coarse, medium, fine, medium dense, moist)
3	0.5	6-8	U	-	-	20	4.5-6ft: Brownish gray clayey silt (low plasticity, moist)
4	0.8	8-10	U	-	-	20	6-8ft: Brown clayey sandy silt (low plasticity, moist)
5	2.7	10-12	U	-	-	20	8-14.5ft: Brownish gray silty gravelly sand (coarse, medium, fine, medium dense, moist to wet)
6	1.5	12-14	U	-	-	20	14.5-16ft: Dark brown sandy gravel (angular, coarse, fine, dense, moist) (slag)
7	153	14-16	U	-	-	20	

NOTES NA = Not Applicable
ft. bgs = feet below ground surface
Fill to ~16 ft. bgs
Moderate petroleum-type odors @ ~13-16 ft. bgs

*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P - PISTON TUBE C - CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Turnpike, Lackawanna, New York
PROJECT No. 04B193.22
CLIENT: M&T Bank
WELL/BORING No. BH3
DATE STARTED: 4/01/04 DATE COMPLETED: 4/01/04 RECORDED BY: JMR
GROUNDWATER DEPTH WHILE DRILLING: ~11 ft. bgs AFTER COMPLETION: NA
WEATHER: ~35F, Cloudy DRILL RIG: Geoprobe DRILLER: BMS Drilling
DRILL SIZE/TYPE: Macro-core SAMPLE HAMMER: WEIGHT NA FALL NA

Sample No.	PID/HNu Reading (ppm)	Depth (Feet)	Type *	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	200	0-2	U	-	-	20	0-4.5ft: Brownish black gravelly sand (coarse, medium, fine, medium dense, moist)
2	2,400	2-4	U	-	-	20	4.5-9.5ft: Gray clayey silt (low plasticity, moist)
3	1,730	4-6	U	-	-	20	9.5-10.5ft: Brown silty clay (low plasticity, soft, moist)
4	1,903	6-8	U	-	-	20	10.5-14ft: Gray clayey silt (low plasticity, moist to wet)
5	1,020	8-10	U	-	-	20	14-16ft: Blackish brown sandy gravel (coarse, fine, angular, dense, moist)(slag)
6	70	10-12	U	-	-	20	
7	799	12-14	U	-	-	20	
8	557	14-16	U	-	-	20	

NOTES: NA = Not Applicable
ft. bgs = feet below ground surface
Staining detected @ ~ 14 ft. bgs
Fill to ~16 ft. bgs
Strong petroleum-type odors @ ~2-16 ft. bgs

*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P - PISTON TUBE C – CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Turnpike, Lackawanna, New York
PROJECT No. 04B193.22
CLIENT: M&T Bank
WELL/BORING No. BH4
DATE STARTED: 4/01/04 DATE COMPLETED: 4/01/04
RECORDED BY: JMR
GROUNDWATER DEPTH WHILE DRILLING: ~11 ft. bgs
AFTER COMPLETION: NA
WEATHER: ~35F, Cloudy DRILL RIG: Geoprobe
DRILLER: BMS Drilling
DRILL SIZE/TYPE: Macro-core
SAMPLE HAMMER: WEIGHT NA FALL NA

Sample No.	PID/HNu Reading (ppm)	Depth (Feet)	Type *	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	0.7	0-4	U	-	-	10	0-0.4ft: Asphalt
2	107	4-6	U	-	-	20	0.4-4.5ft: Blackish brown gravelly sand (coarse, medium, fine, medium dense, moist)
3	9.6	6-8	U	-	-	20	4.5-6ft: Brownish gray clayey silt (low plasticity, moist)
4	2.7	8-10	U	-	-	20	6-8ft: Brown clayey sandy silt (low plasticity, moist)
5	7.8	10-12	U	-	-	20	8-14.5ft: Brownish gray silty gravelly sand (coarse, medium, fine, medium dense, moist to wet)
6	7.1	12-14	U	-	-	20	14.5-16ft: Dark brown sandy gravel (angular, coarse, fine, dense, moist)(slag)
7	114	14-16	U	-	-	20	

NOTES NA = Not Applicable
ft. bgs = feet below ground surface
Fill to ~16 ft. bgs
Petroleum-type odors @ ~4-6 ft. bgs and ~14-16 ft. bgs

*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P - PISTON TUBE C - CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Turnpike, Lackawanna, New York
PROJECT No. 04B193.22
CLIENT: M&T Bank
WELL/BORING No. BH5
DATE STARTED: 4/01/04
DATE COMPLETED: 4/01/04
RECORDED BY: JMR
GROUNDWATER DEPTH WHILE DRILLING: ~11 ft. bgs
AFTER COMPLETION: NA
WEATHER: ~35F, Cloudy
DRILL RIG: Geoprobe
DRILLER: BMS Drilling
DRILL SIZE/TYPE: Macro-core
SAMPLE HAMMER: WEIGHT NA FALL NA

Sample No.	PID/HNu Reading (ppm)	Depth (Feet)	Type*	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	68	0-4	U	-	-	10	0-4.5ft: Brownish black gravelly sand (coarse, medium, fine, medium, dense, moist)
2	1,520	4-6	U	-	-	20	4.5-7.5ft: Gray sandy silt (low plasticity, moist)
3	1,622	6-8	U	-	-	20	7.5-8.5ft: Light brownish gray sand (fine, medium dense, moist)
4	1,632	8-10	U	-	-	20	8.5-12ft: Brown clayey silt (no plasticity, moist to wet)
5	1,310	10-12	U	-	-	20	12-16ft: Grayish brown sandy gravel (angular, coarse, fine, loose, wet)(slag)
6	1,830	12-14	U	-	-	20	
7	250	14-16	U	-	-	20	

NOTES: NA = Not Applicable
ft. bgs = feet below ground surface

Fill to ~16 ft. bgs
Strong petroleum-type odors @ ~4-16 ft. bgs
Petroleum-type sheen detected @ ~8-16 ft. bgs

*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P - PISTON TUBE C – CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Turnpike, Lackawanna, New York PROJECT No. 04B193.22

CLIENT: M&T Bank WELL/BORING No. BH6

DATE STARTED: 4/01/04 DATE COMPLETED: 4/01/04 RECORDED BY: JMR

GROUNDWATER DEPTH WHILE DRILLING: ~11 ft. bgs AFTER COMPLETION: NA

WEATHER: ~35F, Cloudy DRILL RIG: Geoprobe DRILLER: BMS Drilling

DRILL SIZE/TYPE: Macro-core SAMPLE HAMMER: WEIGHT NA FALL NA

Sample No.	PID/HNu Reading (ppm)	Depth (Feet)	Type *	Blows/6"	N	Recovery (inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	0.3	0-4	U	-	-	10	0-4.5ft: Brownish black gravelly sand (coarse, medium, fine, medium dense, moist)
2	0.5	4-8	U	-	-	20	4.5-8ft: Gray sandy silt (low plasticity, wet)
3	3.2	8-10	U	-	-	20	8-13ft: Brown clayey silt (low plasticity, wet)
4	4.9	10-12	U	-	-	20	13-15ft: Brown silty sand (fine, medium dense, wet)
5	0.9	12-14	U	-	-	20	15-16ft: Grayish blue (slag) (coarse, fine, rounded, loose, wet)
6	18.5	14-16	U	-	-	20	

NOTES: NA = Not Applicable

ft. bgs = feet below ground surface

Fill to ~16 ft. bgs

Petroleum-type odors @ ~14-16 ft. bgs

*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P - PISTON TUBE C - CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Turnpike, Lackawanna, New York | PROJECT No. 04B193.22

CLIENT: M&T Bank | WELL/BORING No. BH7

DATE STARTED: 4/01/04 | DATE COMPLETED: 4/01/04 | RECORDED BY: JMR

GROUNDWATER DEPTH WHILE DRILLING: ~11 ft. bgs | AFTER COMPLETION: NA

WEATHER: ~35F, Cloudy | DRILL RIG: Geoprobe | DRILLER: BMS Drilling

DRILL SIZE/TYPE: Macro-core | SAMPLE HAMMER: WEIGHT NA | FALL NA

Sample No.	PID/HNu Reading (ppm)	Depth (Feet)	Type *	Blows/6"	N	Recovery (inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	0.5	0-4	U	-	-	10	0-4.5ft: Brownish black gravelly sand (coarse, medium, fine, medium dense, moist)
2	0.3	4-6	U	-	-	20	4.5-8ft: Gray sandy silt (low plasticity, wet)
3	0.4	6-8	U	-	-	20	8-13ft: Brown clayey silt (low plasticity, wet)
4	0.3	8-10	U	-	-	20	13-15ft: Brown silty sand (fine, medium dense, wet)
5	0.3	10-12	U	-	-	20	15-16ft: Grayish blue (slag) (coarse, fine, rounded, loose, wet)
6	1.0	12-14	U	-	-	20	
7	115	14-16	U	-	-	20	

NOTES: NA = Not Applicable

ft. bgs = feet below ground surface

Fill to ~16 ft. bgs

Petroleum-type odors @ ~14-16 ft. bgs

*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P - PISTON TUBE C - CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Turnpike, Lackawanna, New York | PROJECT No. 04B193.22

CLIENT: M&T Bank | WELL/BORING No. BH8

DATE STARTED: 4/01/04 | DATE COMPLETED: 4/01/04 | RECORDED BY: JMR

GROUNDWATER DEPTH WHILE DRILLING: ~11 ft. bgs | AFTER COMPLETION: NA

WEATHER: ~35F, Cloudy | DRILL RIG: Geoprobe | DRILLER: BMS Drilling

DRILL SIZE/TYPE: Macro-core | SAMPLE HAMMER: WEIGHT NA | FALL NA

Sample No.	PID/HNu Reading (ppm)	Depth (Feet)	Type*	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	1.5	0-4	U	-	-	10	0-4.5ft: Brownish black gravelly sand (coarse, medium, fine, medium dense, moist)
2	894	4-6	U	-	-	20	4.5-7ft: Blackish gray sandy silt (low plasticity, moist)
3	1,575	6-8	U	-	-	20	7-8ft: Gray sand (fine, medium dense, moist)
4	1,610	8-10	U	-	-	20	8-12ft: Brown clayey silt (no plasticity, moist to wet)
5	1,312	10-12	U	-	-	20	12-16ft: Grayish brown sandy gravel (angular, coarse, fine, loose wet)(slag)
6	1,525	12-14	U	-	-	20	
7	1,227	14-16	U	-	-	20	

NOTES NA = Not Applicable

ft. bgs = feet below ground surface

Fill to ~16 ft. bgs

Petroleum-type odors @ ~4-16 ft. bgs

Petroleum-type sheen detected @ ~12-16 ft. bgs

*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P - PISTON TUBE C - CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Turnpike, Lackawanna, New York
PROJECT No. 04B193.22
CLIENT: M&T Bank
WELL/BORING No. BH9/TPMW1
DATE STARTED: 6/02/04 DATE COMPLETED: 6/03/04 RECORDED BY: JMR
GROUNDWATER DEPTH WHILE DRILLING: ~8 ft. bgs AFTER COMPLETION: ~8 ft. bgs
WEATHER: ~/0F, Sunny DRILL RIG: Geoprobe DRILLER: BMS Drilling
DRILL SIZE/TYPE: Macro-core SAMPLE HAMMER: WEIGHT NA FALL NA

Sample No.	PID/FID Reading (ppm)	Depth (Feet)	Type *	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	1.1	0-2	U	-	-	12	0-0.4ft: Asphalt
2	22.6	2-4	U	-	-	12	0.4-2ft: Black sandy gravel (slag) (coarse, angular, loose, moist)
3	53.4	4-6	U	-	-	20	2-6.5ft: Gray silty sand (fine, medium dense, moist)
4	75.2	6-8	U	-	-	20	6.5-10ft: Gray sandy silt (low plasticity, moist to wet)
5	7.8	8-10	U	-	-	20	10-13ft: Gray clayey silt (low plasticity, moist)
6	27.4	10-12	U	-	-	20	13-16ft: Gray gravelly sandy silt (low plasticity, wet)
7	59.6	12-14	U	-	-	20	
8	151	14-16	U	-	-	20	

NOTES NA = Not Applicable
ft bgs = feet below ground surface
Fill to ~16 ft. bgs
Slight petroleum-type odors detected @ ~4-16 ft bgs

*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P - PISTON TUBE C - CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Turnpike, Lackawanna, New York
PROJECT No. 04B193.22
CLIENT: M&T Bank
WELL/BORING No. BH10/TPMW2
DATE STARTED: 6/02/04 DATE COMPLETED: 6/03/04 RECORDED BY: JMR
GROUNDWATER DEPTH WHILE DRILLING: NA AFTER COMPLETION: ~9 ft. bgs
WEATHER: ~70F, Sunny DRILL RIG: Geoprobe DRILLER: BMS Drilling
DRILL SIZE/TYPE: Macro-core SAMPLE HAMMER: WEIGHT NA FALL NA

Sample No	PID/HNu Reading (ppm)	Depth (Feet)	Type *	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	33	0-4	U	-	-	12	0-0.4ft: Brown silty sand (fine, medium dense, moist)
2	703	4-6	U	-	-	20	0.4-4.5ft: Brown gravelly sand (slag) (coarse, medium, fine, medium dense, moist)
3	902	6-8	U	-	-	20	4.5-6ft: Gray gravelly sand (red brick) (coarse, medium, fine, dense, moist)
4	1,517	8-10	U	-	-	20	6-16ft: Gray sandy silt (no plasticity, moist)
5	1,146	10-12	U	-	-	20	
6	492	12-14	U	-	-	20	
7	147	14-16	U	-	-	20	

NOTES NA = Not Applicable
ft. bgs = feet below ground surface
Fill to ~16 ft. bgs
Strong petroleum-type odors detected @ ~4-16 ft. bgs

*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P - PISTON TUBE C – CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Turnpike, Lackawanna, New York
PROJECT No. 04B193.22
CLIENT: M&T Bank
WELL/BORING No. BH11/TPMW3
DATE STARTED: 6/02/04 DATE COMPLETED: 6/03/04 RECORDED BY: JMR
GROUNDWATER DEPTH WHILE DRILLING: ~17 ft. bgs AFTER COMPLETION: ~9 ft. bgs
WEATHER: ~70F, Sunny DRILL RIG: Geoprobe DRILLER: BMS Drilling
DRILL SIZE/TYPE: Macro-core SAMPLE HAMMER: WEIGHT NA FALL NA

Sample No.	PID/HNu Reading (ppm)	Depth (Feet)	Type*	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	4.1	0-4	U		-	10	0-0.5ft: Brown silty sand (coarse, medium, fine, medium dense, moist)
2	504	4-6	U	-	-	12	0.5-4ft: Brown sandy gravel (coarse, angular, loose, moist)
3	1,179	6-8	U		-	12	4-12ft: Gray sandy silt (low plasticity, moist)
4	1,428	8-10	U		-	20	12-17ft: Gray gravelly sandy silt (low plasticity, moist to wet)
5	579	10-12	U	-	-	20	Refusal @ ~17 ft. bgs
6	635	12-14	U	-		20	
7	279	14-16	U	-	-	20	
8	909	16-17	U	-	-	10	

NOTES NA = Not Applicable
ft. bgs = feet below ground surface
Fill to ~16 ft. bgs
Strong petroleum-type odor detected @ ~4-17 ft. bgs

*SS - SPLIT-SPOON SAMPLE U – UNDISTURBED TUBE P - PISTON TUBE C – CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Turnpike, Lackawanna, New York PROJECT No 04B193.22

CLIENT: M&T Bank WELL/BORING No. BH12/TPMW4

DATE STARTED: 6/02/04 DATE COMPLETED: 6/03/04 RECORDED BY: JMR

GROUNDWATER DEPTH WHILE DRILLING: ~11 ft. bgs AFTER COMPLETION: ~9 ft. bgs

WEATHER: ~70F, Sunny DRILL RIG: Geoprobe DRILLER: BMS Drilling

DRILL SIZE/TYPE: Macro-core SAMPLE HAMMER: WEIGHT NA FALL NA

Sample No.	PID/HNu Reading (ppm)	Depth (Feet)	Type*	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	1.5	0-2	U	-	-	10	0-0.4ft: Brown silty sand (fine, medium dense, moist)
2	6.0	2-4	U	-	-	10	0.4-4ft: Gray gravelly sand (coarse, medium, fine, dense, moist)
3	3.8	4-6	U	-		20	4-7ft: Gray sandy silty clay (moderate plasticity, soft, moist)
4	4.2	6-8	U	-	-	20	7-10ft: Gray silty clay (high plasticity, soft, moist)
5	2.7	8-10	U	-	-	20	10-12ft: Brown gravelly silty sand (coarse, medium, fine, dense, wet)
6	1.9	10-12	U	-	-	20	12-15ft: Gray silty clay (high plasticity, very soft, wet)
7	1.7	12-15	U	-	-	20	Refusal @ ~15 ft. bgs

NOTES NA = Not Applicable

ft. bgs = feet below ground surface

Fill to ~ 15 ft bgs

No petroleum-type odors detected

*SS - SPLIT-SPOON SAMPLE U – UNDISTURBED TUBE P - PISTON TUBE C - CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Turnpike, Lackawanna, New York | PROJECT No.: 04B193.22

CLIENT: M&T Bank | WELL/BORING No.: BH13/TPMW5

DATE STARTED: 6/02/04 | DATE COMPLETED: 6/03/04 | RECORDED BY: JMR

GROUNDWATER DEPTH WHILE DRILLING: ~11 ft. bgs | AFTER COMPLETION: ~8 ft. bgs

WEATHER: ~70F, Sunny | DRILL RIG: Geoprobe | DRILLER: BMS Drilling

DRILL SIZE/TYPE: Macro-core | SAMPLE HAMMER: WEIGHT NA | FALL NA

Sample No.	PID/HNu Reading (ppm)	Depth (Feet)	Type*	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	6.5	0-4	U	-	-	10	0-0.4ft: Brown silty sand (fine, medium dense, moist)
2	2.6	4-6	U	-	-	20	0.4-4ft: Gray gravelly sand (coarse, medium, fine, dense, moist)
3	3.5	6-8	U	-	-	20	4-7ft: Gray sandy silty clay (moderate plasticity, soft, moist)
4	4.2	8-10	U	-	-	20	7-10ft: Gray silty clay (high plasticity, soft, moist)
5	2.8	10-12	U	-	-	20	10-12ft: Brown gravelly silty sand (coarse, medium, fine, dense, wet)
6	1.0	12-15.5	U	-	-	20	12-15.5ft: Gray silty clay (high plasticity, very soft, wet)
							Refusal @ ~15.5 ft bgs

NOTES: NA = Not Applicable
ft. bgs = feet below ground surface
Fill to ~16 ft. bgs
No petroleum-type odors detected

*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P - PISTON TUBE C - CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Turnpike, Lackawanna, New York | PROJECT No: 04B193.22

CLIENT: M&T Bank | WELL/BORING No: BH14/TPMW6

DATE STARTED: 6/02/04 | DATE COMPLETED: 6/03/04 | RECORDED BY: JMR

GROUNDWATER DEPTH WHILE DRILLING: ~15 ft. bgs | AFTER COMPLETION: ~8 ft. bgs

WEATHER: ~70F, Sunny | DRILL RIG: Geoprobe | DRILLER: BMS Drilling

DRILL SIZE/TYPE: Macro-core | SAMPLE HAMMER: WEIGHT NA | FALL NA

Sample No.	PID/FINo Reading (ppm)	Depth (Feet)	Type *	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	0.2	0-2	U	-	-	15	0-4ft: Brown/gray sandy gravel (red brick) (coarse, angular, loose, moist)
2	0.3	2-4	U	-	-	15	4-16.5ft: Brown sandy silt (no plasticity, moist to wet)
3	54	4-6	U	-	-	24	Refusal @ ~16.5 ft. bgs
4	1,277	6-8	U	-	-	24	
5	1,570	8-10	U	-	-	24	
6	458	10-12	U	-	-	24	
7	43	12-14	U	-	-	24	
8	267	14-16	U	-	-	24	

NOTES: NA = Not Applicable

ft. bgs = feet below ground surface

Fill to ~16 ft. bgs

Slight to strong petroleum-type odors detected @ ~4-16.5 ft. bgs

*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P - PISTON TUBE C - CORE

SUBSURFACE LOG

SUBSURFACE LOG

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Turnpike, Lackawanna, New York | PROJECT No: 04B193.22

CLIENT: M&T Bank | WELL/BORING No. BH15/TPMW7

DATE STARTED: 6/02/04 | DATE COMPLETED: 6/03/04 | RECORDED BY: JMR

GROUNDWATER DEPTH WHILE DRILLING: ~15 ft. bgs | AFTER COMPLETION: ~9 ft. bgs

WEATHER: ~70F, Sunny | DRILL RIG: Geoprobe | DRILLER: BMS Drilling

DRILL SIZE/TYPE: Macro-core | SAMPLE HAMMER: WEIGHT NA | FALL NA

Sample No.	PID/HNu Reading (ppm)	Depth (Feet)	Type *	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	8.2	0-2	U	-	-	10	0-2ft: Black sandy gravel (coarse, angualr, loose, moist)
2	12.2	2-4	U	-	-	10	2-4ft: Brown silty gravelly sand (coarse, medium, fine, medium dense, moist
3	9.5	4-6	U	-	-	24	4-8ft: Gray/brown sandy silt (no plasticity, moist)
4	2.1	6-8	U	-	-	24	8-16ft: Brown sandy clayey silt (no plasticity, moist to wet)
5	1.2	8-10	U	-	-	24	
6	5.1	10-12	U	-	-	24	
7	0.5	12-14	U	-	-	12	
8	0.1	14-16	U	-	-	12	

NOTES NA = Not Applicable

ft. bgs = feet below ground surface

Fill to ~16 ft. bgs

Slight petroleum-type odors detected @ ~15-16 ft. bgs

*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P - PISTON TUBE C - CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Turnpike, Lackawanna, New York | PROJECT No. 04B193.22

CLIENT: M&T Bank | WELL/BORING No. BH16/TPMW8

DATE STARTED: 6/02/04 | DATE COMPLETED: 6/03/04 | RECORDED BY: JMR

GROUNDWATER DEPTH WHILE DRILLING: NA | AFTER COMPLETION: ~8 ft. bgs

WEATHER: ~70F, Sunny | DRILL RIG: Geoprobe | DRILLER: BMS Drilling

DRILL SIZE/TYPE: Macro-core | SAMPLE HAMMER: WEIGHT NA FALL NA

Sample No.	PID/HNu Reading (ppm)	Depth (Feet)	Type*	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	0.0	0-4	U	-	-	10	0-2ft: Brown sandy gravel (slag) (coarse, angular, dense, moist)
2	0.0	4-6	U	-	-	20	2-4.5ft: Black sandy silt (low plasticity, moist)
3	0.0	6-8	U	-	-	20	4.5-6ft: Gray clayey silt (low plasticity, moist)
4	0.0	8-10	U	-	-	20	6-14ft: Gray silty clay (high plasticity, soft, moist)
5	0.0	10-12	U	-	-	20	14-15ft: Brown sandy gravel (coarse, angular, medium dense, moist)
6	0.0	12-15	U	-	-	20	

NOTES NA = Not Applicable

ft. bgs = feet below ground surface

Fill to ~16 ft. bgs

Slight petroleum-type odors detected @ ~14-15 ft. bgs

*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P - PISTON TUBE C - CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Turnpike, Lackawanna, New York | PROJECT No. 04B193.22

CLIENT: M&T Bank | WELL/BORING No. BH17/TPMW9

DATE STARTED: 6/02/04 | DATE COMPLETED: 6/03/04 | RECORDED BY: JMR

GROUNDWATER DEPTH WHILE DRILLING: ~14 ft. bgs | AFTER COMPLETION: ~9ft. bgs

WEATHER: ~70F, Sunny | DRILL RIG: Geoprobe | DRILLER: BMS Drilling

DRILL SIZE/TYPE: Macro-core | SAMPLE HAMMER: WEIGHT NA | FALL NA

Sample No.	PID/HNu Reading (ppm)	Depth (Feet)	Type *	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	1.1	0-4	U	-	-	12	0-2ft: Brown sandy gravel (slag) (coarse, angular, dense, moist)
2	0.7	4-6	U	-	-	20	2-4.5ft: Black sandy gravel (coarse, angular, loose, moist)
3	0.5	6-8	U	-	-	20	4.5-6ft: Gray sandy silt (low plasticity, moist)
4	0.0	8-10	U	-	-	20	6-7ft: Gray silty sand (fine, medium dense, moist)
5	0.0	10-12	U	-	-	20	7-9ft: Gray clayey silt (low plasticity, moist)
6	0.6	12-14	U	-	-	10	9-12ft: Gray/brown silty clay (no plasticity to high plasticity, dense to soft, moist)
7	0.0	14-15.5	U	-	-	10	12-15ft: Gray clayey sandy silt (low plasticity, moist to wet)
							15-15.5ft: Brown sandy gravel (coarse, fine, angular, loose, wet)
							Refusal @ ~15.5 ft. bgs

NOTES NA = Not Applicable

ft. bgs = feet below ground surface

Fill to ~16 ft. bgs

Slight petroleum-type odors detected @ ~15-15.5 ft. bgs

*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P – PISTON TUBE C - CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Turnpike, Lackawanna, New York
PROJECT No. 04B193.22
CLIENT: M&T Bank
WELL/BORING No: BH18
DATE STARTED: 6/02/04 DATE COMPLETED: 6/03/04 RECORDED BY: JMR
GROUNDWATER DEPTH WHILE DRILLING: ~12 ft. bgs AFTER COMPLETION: NA
WEATHER: ~70F, Sunny DRILL RIG: Geoprobe DRILLER: BMS Drilling
DRILL SIZE/TYPE: Macro-core SAMPLE HAMMER: WEIGHT NA FALL NA

Sample No.	PID/FID Reading (ppm)	Depth (Feet)	Type *	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	0.1	0-2	U	-	-	15	0-2ft: Brown sandy gravel (slag) (coarse, angular, dense, moist)
2	57.8	2-4	U	-	-	15	2-4.5ft: Black sandy gravel (coarse, angular, loose, moist)
3	810	4-6	U	-	-	20	4.5-6ft: Gray sandy silt (low plasticity, moist)
4	1,799	6-8	U	-	-	20	6-7ft: Gray silty sand (fine, medium dense, moist)
5	610	8-10	U	-	-	20	7-9ft: Gray clayey silt (low plasticity, moist)
6	612	10-12	U	-	-	20	9-12ft: Gray/brown silty clay (no plasticity to high plasticity, dense to soft, moist)
7	810	12-14	U	-	-	20	12-15ft: Gray clayey sandy silt (low plasticity, moist to wet)
8	699	14-16	U	-	-	20	15-16.5ft: Brown sandy gravel (slag) (coarse, fine, angular, loose, wet)
							Refusal @ ~16.5 ft. bgs

NOTES: NA = Not Applicable
ft. bgs = feet below ground surface
Fill to ~16 ft. bgs
Strong to Moderate petroleum-type odors detected @ ~5-16.5 ft. bgs

*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P - PISTON TUBE C - CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Tumpike, Lackawanna, New York | PROJECT No. 04B193.22

CLIENT: M&T Bank | WELL/BORING No. BH19/TPMW10

DATE STARTED: 6/02/04 | DATE COMPLETED: 6/03/04 | RECORDED BY: JMR

GROUNDWATER DEPTH WHILE DRILLING: ~13 ft. bgs | AFTER COMPLETION: ~9 ft. bgs

WEATHER: ~70F, Sunny | DRILL RIG: Geoprobe | DRILLER: BMS Drilling

DRILL SIZE/TYPE: Macro-core | SAMPLE HAMMER: WEIGHT NA | FALL NA

Sample No.	PID/HNu Reading (ppm)	Depth (Feet)	Type *	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	13 5	0-4	U	-		10	0-2ft: Brown sandy gravel (slag) (coarse, angular, dense, moist)
2	146	4-6	U	-	-	20	2-4 5ft: Black sandy gravel (coarse, angular, loose, moist)
3	1,396	6-8	U	-	-	20	4.5-6ft: Gray sandy silt (low plasticity, moist)
4	638	8-10	U	-		20	6-7ft: Gray silty sand (fine, medium dense, moist)
5	649	10-12	U	-	-	20	7-9ft: Gray clayey silt (low plasticity, moist)
6	1,343	12-14	U	-	-	20	9-12ft: Gray/brown silty clay (no plasticity to high plasticity, dense to soft, moist)
7	845	14-16	U	-	-	20	12-15ft: Gray clayey sandy silt (low plasticity, moist to wet)
							15-16ft: Brown sandy gravel (slag) (coarse, fine, angular, loose, wet)

NOTES: NA = Not Applicable

ft bgs = feet below ground surface

Fill to ~16 ft. bgs

Strong petroleum-type odors detected @ ~4-16 ft bgs

*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P - PISTON TUBE C - CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION:	2530 Hamburg Turnpike, Lackawanna, New York	PROJECT No.	04B193.22
CLIENT:	M&T Bank	WELL/BORING No.	BH20/TPMW11
DATE STARTED:	6/02/04	DATE COMPLETED:	6/03/04
RECORDED BY:	JMR		
GROUNDWATER DEPTH WHILE DRILLING:	~9 ft. bgs	AFTER COMPLETION:	~9 ft. bgs
WEATHER:	~70F, Sunny	DRILL RIG:	Geoprobe
DRILLER:	BMS Drilling		
DRILL SIZE/TYPE:	Macro-core	SAMPLE HAMMER: WEIGHT	NA
FALL	NA		

Sample No.	PID/HNu Reading (ppm)	Depth (Feet)	Type *	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	4.7	0-4	U	-	-	10	0-0.4ft: Asphalt
2	5.7	4-6	U		-	20	0.4-3ft: Brown/black sandy gravel (slag) (coarse, angular to sub-angular, loose, moist)
3	2.3	6-8	U	-	-	20	3-13ft: Gray sandy clayey silt (low plasticity, moist to wet)
4	1.5	8-10	U	-	-	20	Refusal @ ~13 ft. bgs
5	3.2	10-13	U	-	-	10	

NOTES NA = Not Applicable

ft. bgs = feet below ground surface

Fill to ~16 ft. bgs

No petroleum-type odors detected

*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P - PISTON TUBE C - CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION: 2530 Hamburg Turnpike, Lackawanna, New York PROJECT No. 04B193.22

CLIENT: M&T Bank WELL/BORING No. BH21

DATE STARTED: 6/02/04 DATE COMPLETED: 6/03/04 RECORDED BY: JMR

GROUNDWATER DEPTH WHILE DRILLING: ~15 ft. bgs AFTER COMPLETION: NA

WEATHER: ~70F, Sunny DRILL RIG: Geoprobe DRILLER: BMS Drilling

DRILL SIZE/TYPE: Macro-core SAMPLE HAMMER: WEIGHT NA FALL NA

Sample No.	PID/HNu Reading (ppm)	Depth (Feet)	Type *	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	0.5	0-4	U	-	-	10	0.0-2ft: Black sandy gravel (slag) (coarse, angular, loose, moist)
2	0.0	4-6	U	-	-	15	2-6.5ft: Gray silty sand (fine, medium dense, moist)
3	0.0	6-8	U	-	-	15	6.5-10ft: Gray sandy silt (low plasticity, moist to wet)
4	0.0	8-10	U	-	-	15	10-13ft: Gray clayey silt (low plasticity, moist))
5	0.0	10-12	U		-	15	13-16.5ft: Gray gravelly sandy silt (low plasticity, wet)
6	0.5	12-16	U	-	-	10	Refusal @ ~16.5 ft. bgs
7	1.3	16-16.5	U	-	-	10	

NOTES: NA = Not Applicable

ft. bgs = feet below ground surface

Fill to ~16 ft. bgs

No petroleum-type odors detected

*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P - PISTON TUBE C - CORE

LCS Inc. SUBSURFACE LOG

PROJECT/ LOCATION:	2530 Hamburg Turnpike, Lackawanna, New York	PROJECT No.	04B193.22
CLIENT:	M&T Bank	WELL/BORING No.	BH22
DATE STARTED:	6/02/04	DATE COMPLETED: 6/03/04	RECORDED BY: JMR
GROUNDWATER DEPTH WHILE DRILLING:	~15 ft. bgs	AFTER COMPLETION:	NA
WEATHER:	~70F, Sunny	DRILL RIG: Geoprobe	DRILLER: BMS Drilling
DRILL SIZE/TYPE:	Macro-core	SAMPLE HAMMER: WEIGHT	NA FALL NA

Sample No.	PID/HNu Reading (ppm)	Depth (Feet)	Type *	Blows/6"	N	Recovery (Inches)	Material Classification and Description (Unified Soil Classification System-Visual Manual Method)
1	0.0	0-4	U	-		10	0.0-1ft: Black sandy gravel (slag) (coarse, angular, loose, moist)
2	0.8	4-8	U	-	-	10	1-5ft: Gray silty sand (fine, medium dense, moist)
3	0.0	8-12	U	-	-	10	5-8ft: Gray sandy silt (low plasticity, moist to wet)
4	0.0	12 14	U	-	-	20	8-12ft: Gray clayey silt (low plasticity, moist))
5	0.8	14-16.5	U	-	-	20	13-16.5ft: Gray gravelly sandy silt (low plasticity, wet)
							Refusal @ ~16.5 ft. bgs

NOTES NA = Not Applicable
ft bgs = feet below ground surface
Fill to ~16 ft. bgs
No petroleum-type odors detected

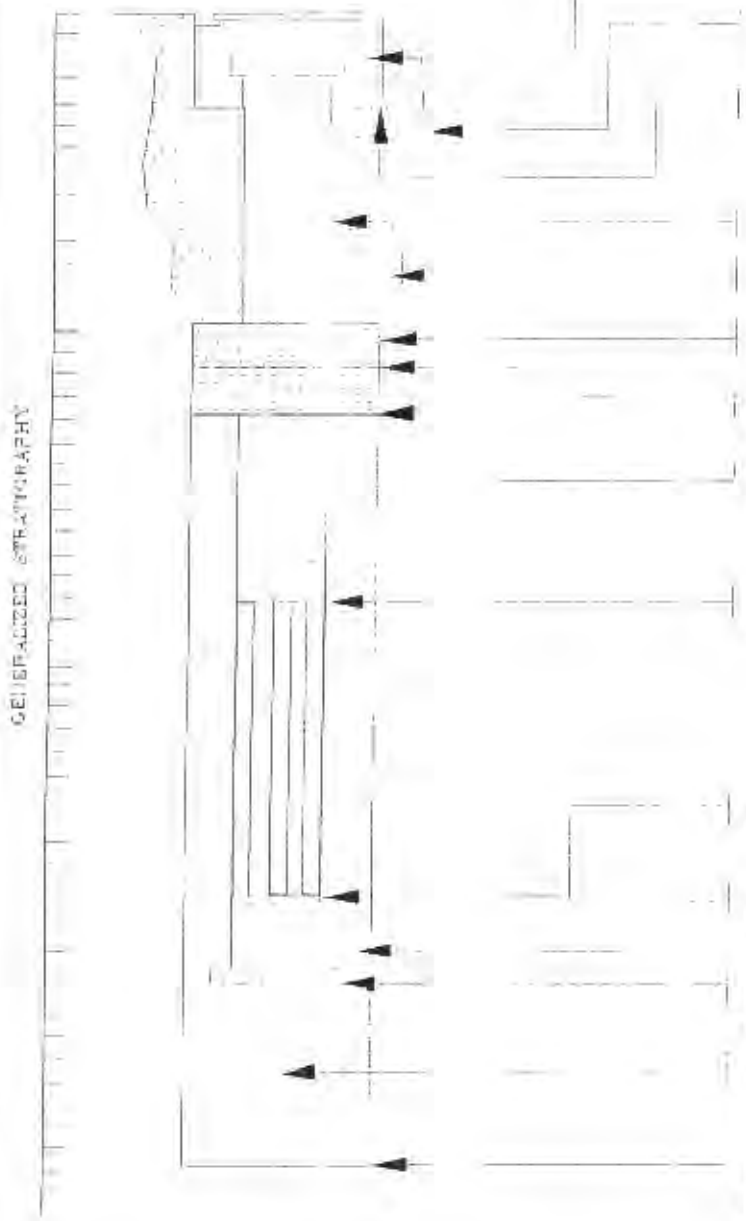
*SS - SPLIT-SPOON SAMPLE U - UNDISTURBED TUBE P - PISTON TUBE C - CORE

LCS INC.
Environmental and Real Estate Consultants

WELL CONSTRUCTION DETAILS

LCS Inc. WELL CONSTRUCTION DETAIL

PROJECT/LOCATION:	2530 Hamburg Turnpike, Lackawana, NY	PROJECT No.	04B193.22
CLIENT:	M&T Bank	WELL No.	TPMW1
DATE COMPLETED:	June 1, 2004	SUPERVISED BY:	JMR



REFERENCE POINT
Elevation/Depth: NA

SURFACE SEAL
Type/Depth: Hydrated Bentonite / 0.0 ft. bgs

DEPTH OF SURFACE CASING: NA

RISER PIPE Size/Type: 1 inch diameter / Sch. 40 PVC

DIAMETER OF BOREHOLE: 2.2 inches

TYPE OF FILL: NA

TOP OF SEAL Elevation/Depth: 0.0 ft. bgs
TYPE OF SEAL: Hydrated Bentonite

TOP OF FILTER PACK Elevation/Depth: 1.0 ft. bgs
FILTER PACK MATERIAL: #00 Sand

TOP OF SCREEN Elevation/Depth: 4.9 ft. bgs
SCREEN SIZE/TYPE: 0.010 inch / Sch. 40 PVC

BOTTOM OF SCREEN Elevation/Depth: 14.9 ft. bgs

BOTTOM OF FILTER PACK
Elevation/Depth: 14.9 ft. bgs

BOTTOM OF PLUGGED BLANK SECTION
Elevation/Depth: 14.9 ft. bgs

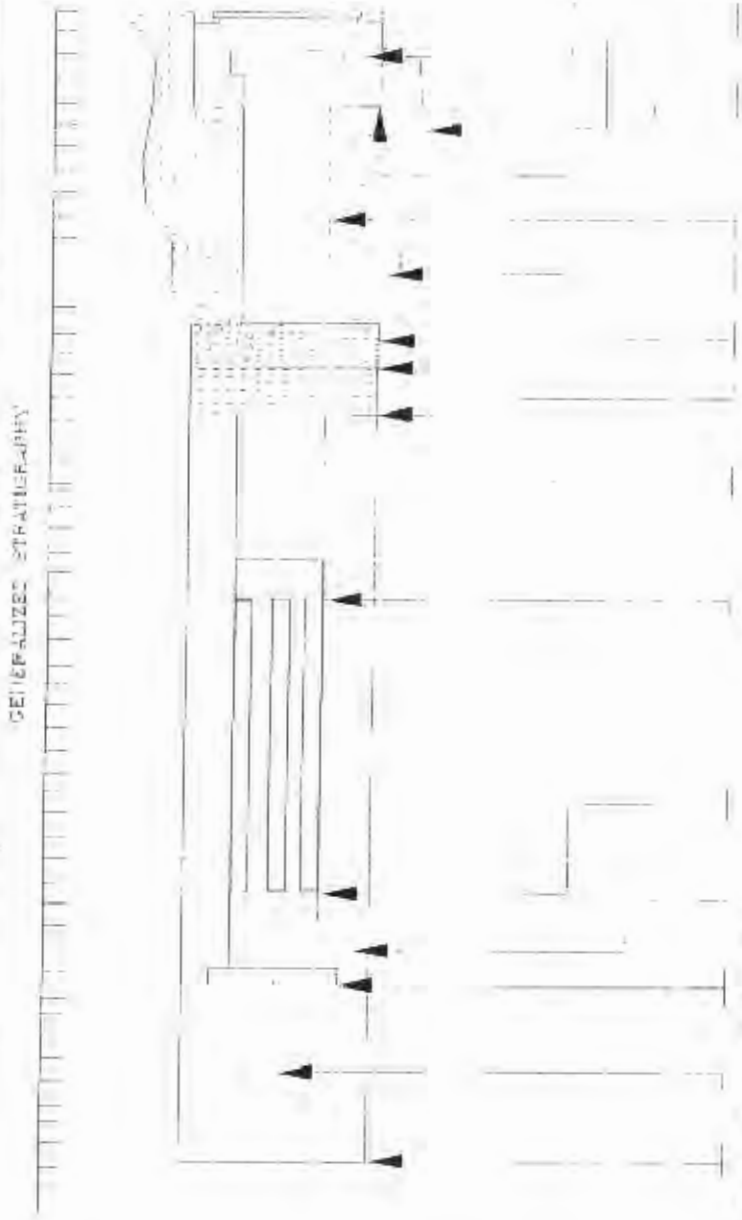
TYPE OF FILLER
BELOW PLUGGED BLANK: #00 Sand

BOTTOM OF BOREHOLE
Elevation/Depth: 15.0 ft. bgs

NOTES: ft bgs = feet below ground surface
NA = Not Applicable

LCS Inc. WELL CONSTRUCTION DETAIL

PROJECT/LOCATION:	2530 Hamburg Turnpike, Lackawana, NY	PROJECT No.:	04B193.22
CLIENT:	M&T Bank	WELL No.:	TPMW2
DATE COMPLETED:	June 1, 2004	SUPERVISED BY:	JMR



REFERENCE POINT
Elevation/Depth: NA

SURFACE SEAL
Type/Depth: Hydrated Bentonite / 0.0 ft. bgs

DEPTH OF SURFACE CASING: NA

RISER PIPE Size/Type: 1 inch diameter / Sch. 40 PVC

DIAMETER OF BOREHOLE: 2.2 inches

TYPE OF FILL: NA

TOP OF SEAL Elevation/Depth: 0.0 ft. bgs
TYPE OF SEAL: Hydrated Bentonite

TOP OF FILTER PACK Elevation/Depth: 1.0 ft. bgs
FILTER PACK MATERIAL: #00 Sand

TOP OF SCREEN Elevation/Depth: 7.9 ft. bgs
SCREEN SIZE/TYPE: 0.010 inch / Sch. 40 PVC

BOTTOM OF SCREEN Elevation/Depth: 17.9 ft. bgs

BOTTOM OF FILTER PACK
Elevation/Depth: 17.9 ft. bgs

BOTTOM OF PLUGGED BLANK SECTION
Elevation/Depth: 17.9 ft. bgs

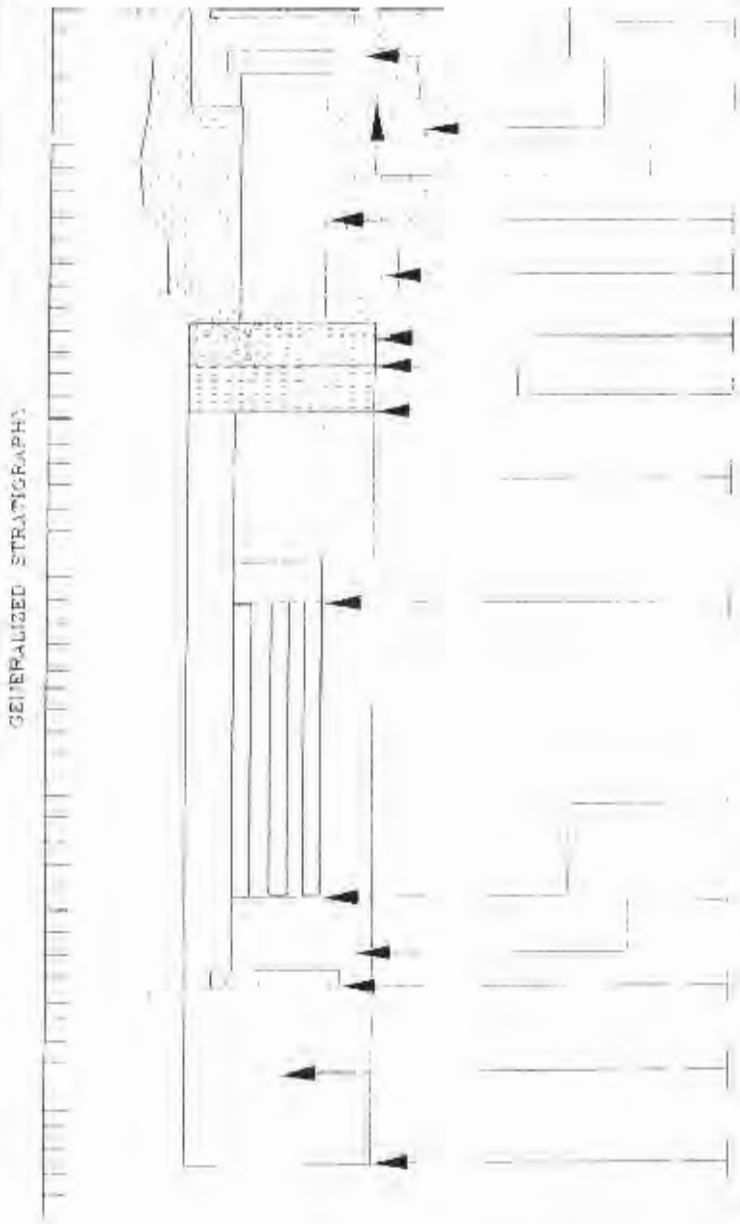
TYPE OF FILLER
BELOW PLUGGED BLANK: #00 Sand

BOTTOM OF BOREHOLE
Elevation/Depth: 18.0 ft. bgs

NOTES ft. bgs = feet below ground surface
NA = Not Applicable

LCS Inc. WELL CONSTRUCTION DETAIL

PROJECT/LOCATION:	2530 Hamburg Turnpike, Lackawana, NY	PROJECT No.	04B193.22
CLIENT:	M&T Bank	WELL No.	TPMW3
DATE COMPLETED:	June 1, 2004	SUPERVISED BY:	JMR



REFERENCE POINT
Elevation/Depth: NA

SURFACE SEAL
Type/Depth: Hydrated Bentonite / 0.0 ft. bgs

DEPTH OF SURFACE CASING: NA

RISER PIPE Size/Type: 1 inch diameter / Sch. 40 PVC

DIAMETER OF BOREHOLE: 2.2 inches

TYPE OF FILL: NA

TOP OF SEAL Elevation/Depth: 0.0 ft. bgs
TYPE OF SEAL: Hydrated Bentonite

TOP OF FILTER PACK Elevation/Depth: 1.0 ft. bgs
FILTER PACK MATERIAL: #00 Sand

TOP OF SCREEN Elevation/Depth: 5.9 ft. bgs
SCREEN SIZE/TYPE: 0.010 inch / Sch. 40 PVC

BOTTOM OF SCREEN Elevation/Depth: 15.9 ft. bgs

BOTTOM OF FILTER PACK
Elevation/Depth: 15.9 ft. bgs

BOTTOM OF PLUGGED BLANK SECTION
Elevation/Depth: 15.9 ft. bgs

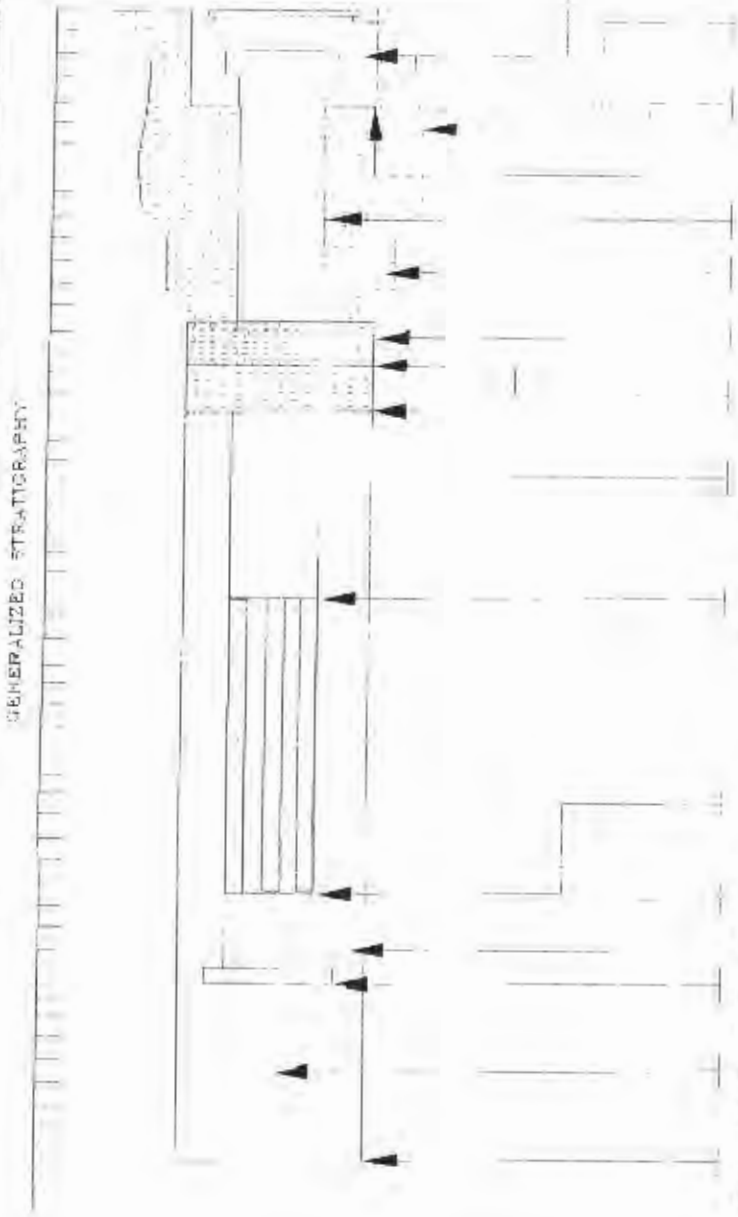
TYPE OF FILLER
BELOW PLUGGED BLANK: #00 Sand

BOTTOM OF BOREHOLE
Elevation/Depth: 16.0 ft. bgs

NOTES ft. bgs = feet below ground surface
NA = Not Applicable

LCS Inc. WELL CONSTRUCTION DETAIL

PROJECT/LOCATION:	2530 Hamburg Turnpike, Lackawana, NY	PROJECT No.	04B193.22
CLIENT:	M&T Bank	WELL No.	TPMW4
DATE COMPLETED:	June 1, 2004	SUPERVISED BY:	JMR



REFERENCE POINT
Elevation/Depth: NA

SURFACE SEAL
Type/Depth: Hydrated Bentonite / 0.0 ft. bgs

DEPTH OF SURFACE CASING: NA

RISER PIPE Size/Type: 1 inch diameter / Sch. 40 PVC

DIAMETER OF BOREHOLE: 2.2 inches

TYPE OF FILL: NA

TOP OF SEAL Elevation/Depth: 0.0 ft. bgs
TYPE OF SEAL: Hydrated Bentonite

TOP OF FILTER PACK Elevation/Depth: 1.0 ft. bgs
FILTER PACK MATERIAL: #00 Sand

TOP OF SCREEN Elevation/Depth: 4.9 ft. bgs
SCREEN SIZE/TYPE: 0.010 inch / Sch. 40 PVC

BOTTOM OF SCREEN Elevation/Depth: 14.9 ft. bgs

BOTTOM OF FILTER PACK
Elevation/Depth: 14.9 ft. bgs

BOTTOM OF PLUGGED BLANK SECTION
Elevation/Depth: 14.9 ft. bgs

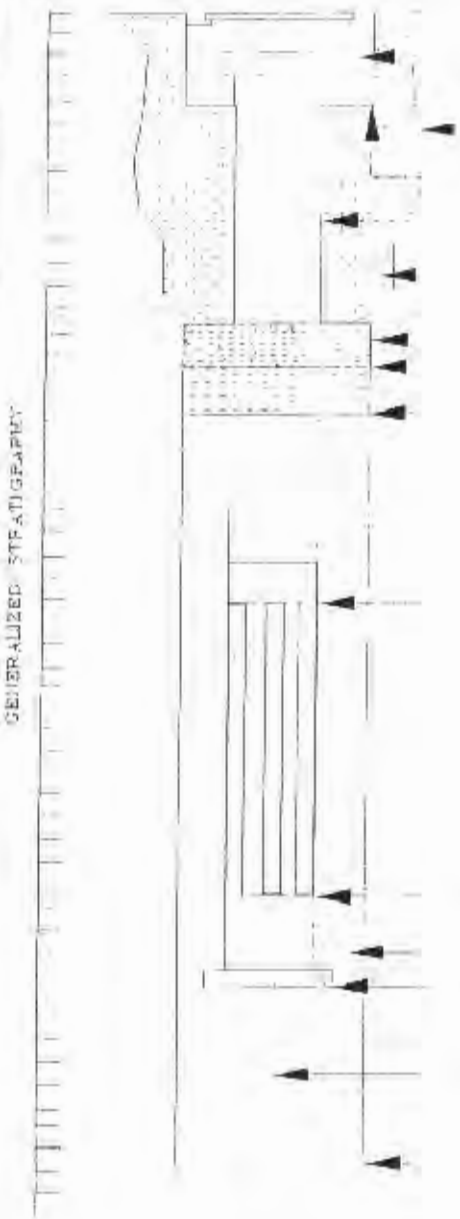
TYPE OF FILLER
BELOW PLUGGED BLANK: #00 Sand

BOTTOM OF BOREHOLE
Elevation/Depth: 15.0 ft. bgs

NOTES: ft. bgs = feet below ground surface
NA = Not Applicable

LCS Inc. WELL CONSTRUCTION DETAIL

PROJECT/LOCATION	2530 Hamburg Turnpike, Lackawana, NY	PROJECT No.	04B193.22
CLIENT:	M&T Bank	WELL No.	TPMW5
DATE COMPLETED	June 1, 2004	SUPERVISED BY:	JMR



REFERENCE POINT
Elevation/Depth: NA

SURFACE SEAL
Type/Depth: Hydrated Bentonite / 0.0 ft. bgs

DEPTH OF SURFACE CASING: NA

RISER PIPE Size/Type: 1 inch diameter / Sch. 40 PVC

DIAMETER OF BOREHOLE: 2.2 inches

TYPE OF FILL: NA

TOP OF SEAL Elevation/Depth: 0.0 ft. bgs
TYPE OF SEAL: Hydrated Bentonite

TOP OF FILTER PACK Elevation/Depth: 1.0 ft. bgs
FILTER PACK MATERIAL: #00 Sand

TOP OF SCREEN Elevation/Depth: 4.4 ft. bgs
SCREEN SIZE/TYPE: 0.010 inch / Sch. 40 PVC

BOTTOM OF SCREEN Elevation/Depth: 14.4 ft. bgs

BOTTOM OF FILTER PACK
Elevation/Depth: 14.4 ft. bgs

BOTTOM OF PLUGGED BLANK SECTION
Elevation/Depth: 14.4 ft. bgs

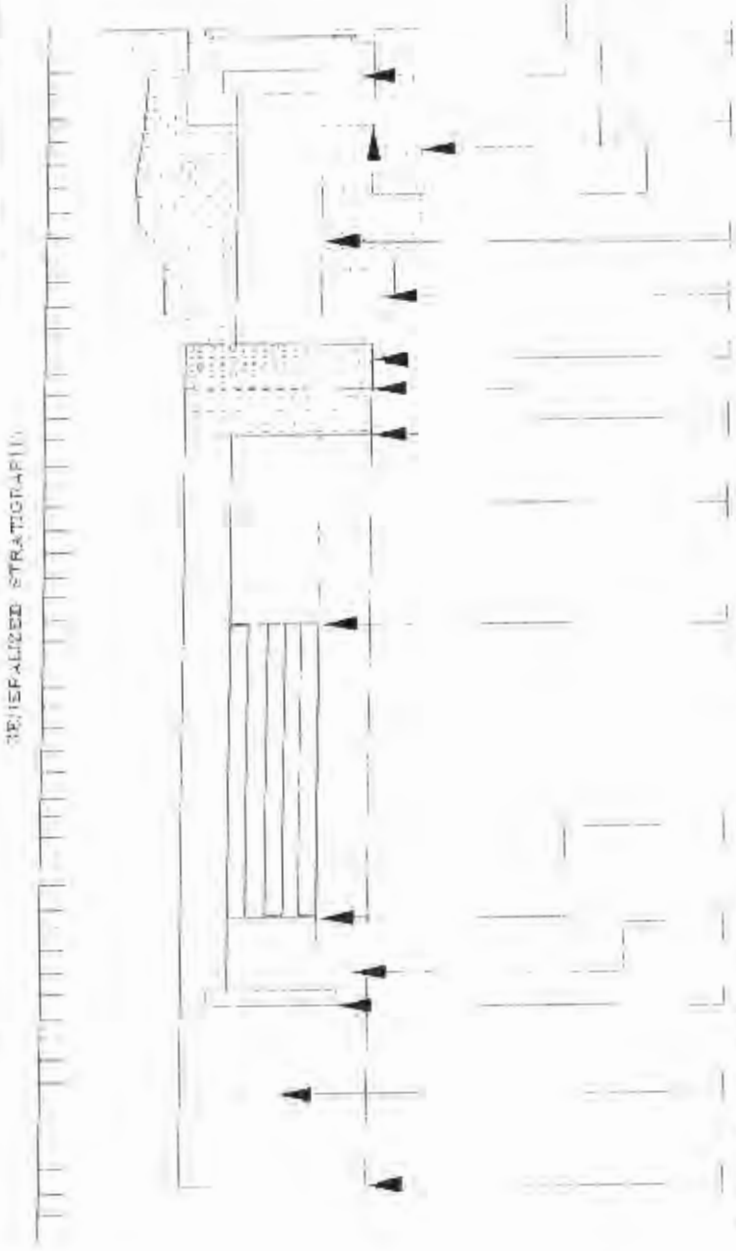
TYPE OF FILLER
BELOW PLUGGED BLANK: #00 Sand

BOTTOM OF BOREHOLE
Elevation/Depth: 15.5 ft. bgs

NOTES: ft bgs = feet below ground surface
NA = Not Applicable

LCS Inc. WELL CONSTRUCTION DETAIL

PROJECT/LOCATION:	2530 Hamburg Turnpike, Lackawana, NY	PROJECT No.	04B193.22
CLIENT:	M&T Bank	WELL No.	TPMW6
DATE COMPLETED:	May 11, 2004	SUPERVISED BY:	JMR



REFERENCE POINT
Elevation/Depth: NA

SURFACE SEAL
Type/Depth: Hydrated Bentonite / 0.0 ft. bgs

DEPTH OF SURFACE CASING: NA

RISER PIPE Size/Type: 1 inch diameter / Sch. 40 PVC

DIAMETER OF BOREHOLE: 2.2 inches

TYPE OF FILL: NA

TOP OF SEAL Elevation/Depth: 0.0 ft. bgs
TYPE OF SEAL: Hydrated Bentonite

TOP OF FILTER PACK Elevation/Depth: 1.0 ft. bgs
FILTER PACK MATERIAL: #00 Sand

TOP OF SCREEN Elevation/Depth: 6.4 ft. bgs
SCREEN SIZE/TYPE: 0.010 inch / Sch. 40 PVC

BOTTOM OF SCREEN Elevation/Depth: 16.4 ft. bgs

BOTTOM OF FILTER PACK
Elevation/Depth: 16.4 ft. bgs

BOTTOM OF PLUGGED BLANK SECTION
Elevation/Depth: 16.4 ft. bgs

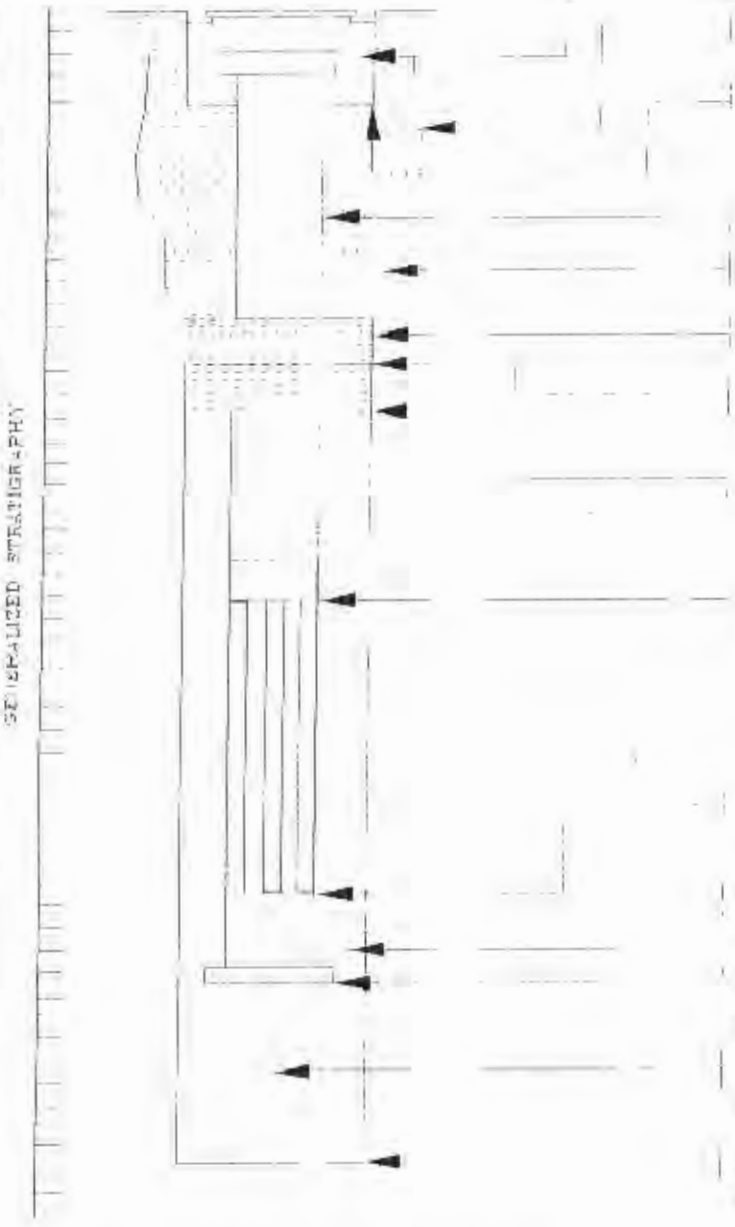
TYPE OF FILLER
BELOW PLUGGED BLANK: #00 Sand

BOTTOM OF BOREHOLE
Elevation/Depth: 16.5 ft. bgs

NOTES: ft. bgs = feet below ground surface
NA = Not Applicable

LCS Inc. WELL CONSTRUCTION DETAIL

PROJECT/LOCATION:	2530 Hamburg Turnpike, Lackawana, NY	PROJECT No.	04B193.22
CLIENT:	M&T Bank	WELL No.	TPMW7
DATE COMPLETED:	May 11, 2004	SUPERVISED BY:	JMR



REFERENCE POINT
Elevation/Depth: NA

SURFACE SEAL
Type/Depth: Hydrated Bentonite / 0.0 ft. bgs

DEPTH OF SURFACE CASING: NA

RISER PIPE Size/Type: 1 inch diameter / Sch. 40 PVC

DIAMETER OF BOREHOLE: 2.2 inches

TYPE OF FILL: NA

TOP OF SEAL Elevation/Depth: 0.0 ft. bgs
TYPE OF SEAL: Hydrated Bentonite

TOP OF FILTER PACK Elevation/Depth: 1.0 ft. bgs
FILTER PACK MATERIAL: #00 Sand

TOP OF SCREEN Elevation/Depth: 6.9 ft. bgs
SCREEN SIZE/TYPE: 0.010 inch / Sch. 40 PVC

BOTTOM OF SCREEN Elevation/Depth: 16.9 ft. bgs

BOTTOM OF FILTER PACK
Elevation/Depth: 16.9 ft. bgs

BOTTOM OF PLUGGED BLANK SECTION
Elevation/Depth: 16.9 ft. bgs

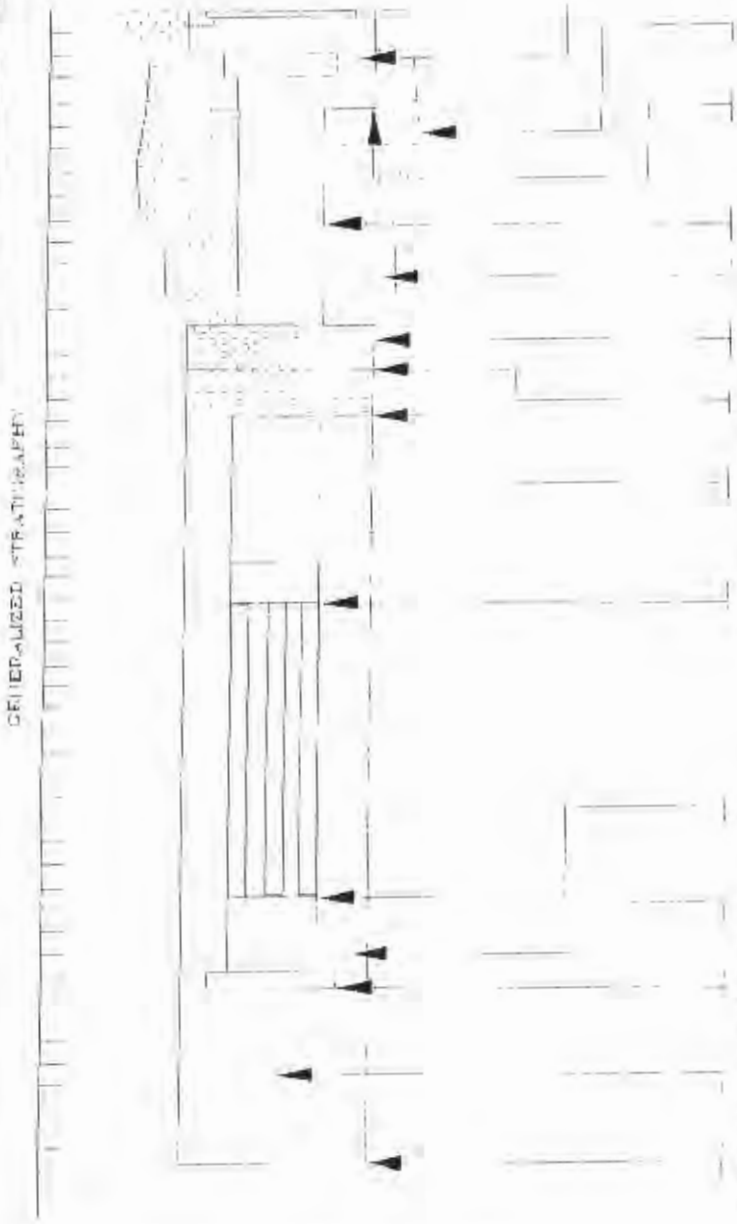
TYPE OF FILLER
BELOW PLUGGED BLANK: #00 Sand

BOTTOM OF BOREHOLE
Elevation/Depth: 17.0 ft. bgs

NOTES ft. bgs = feet below ground surface
NA = Not Applicable

LCS Inc. WELL CONSTRUCTION DETAIL

PROJECT/LOCATION:	2530 Hamburg Turnpike, Lackawana, NY	PROJECT No.	04B193.22
CLIENT:	M&T Bank	WELL No.	TPMW8
DATE COMPLETED:	June 1, 2004	SUPERVISED BY:	JMR



REFERENCE POINT
Elevation/Depth: NA

SURFACE SEAL
Type/Depth: Hydrated Bentonite / 0.0 ft. bgs

DEPTH OF SURFACE CASING: NA

RISER PIPE Size/Type: 1 inch diameter / Sch. 40 PVC

DIAMETER OF BOREHOLE: 2.2 inches

TYPE OF FILL: NA

TOP OF SEAL Elevation/Depth: 0.0 ft. bgs
TYPE OF SEAL: Hydrated Bentonite

TOP OF FILTER PACK Elevation/Depth: 1.0 ft. bgs
FILTER PACK MATERIAL: #00 Sand

TOP OF SCREEN Elevation/Depth: 4.9 ft. bgs
SCREEN SIZE/TYPE: 0.010 inch / Sch. 40 PVC

BOTTOM OF SCREEN Elevation/Depth: 14.9 ft. bgs

BOTTOM OF FILTER PACK
Elevation/Depth: 14.9 ft. bgs

BOTTOM OF PLUGGED BLANK SECTION
Elevation/Depth: 14.9 ft. bgs

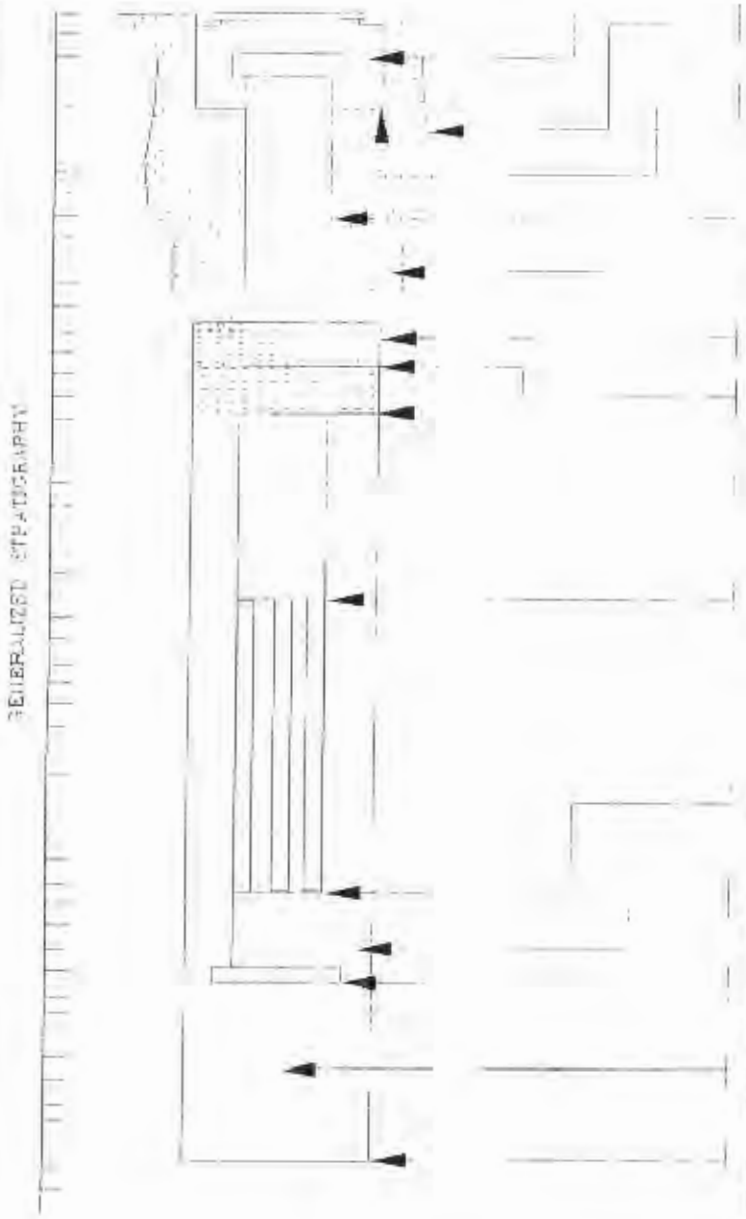
TYPE OF FILLER
BELOW PLUGGED BLANK: #00 Sand

BOTTOM OF BOREHOLE
Elevation/Depth: 15.0 ft. bgs

NOTES: ft. bgs = feet below ground surface
NA = Not Applicable

LCS Inc. WELL CONSTRUCTION DETAIL

PROJECT/LOCATION:	2530 Hamburg Turnpike, Lackawana, NY	PROJECT No.	04B193.22
CLIENT:	M&T Bank	WELL No.	TPMW9
DATE COMPLETED	June 2, 2004	SUPERVISED BY:	JMR



REFERENCE POINT
Elevation/Depth: NA

SURFACE SEAL
Type/Depth: Hydrated Bentonite / 0.0 ft. bgs

DEPTH OF SURFACE CASING: NA

RISER PIPE Size/Type: 1 inch diameter / Sch. 40 PVC

DIAMETER OF BOREHOLE: 2.2 inches

TYPE OF FILL: NA

TOP OF SEAL Elevation/Depth: 0.0 ft. bgs
TYPE OF SEAL: Hydrated Bentonite

TOP OF FILTER PACK Elevation/Depth: 1.0 ft. bgs
FILTER PACK MATERIAL: #00 Sand

TOP OF SCREEN Elevation/Depth: 4.9 ft. bgs
SCREEN SIZE/TYPE: 0.010 inch / Sch. 40 PVC

BOTTOM OF SCREEN Elevation/Depth: 14.9 ft. bgs

BOTTOM OF FILTER PACK
Elevation/Depth: 14.9 ft. bgs

BOTTOM OF PLUGGED BLANK SECTION
Elevation/Depth: 14.9 ft. bgs

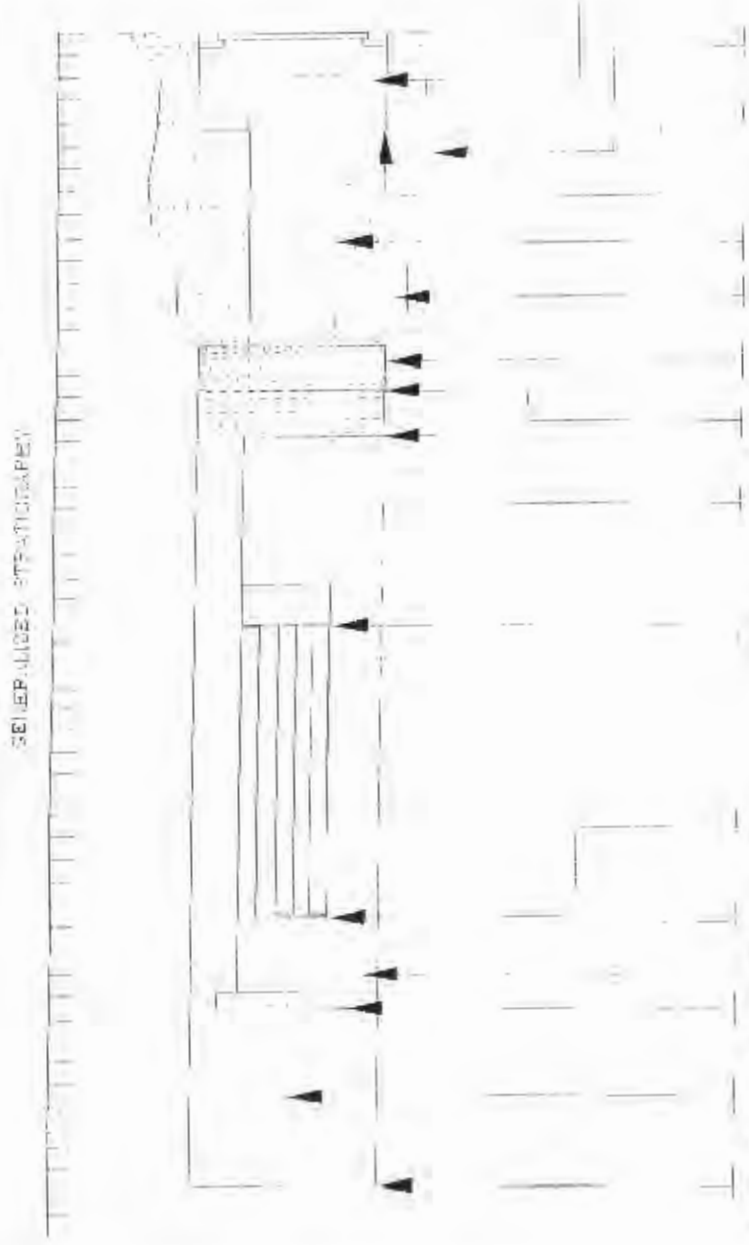
TYPE OF FILLER
BELOW PLUGGED BLANK: #00 Sand

BOTTOM OF BOREHOLE
Elevation/Depth: 15.0 ft. bgs

NOTES ft. bgs = feet below ground surface
NA = Not Applicable

LCS Inc. WELL CONSTRUCTION DETAIL

PROJECT/LOCATION:	2530 Hamburg Turnpike, Lackawana, NY	PROJECT No	04B193.22
CLIENT:	M&T Bank	WELL No.	TPMW10
DATE COMPLETED:	June 2, 2004	SUPERVISED BY:	JMR



REFERENCE POINT
Elevation/Depth: NA

SURFACE SEAL
Type/Depth: Hydrated Bentonite / 0.0 ft. bgs

DEPTH OF SURFACE CASING: NA

RISER PIPE Size/Type: 1 inch diameter / Sch. 40 PVC

DIAMETER OF BOREHOLE: 2.2 inches

TYPE OF FILL: NA

TOP OF SEAL Elevation/Depth: 0.0 ft. bgs
TYPE OF SEAL: Hydrated Bentonite

TOP OF FILTER PACK Elevation/Depth: 1.0 ft. bgs
FILTER PACK MATERIAL: #00 Sand

TOP OF SCREEN Elevation/Depth: 4.9 ft. bgs
SCREEN SIZE/TYPE: 0.010 inch / Sch. 40 PVC

BOTTOM OF SCREEN Elevation/Depth: 14.9 ft. bgs

BOTTOM OF FILTER PACK
Elevation/Depth: 14.9 ft. bgs

BOTTOM OF PLUGGED BLANK SECTION
Elevation/Depth: 14.9 ft. bgs

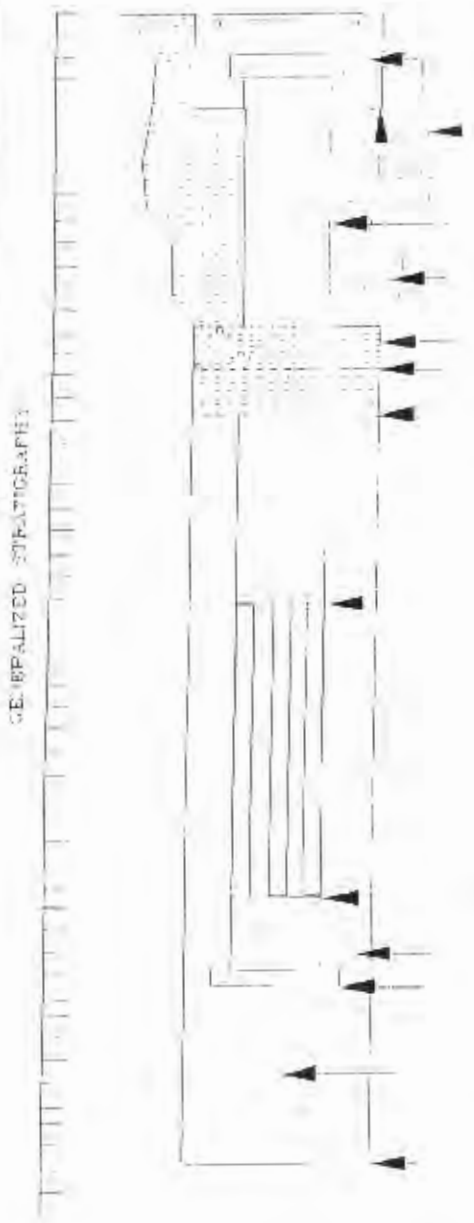
TYPE OF FILLER
BELOW PLUGGED BLANK: #00 Sand

BOTTOM OF BOREHOLE
Elevation/Depth: 15.0 ft. bgs

NOTES ft. bgs = feet below ground surface
NA = Not Applicable

LCS Inc. WELL CONSTRUCTION DETAIL

PROJECT/LOCATION:	2530 Hamburg Turnpike, Lackawana, NY	PROJECT No.	04B193.22
CLIENT:	M&T Bank	WELL No.	TPMW11
DATE COMPLETED:	June 2, 2004	SUPERVISED BY:	JMR



REFERENCE POINT
Elevation/Depth: NA

SURFACE SEAL
Type/Depth: Hydrated Bentonite / 0.0 ft. bgs

DEPTH OF SURFACE CASING: NA

RISER PIPE Size/Type: 1 inch diameter / Sch. 40 PVC

DIAMETER OF BOREHOLE: 2.2 inches

TYPE OF FILL: NA

TOP OF SEAL Elevation/Depth: 0.0 ft. bgs
TYPE OF SEAL: Hydrated Bentonite

TOP OF FILTER PACK Elevation/Depth: 1.0 ft. bgs
FILTER PACK MATERIAL: #00 Sand

TOP OF SCREEN Elevation/Depth: 2.9 ft. bgs
SCREEN SIZE/TYPE 0.010 inch / Sch. 40 PVC

BOTTOM OF SCREEN Elevation/Depth: 12.9 ft. bgs

BOTTOM OF FILTER PACK
Elevation/Depth: 12.9 ft. bgs

BOTTOM OF PLUGGED BLANK SECTION
Elevation/Depth: 12.9 ft. bgs

TYPE OF FILLER
BELOW PLUGGED BLANK: #00 Sand

BOTTOM OF BOREHOLE
Elevation/Depth: 13.0 ft. bgs

NOTES ft. bgs = feet below ground surface
NA = Not Applicable

WORK PLAN
BROWNFIELDS SITE
INVESTIGATION/INTERIM REMEDIAL MEASURE
2530 HAMBURG TURNPIKE, LACKAWANNA, NY

APPENDIX D
RESUMES

IYER ENVIRONMENTAL GROUP, PLLC

DHARMARAJAN R. IYER, Ph.D., PE, CES **President/Project Manager**

Education

Ph.D., Civil/Environmental Engineering, Syracuse University, 1984
M.S., Civil/Environmental Engineering, Syracuse University, 1980
B. S., Chemical Engineering, Indian Institute of Technology, Bombay, 1976
OSHA 40-Hr Health & Safety Training/Annual Refreshers
Mediation Skills Training, Metropolitan Mediation Services, Boston, MA (2000)

Registration

Professional Engineer, New York

Professional Affiliations

American Institute of Chemical Engineers
(Past Chairman/Treasurer, Western NY and Syracuse Sections)
American Water Works Association
Water Pollution Control Federation

Employment History

Principal, Iyer Environmental Group PLLC, Orchard Park, NY (1998 - present)
Senior Project Manager, URS Greiner, Buffalo, NY (1989-1998)
Associate, Malcolm Pirnie, Buffalo, NY (1987-1989)
Sr. Project Engineer, O'Brien & Gere Engineers, Syracuse, NY (1982-1987)

Expertise

Dr. Iyer has over 25 years of hands-on project management and technical experience: Phase I/II and remedial investigations; feasibility studies; design/implementation of bench scale and pilot plant test programs; water/wastewater treatment facilities evaluation/design; technical and economic feasibility evaluations; conceptual/detailed design; construction management/inspection; operation and maintenance of treatment/remedial systems; and development of unique and advanced solutions to waste treatment problems. Also, experienced in human health/ecological risk assessments, mathematical modeling of water/wastewater treatment processes and chemical equilibrium in aqueous systems; NYS-ASP and USEPA-CLP analytical program; laboratory sample tracking and analytical data retrieval systems; and development of statistical models/programs for data evaluation.

Representative Clients

NYSDEC; Earth Tech; O'Brien & Gere; Niagara Falls Bridge Commission; Seneca Nations; NJDEP; USEPA; USACOE; U.S. FWS; South Essex Sewerage District; Serafini, Serafini & Darling; Schenectady Chemicals; Chautauqua County IDA; City of Dunkirk; Chemical Process & Supply; Harrison Radiator Divn. of GM; Hercules/Aqualon; City of Corning; City of Amherst; American Cyanamid; Canandaigua Wine Co.; DuPont; Harshaw/Filtrol; GE; Goulds Pumps; IBM Corporation; Johnson & Johnson; Moog Automotive; North American Philips Corporation; Norwich Pharmaceuticals; Beveridge & Diamond; Sangamo-Weston Division of Slumberger; US Chrome; and Warner-Lambert.

Environmental Services

Iyer Environmental Group provides a wide spectrum of consulting, engineering and design-build services for water, wastewater, solid waste, hazardous waste and brownfields sites, and the ability to interface effectively with regulatory agencies on the client's behalf,. in a number of areas including but not limited to the following:

- ✎ Environmental Compliance/Audits/Assessments/Permits
- ✎ Water/Waste Analyses, Compliance Testing and Monitoring
- ✎ Water/Wastewater Treatment System Evaluation/Upgrade
- ✎ Bench/Pilot Scale Evaluation of Treatment/Remedial Systems
- ✎ Solid/Hazardous Waste Site Investigations through Remediation
- ✎ Engineering Design and Construction Management/Oversight
- ✎ Operations and Maintenance of Remedial/Treatment Systems
- ✎ Mediation/Expert Witness/Litigation Support/Cost Apportionment
- ✎ Community Relations/Public Meetings

REPRESENTATIVE PROJECTS

Hazardous and Solid Wastes

Kingsbury Landfill/Leachate Treatment System , Hudson Falls, NY (*OM&M*)
Dutchess Sanitation/FICA and Kessman Landfills, Region 3, NY (*OM&M*)
Whirlpool Bridge, Niagara Falls, NY (*SI, VCP, RD, RA*)
Haight Farm Superfund Site, Clarendon, NY *{RA; Design-Build, OM&M}*
Salem Acres Superfund Site, Salem, MA *{FS/PDI/RD/RA/CM/Monitoring}*
Santi's Gas Station, East Aurora, NY *{UST Investigation/Site Remediation}*
N. Franklin St. Site, Watkins Glen, NY *{RI/FS/PDI/RD/RA/O&M}*
Busy Bee Disposal Site, Alfred, NY *{RI/FS/Leachate Management}*
Robeson Industries Site, Castile, NY *{PDI/TS/RD/RA/CM/O&M}*
Phase I/Phase II Site Investigations, NY State *{SI}*
Galena Superfund Subsite, Cherokee County, KS *{PDI/RD/CM}*
Pennsylvania Ave/Fountain Ave Landfills, New York, NY *{RD}*
PAS Site, Oswego, NY *{Long-Term Monitoring/Leachate Management}*
Gratwick Park Waste Disposal Site, Buffalo, NY *{RI/FS}*
Frontier Chemical Waste Site, Buffalo, NY *{RI/FS}*
US Chrome Groundwater Remedial Program, Batavia, NY *{Design/Build}*
Groundwater Remedial Program, Batavia, NY *{Design/Build}*
Hazardous Waste Impoundment Cleanup, Maryville, MO *{TS/Design/Build}*
IBM Manufacturing Plant, Endicott, NY *{Groundwater Monitoring}*
Crab Orchard National Wildlife Refuge, Marion, IL *{RI/FS}*
Global Landfill, Old Bridge, NJ *{RI/FS}*
Millcreek Superfund Site, Erie, PA *{PDI/RD}*
Cleve Reber Industrial Waste Landfill, LA *{RD/RA Technical Support}*

Water and Wastewater

VA Medical Center, Bath, NY *{Water Supply Eval./Corrosion Control Installation}*
City of Watertown WTP Evaluation/Upgrade, NY *{Pilot Study/Design}*
MCWA WTP Taste/Odor Control, Rochester, NY *{Ozone Pilot Scale Testing}*
City of Rome WTP Evaluation, Rome, NY *{Pilot Scale DAF Testing}*
Kodak WTP Evaluation, Rochester, NY *{Pilot Dual/Multi Media Testing}*
Town of Kirkwood Water Supply *{Air Stripper Addition}*
City of Corning Water Supply *{Air Stripper Addition}*
Allied Chemicals, Solvay, NY *{Coagulant/Bicarbonate Use Study}*
City of Syracuse WWTP, Syracuse, NY *{Evaluation/Phosphate Control}*
Kodak Park Stormwater Tunnel, Rochester, NY *{Groundwater Contamination}*
GE WW Pretreatment, Johnson City, NY *{O&M Support/Water Recyle}*
IBM WWTP Replacement/Recycle, Owego, NY *{Pilot Testing/Design}*
Lockheed Martin WWTP Operations, Owego, NY *{O&M Support}*
Schenectady Chemicals WWTP Upgrade *{SBR/Biological Treatability Study}*
Norwich Pharmaceuticals WWTP, Norwich, NY *{Evaluation/Pilot testing}*
Warner Lambert WWTP, San Juan, PR *{Evaluation/Testing}*
North American Phillips Corp., Bath NY *{Antimony Removal Study}*
Chemical Process Supply, Dunkirk, NY *{New Process WW Treatment Study}*
Hercules/Aqualon WWTP Upgrade, Hopewell, NC *{Evaluation/Pilot Plant Test}*
GM Automotive WWTP, Baltimore, MD *{Evaluation/O&M Support}*
Harrison Radiator WWTP, Lockport, NY *{Evaluation/Full Scale Testing}*
Ford Automotive Parts WWTP, Dayton, OH *{Evaluation/O&M Support}*

IYER ENVIRONMENTAL GROUP
Dharmarajan R. Iyer, Ph.D., P.E.

PROJECT SUMMARIES: SOLID/HAZARDOUS WASTE

N. Franklin St. Site, Watkins Glen, NY {RI/FS/PDI/RD/RA/O&M}
Client: NYSDEC, Albany, NY

Project Manager from start to finish - RI/FS, pre-design investigations (PDI), remedial design, construction oversight of the remedial action, and operations and maintenance of the soil vapor and groundwater treatment systems. The RI/FS was performed under an emergency work assignment from the NYSDEC, and under Dr. Iyer's direction, the field work for the first phase RI was completed within three months from notice-to-proceed, earning the highest possible rating (20/20) and commendations from the client. The second phase RI and focused feasibility study for this former dry cleaner site were expedited at the client's request for this politically sensitive area so as to finalize the Remedial Action Plan within one year from the start of the project, a record for the NYSDEC.

Pre-design investigations included an aquifer pumping test with a mobile treatment system prior to surface water discharge. The remedial design included a 30 gpm groundwater extraction and treatment system (GWETS) and a 500 scfm soil vapor extraction and treatment system (SVET) with air-stripping and off-gas catalytic oxidation as major process units for the removal and destruction of perchloroethylene and its degradation byproducts. The two treatment systems, with programmable logic controller and full remote access, have been in operation for over a year. The SVET system successfully remediated the bulk of the contaminated soils, and residual contaminated soils straddling the water table at the foundation walls will be targeted through other means. The GWET system has already achieved a substantial reduction in contaminant levels and is expected to be continued for another year.

Salem Acres Superfund Site, Salem, MA {FS/TS/CADS/RD/RA/CM}
Client: South Essex Sewerage District, Salem, MA; Oversight by USEPA, MADEP

Project Manager for pilot scale treatability testing, clean area delineation study, remedial design, construction management/oversight and confirmatory soil sampling during remedial action, and monitoring of groundwater and adjacent wetland sediments/at this site for the five-borough wastewater utility with USEPA Region I/MADEP oversight. The pre- and post-construction monitoring programs included groundwater, wetland sediment and surface water. During this time, Dr. Iyer also provided technical assistance to the District's general counsel in negotiating the terms of the RD/RA consent decree and the apportionment of past investigation costs with the other two PRPs for this site. The site has been successfully remediated and returned to natural conditions. Over 90,000 tons of sludge and soil were excavated and disposed in two solid waste landfills without impacting the wetlands adjacent to the waste disposal lagoon.

Initially, Dr. Iyer helped bring the Remedial Investigation/Feasibility Study to a closure by developing a low-cost remedial alternative (chemical fixation with off-site disposal) for sludges and soils with high levels of petroleum and other HSL contaminants, and sliced the potential remedial cost by over 50%. Through expedited treatability studies and sludge/soil leachability tests, Dr. Iyer was instrumental in getting an unprecedented Massachusetts DEP approval for the disposal of treated sludges and soils in a lined solid waste landfill, and as a contingency measure, Maine DEP approval for the disposal of untreated sludges. During site remediation, 2000 feet of a 2" waterline along two residential streets leading to the site was replaced with a 6" line. Nearly 70 percent of this waterline was installed in bedrock which required blasting. The proactive approach with the client, agencies and local landfills enabled Dr. Iyer to bring the site remediation to completion at a construction cost of $7.5 million, well below initial estimates based on original quantities. Provided assistance to the SESD in closing out the Construction Contract, getting final certificate of completion by the regulatory agencies, performing the long-term site monitoring and getting the site delisted.

PROJECT SUMMARIES: SOLID/HAZARDOUS WASTE *(contd.)*

Busy Bee Disposal Site, Alfred, NY {RI/FS/Leachate Management}
Client: NYSDEC, Albany, NY

Project Manager for an RI/FS at this solid/industrial waste disposal site characterized by several alternating layers of sandstone and shale units underlying the waste material. Chlorinated organics and fuel-related compounds were contaminants of concern at this site. The RI field work included a geophysical survey, an extensive soil gas survey across the site, 17 monitoring wells in multiple clusters (including triplets), 10 landfill piezometers, and on-site/residential well sampling. Cap replacement, fractured bedrock wells for contaminated groundwater collection and interceptor trenches were evaluated in the FS. Dr. Iyer also initiated an active leachate withdrawal and disposal program at the outset of the RI which was instrumental in restricting contaminant migration off-site, and supported the selection of a low-cost, limited action remedy (leachate management and groundwater monitoring) for this disposal site.

Robeson Industries Site, Castile, NY {PDI/TS/RD/RA/CM/O&M}
Client: NYSDEC, Albany, NY

Project Manager for pre-design investigations, pilot-scale treatability study, remedial design, construction oversight, and O&M for this former industrial site with significant trichloroethylene contamination in soil and groundwater. A soil gas survey, groundwater sampling and analysis, and a soil vapor extraction pilot test was completed as part of the pre-design field work. The soil vapor (500 scfm) and groundwater (40 gpm) extraction and treatment systems were constructed early this year and have been operating successfully.

Galena Superfund Subsite, Cherokee County, KS {PDI/RD/CM}
Client: USACOE, Kansas City, MO; Oversight: USEPA, Kansas City, KS

Project Manager for pre-design investigations, design and construction oversight of the ROD-specified remedial action at the 800-acre Galena lead and zinc mining subsite, Cherokee County, Kansas. Components of this project for the U.S. Army Corps of Engineers include removal and placement of over one million cubic yards of surficial mining wastes, diversion of surface water, rechannelization of over 5,000 feet along two tributaries, recontouring and vegetation, protection of threatened and endangered species, and groundwater and surface water monitoring. Also developed and implemented a supplemental investigation program using X-ray fluorescence instrumentation for zinc, lead and cadmium in the field, which enabled the development of clearly-defined plans and specifications for competitive bidding. Received the highest praise from USACE, Kansas City District, for completing this project within a very aggressive schedule, and for the receipt of favorable bids without a single amendment during the solicitation period. Through the implementation of cost-saving alternatives for channel reconstruction and the development of a clear and precise set of design documents, the remedial construction was completed at a cost of $8.5 million or 70% below USEPA's original estimate to remediate this site.

Pollution Abatement Services, Oswego, NY {Long-Term Monitoring/Leachate Management}
Client: NYSDEC, Albany, NY

Task Manager for post-remediation operations and maintenance of this former solvent processing site in Oswego, New York. Conducted an evaluation for the hydrology within the slurry wall/cap containment system to determine the required leachate collection rate from trenches so as to develop and maintain an inward hydraulic gradient across the site. Developed implemented an O&M Manual for the NYSDEC, hauling over 10,000 gallons month of highly contaminated leachate to an off-site hazardous waste treatment facility, and performing environmental monitoring (surface water, groundwater and wetland sediments) for eight years, until the PRPs assumed responsibility for the long-term O&M.

IYER ENVIRONMENTAL GROUP
Dharmarajan R. Iyer, Ph.D., P.E.

PROJECT SUMMARIES: WATER/WASTEWATER

Ozonation Pilot Scale Testing, Rochester, NY {Drinking Water Treatment}
Client: Monroe County Water Authority, Rochester, NY

Project Manager for the design, installation and operation of an oxidation/direct filtration pilot plant for taste and odor control in raw water from lake Ontario for Monroe County, New York. The pilot plant consisted of a 9" diameter, 10' high plexiglass ozonation column, an ozone generator and two parallel dual and multi media filters. Several treated water quality parameters including turbidity, trihalomethane formation potential, particle count and bacterial count were evaluated. Prepared a basis of design and cost estimates for a full-scale, 3,750-lb/day oxidation plant.

WTP Upgrade, Watertown, NY {Pilot Study/Preliminary Design}
Client: City of Watertown, Watertown, NY

Designed, built and operated a 25 gpm pilot-plant upgrade of the 80-year old water treatment plant. The study and preliminary design contributed to the development of both short-term rehabilitation and long-range treatment programs for the City of Watertown, New York, water supply. The pilot scale unit simulated existing treatment processes including flocculation and sedimentation which occurred in an upgradient section of the river where a dam had been built to provide a large retention time. Also tested were dissolved air flotation, dual and multi-media filtration, and taste and odor control for addition to the plant.

Potable Surface Water Treatment, Rome, NY {Pilot Scale Dissolved Air Flotation testing}

Responsible for the oversight and sampling/analysis for the City of Rome during the operation of a 50 gpm pilot scale dissolved air flotation unit by Krofta Engineering. DAF was being evaluated as a potential treatment process for the a proposed water treatment plant.

Application/Testing/Design of Air-Stripper Model
Clients: Several Municipal/Industrial clients

Project Manager responsible for design/evaluation of air-strippers FOR wastewater treatment. Installed/operated a pilot air stripper (12" dia, 10' height) for VOC removal from groundwater used as the source of drinking water by the City of Corning, New York. The pilot plant results became the basis for a 2 MGD air stripper (packed column in a square brick tower) located at the pumping well and piped into the distribution system. Responsible for preliminary design of an air stripper built at a pumping well in the Town of Kirkwood due to chlorinated organics contaminated from an adjacent waste landfill. Also evaluated water supply and treatment requirements for contaminated potable water supplies in the Ellicottville and Franklinville, NY.

Industrial WWTP Replacement/Operation, Owego, NY {Pilot Testing/Design/O&M}
Client: IBM Federal Systems (now Lockheed Martin), Owego, NY/IBM, Armonk, NY

Designed, built and operated two 5 GPM on-site parallel pilot-plant units, one with dual conventional resins for water recycle, and the other a chelating cation-exchange resin for heavy metals removal prior to surface water discharge at a major electronics manufacturing facility. Performed on-site analysis for metals using AA and other parameters during the pilot study. Developed a basis of design and associated capital and operating costs for a 500 GPM dual ion-exchange system, following a technical and economic evaluation of alternatives for the treatment of general rinse waters and other wastes. Other projects at the same facility included an evaluation of operating procedures, chemical usages and a reactor-clarifier tracer study. Provided technical support during design of the new wastewater treatment system.

Industrial Wastewater Pretreatment, Johnson City, NY {O&M Support/Water Recyle}
Client: General Electric, Johnson City, NY

Evaluated several alternatives including chemical precipitation/ reduction and ion-exchange for the removal of heavy metals and other inorganics from electroplating wastewater. Designed a 70 GPM dual ion-exchange system for water reuse that resulted in significant savings in operating costs and decreased the purchase of water. Subsequently provided operational assistance and re-piped the system for maximum resin utilization.

PROJECT SUMMARIES: WATER/WASTEWATER (contd.)

Kodak WTP Evaluation, Rochester, NY {Pilot Dual/Multi Media Testing}
Client: Eastman Kodak, Rochester, NY
Project Manager responsible for the pilot testing of dual and multi-media filters for the treatment of water from Lake Ontario for plant use, including feed to the de-ionization/ultra pure water system.

Industrial WWTP Operation, Arcade, NY {Troubleshooting/Operation}
Motorola, Arcade, NY
Responded to the accidental release of hydrogen cyanide into the plant wastewater which reacted with ferrous sulfate and produced ferrous ferrocyanide across the entire WWTP. Developed chemical feed requirements and treatment strategy using on-site bench scale tests to precipitate the ferrous-ferro cyanide as prussian blue. Implemented the treatment strategy through temporary reconfiguration of the WWTP piping and manual chemical feed and, over two days, successfully removed all ferrous ferro-cyanide in the treatment system.

Organic Industry WWTP Upgrade, Schenectady, NY {Pilot SBR Testing/Design}
Client: Schenectady Chemicals, Schenectady, NY
Project Manager responsible for the pilot scale testing of the sequential batch reactor (SBR) process for the biological treatment of high-strength organic chemical industry wastewater. The pilot scale testing was followed with a preliminary design and cost estimate for the addition of a full scale SBR unit to the WWTP.

Organic Industry WWTP Upgrade, Hopewell, NC {Evaluation/Pilot Plant Testing}
Client: Hercules/Aqualon, Hopewell, NC
Provided technical assistance during nine weeks of pilot plant testing of segregated cellulose derivatives and chemical cotton waste streams, and subsequent design for the expansion of the wastewater treatment system at a large industrial facility in Virginia. Biological treatment processes and secondary clarifier performance were evaluated using pilot scale units at the plant site.

Automotive Industry WWTP Evaluation, Lockport, NY {Evaluation/Full Scale testing}
Client: Harrison Radiator, Lockport, NY
Provided technical assistance during the full scale testing of coagulation/flocculation chemicals for metals precipitation and solids settleability at this automotive parts manufacturing facility in Western NY.

Industrial WWTP Evaluation, Norwich, NY {Evaluation/Pilot Scale Testing}
Client: Norwich Pharmaceuticals, Norwich, NY
Provided process and operational assistance for a pharmaceutical company in Upstate NY to solve problems associated with a two stage biological treatment system and a bank of pressure filters.

Industrial Pre-Treatment Study, Dunkirk, NY {Pilot Testing}
Client: Chemical Process Supply/City of Dunkirk, NY
Managed a feasibility study using four 20-gallon reactors to assess the impact of waste waters from a proposed pigment manufacturing facility on the City's WWTP. Similarly, conducted a pilot plant study and preliminary design of Sequential Batch Reactors for the upgrade of a wastewater treatment system to include biological treatment at a major phenol formaldehyde resin manufacturing facility.

New Inorganic Industry WWTP Study, Bath, NY {Antimony Removal}
Client: North American Phillips Corp., Mahwah, NJ
Conducted chemical equilibrium (MINEQL) modeling and bench scale testing to assess antimony removal as hydroxide and sulfide using inorganic precipitating agents. Developed a technical memorandum and successfully convinced USEPA that pre-treatment standards for antimony needed to be revised and be made specific to this industry.

Pharmaceutical Industry WWTP, San Juan, PR {Evaluation/Testing}
Client: Warner Lambert, San Juan, PR
Reviewed plant operations and waste segregation practices, and conducted bench scale tests to evaluate inorganics removal in the pretreatment steps prior to reverse osmosis for direct surface water discharge.

PUBLICATIONS/PRESENTATIONS

Iyer, D., Iverson, S., and Sanders, S., Galena Mine Waste - Investigations through Remediation, XIV Superfund Conference, Washington, D.C., November 30 - December 3, 1993.

Amend, J. and Iyer, D. R., "Treatment of High-Strength Organic Chemical Industry Wastewater in a Sequencing Batch Reactor", WPCF Fall Convention, Dallas, TX, October 6, 1988.

Iyer, D.R. and Letterman, R.D., "Modeling the Effects of Adsorbed Hydrolyzed Aluminum and Solution Chemistry on Flocculation Kinetics", Environmental Sci. & Tech., Vol. 19, No. 8, 1985.

Letterman, R.D. and Iyer, D.R., "Modeling the Effects of Adsorbed Aluminum Hydrolysis Products and Solution Chemistry on Flocculation Kinetics", 5th International Conference on Surface and Colloid Science & 59th Colloid and Surface Science Symposium, Clarkson University, Potsdam, NY, June 24-28, 1985.

"Chemical Equilibrium Model Used for Hazardous Waste Impoundment Closure", Proceedings, AIChE Diamond Jubilee/Annual Meeting, Washington, D.C., October 30-November 4, 1983.

Iyer, D.R. and Letterman, R.D., "Modeling the Effects of Adsorbed Hydrolyzed Aluminum on the Electrical Double Layer Properties of Aqueous Solutions", International Conference on Advances in Solids Separation, Society of Chemical Industry, University College, London, England, September 19-21, 1983; in Solid-Liquid Separation, Ellis Horwood Publishers, Chichester, England, 1984.

"Predicting the Effect of Hydrolyzing Salts on Flocculation Efficiency Using Computerized Chemical Equilibrium Models", Proceedings, AWWA Annual Conference, Miami, Fl, May 18, 1982.

D.R. Iyer and R.D. Letterman. Chemical Equilibrium Models. Report to Allied Chemical Corporation, Syracuse Research Laboratory, Syracuse, NY, 1980.

"Adsorption of Color-Causing Organics on Aluminum Hydroxide Precipitate", ASCE National Conference on Environmental Engineering, New York, NY, July 8-10, 1980.

S.W. Effler, D.R. Iyer, R.L. Honstein, K.S. Young, G. Lorifice and B. Lingo. Water Quality Analysis of Limestone Creek. Departmental Publication, Department of Civil Engineering, Syracuse University, Syracuse, NY, 1979.

"Modeling Solid-Liquid Separation Processes for Water Treatment", AWWA New York Section Meeting, Liberty, NY, September 12, 1978.

Letterman, R.D. and Iyer, D.R., "Process Model Application in Potable Water Treatment", Proceedings, Conference on Theory, Practice and Process Principles for Physical Separation, AIChE/Engineering Foundation, Pacific Grove, California, October 30-November 4, 1977.

IYER ENVIRONMENTAL GROUP

DANIEL TAGLIENTO **Resident Engineer**

Education Associates Degree, Liberal Arts and Construction Technology,
Hudson Valley Community College, New York (1968)

PROJECT EXPERIENCE

IEG, Resident Engineer, A*lbany, N Y (2002 – present)*
Provided operation, maintenance and monitoring services at various landfill projects. Besides sampling and routine inspections, his responsibilities include sampling, testing, repairing, upgrading, operating and maintaining the leachate treatment system at Kingsbury Landfill, Hudson Falls, NY. Evaluate, repair and upgrade landfill gas collection and flare combustion system at the Dutchess Sanitation Landfill, Poughkeepsie, NY. Prepare and submit inspection reports. Assist in the implementation and compliance of health and safety guidelines.

Canfield Casino Facility, Assistant Manager (2001)
Supervised the organizing and planning of public events at the casino.

City of Saratoga Springs, DPW, Senior Operator *(1995 – 2001)*
Assisted in the development and implementation of operation and maintenance program for the City's wastewater treatment plant.

Toys R Us, Construction Superintendent/Project Manager Paramus, *New Jersey, (1994 – 1995)*
Prepared bid packages, qualified subcontractors, oversaw construction on retail store renovations and new computer center at Parsippany, New Jersey.

Marriott Meridian Construction Company, Construction Manager, *Beacon, New York (1991 – 1993)*
On-site Project Monitor for additions and renovations during a multiyear project at the middle school and junior/senior high school complex of the Schyletzville School District.

Barry, Bette & Leo Duke, Senior Project Manager, *Colonie New York (1989 – 1991*)
On-site project manager on construction projects including Public School Fire Rebuilding in Massachusetts, and renovations of shopping mall and automobile dealership.

Beltrone Construction Company, Project Manager, *Latham, New York (1984 -1989)*
On-site construction manager for New York State OGS projects in Green County, Washington County and Mid State Correctional Facilities, and Telecommunications at Empire State Mall.

City of Saratoga Springs School District, Director of Maintenance & Operations (1982 – 1984)
Responsible for eight school bus garages and administrative offices.

College Oil Recycling, *Saratoga Springs, New York (1976 – 1985)*
Owner and operator of recycling operations for collecting and refining of waste oil for Skidmore College's Waste Oil Project.

Skidmore College, *Saratoga Springs, New York (1973 – 1982)*
Assistant to director of facilities and planning. Representative at new campus expansion including classroom and science buildings, student apartments and student center.

FRED SMITH, CIH, CSP **H&S Specialist**

Education	B.A. (Arts & Sciences), Syracuse University, Syracuse, NY, 1975 B.S. (Industrial Hygiene), State University of NY at Buffalo, 1991
Registrations	Certified Industrial Hygienist (*CIH*) No. 4785 Certified Safety Professional (*CSP*) No. 10740
Professional Affiliations	American Industrial Hygiene Association Diplomate, American Academy of Industrial Hygiene Advisory Board, Occupation Safety & Health, Niagara Community College Board of Directors, Steel Structures Painting Council
Employment History	Associate H&S Specialist, Iyer Environmental Group (1998-present) Environmental Manager, Sear-Brown Group, Lewiston NY (1991-1993) Project Engineer, UR Greiner, Buffalo, NY (1990 -1991) President - ASTECO, Inc., Niagara University, NY (1983 - 1990) Development Engineer, Union Carbide, Buffalo, NY (1976 - 1983)
Expertise	Mr. Smith has extensive experience providing environmental science and industrial hygiene professional services for site investigations, remediation and construction projects for many years. His current work includes: conducting worker exposure assessments, developing environmental compliance and worker protection plans, as well as construction period services. Previously, Mr. Smith was chief environmental scientist in the Buffalo office of a nation-wide environmental engineering firm, responsible for hazardous waste, landfill closure and RI/FS projects, including Quality Assurance Project Plans, Health Risk Assessments, Superfund/RCRA chemical data audits, and field sampling design he also founded an industrial hygiene analytical/consulting firm which was sold to a British multinational engineering/life sciences company and operated it as well as an environmental analytical services center.

EXPERIENCE SUMMARY

Hazardous Waste Specialist on Construction Projects: Practice as an independent environmental, industrial hygiene and safety consultant includes regulatory compliance (OSHA, EPA, NYSDEC), and classical industrial hygiene including: worker exposure assessments, hazard analysis, heat stress, radiation, noise, ventilation and training. Also involved in the emerging health and safety issues of complex steel structures lead removal, indoor air quality, hazardous waste investigation and remediation, asbestos, contaminant fate and transport modeling, health risk assessments, and air/groundwater quality.

Bell Landfill Superfund Site, Towanda, PA: Site Specific Health and Safety Plan for remedial construction included recognizing and controlling chemical and physical hazards during installation of an engineered cap and leachate collection systems improvements. Additional work included designing worker, environmental exposure monitoring and field screening with direct reading instrumentation. Prepared for Golder Associates/ DuPont.

Village of Lindley, NY: Site Health and Safety Plan for construction of new underground and aboveground facilities for the transmission, collection, transfer, and tanker loading of leachate generated within the Lindley South Landfill. Safety and Health planning anticipated chemical exposures from leachate and physical hazards of excavation and trenching. Plan included worker and environmental exposure monitoring, field screening with direct reading instrumentation, specification of appropriate protective clothing and equipment, and establishing action levels and response actions. Prepared for remediation contractor - Orchard Earth & Pipe..

Niagara Mohawk, Syracuse, NY: Site Health and Safety Plan for remediation of a abandoned acid crock at Niagara Mohawk Power Corporation (NMPC) Seventh North Service Center. Remediation work included removal of contaminated soils, demolition of a below-grade acid crock, and site restoration. Contaminants included halogenated aliphatic and aromatic hydrocarbons, and PCB's. Safety and Health planning anticipated exposures by the respiratory route and dermal contact. Included were personal breathing zone exposure monitoring by NIOSH methods, ambient air monitoring at construction boundaries, field screening with direct reading instrumentation, specification of appropriate protective clothing and equipment, and establishing action levels and response actions. Prepared for remediation contractor - Orchard Earth & Pipe. Owner: Niagara Mohawk Power Corp.

Lincoln Air Force Base - Atlas Missile Site No. 9, Wilber, NB: Site Health and Safety Plan for engineering investigation at Lincoln Air Force Base - Atlas Missile Site No. 9 in Wilber Nebraska. Work involved developing site specific health and safety procedures to investigate this 18.5 acre site containing abandoned missile silos, water treatment plant, and underground storage tanks. Contaminants included volatile organics, PCBs, and heavy metals. Safety and Health planning anticipated exposures by the respiratory route and dermal contact. Included were personal breathing zone exposure monitoring by NIOSH methods, field screening techniques with direct reading instrumentation, specification of appropriate protective clothing and equipment, and establishing action levels and response actions. Prepared as a subconsultant to IMS Engineers. Owner: U.S. Army Corps of Engineers - Omaha District.

Niagara Mohawk, Utica, NY: Site Health and Safety Plan during Dense Non-Aqueous Phase Liquid Extraction Demonstration Study at the Harbor Point Former Manufactured Gas Plant Site in Utica, New York. Work included an engineering investigation to obtain information regarding the practicality of recovering DNAPL with no physiochemical changes to coal tar residues, effect of hydraulic modifications to the DNAPL extraction systems, and applicability of these measures at other MGP Sites. Safety and Health planning anticipated exposures by the respiratory and dermal routes. Included were field screening techniques with direct reading instrumentation, specification of appropriate protective clothing and equipment, and establishing action levels and response actions. Prepared as a subconsultant to Blasland Bouck & Lee.

U.S. Army Corps of Engineers, PA: Site Health and Safety Plan for Verification of PCB Spill Cleanup at Fort Indiantown Gap, Pennsylvania. Work included engineering investigation by PCB wipe sampling and surface soil sampling. Safety and Health planning anticipated exposures by the respiratory and dermal routes. Included were field screening techniques with direct reading instrumentation, specification of appropriate protective clothing and equipment, and establishing action levels and response actions. Prepared as a subconsultant to Blasland Bouck & Lee.

Fulton Terminals RA Trust PRP Group, NY: Site Health and Safety Plan for remediation activities at the Fulton Terminals Superfund Site. The site is an approximately two-acre former facility used for raw material storage for manufacturing asphalt roofing. Contaminates included

fluids in underground storage tanks, organic solvents, unlabeled drums, and 300 cubic yards of contaminated soils. Safety and Health planning anticipated exposures by the respiratory and dermal routes. Included were field screening techniques with direct reading instrumentation, ambient air quality monitoring, specification of appropriate protective clothing and equipment, and establishing action levels and response actions. Prepared as a subconsultant to Blasland Bouck & Lee.

Niagara Mohawk, NY: Site Health and Safety Plan for Preliminary Site Assessment/Interim Remedial Measures Study at the Former Engine Street MGP site. Work included surface soil and surface water sampling, test pit excavation, ground water sampling and fluid level monitoring. Potential contaminants included PAH's, volatile aromatics, phenolics, heavy metals, and PCB's. Safety and Health planning anticipated exposures by the respiratory and dermal routes. Included were field screening techniques with direct reading instrumentation, specification of appropriate protective clothing and equipment, and establishing action levels and response actions. Prepared as a subconsultant to Blasland Bouck & Lee.

U.S. Army Corps of Engineers, NY: Work Plan, Chemical Data Acquisition Plan, and Site Safety and Health Plan for $650,000 Underground Tank and Contaminated Soil Remediation project in Cambria New York. Work included developing a field sampling and data quality program to sample tank contents, petroleum contaminated soils, and unlabeled drums. SSHP included unique task Activity Hazard Analysis format. Safety and Health planning anticipated exposures by the respiratory and dermal routes. Included were field screening techniques with direct reading instrumentation, ambient air quality monitoring, specification of appropriate protective clothing and equipment, and establishing action levels and response actions. Prepared for remediation contractor - Rayford Enterprises, Inc.

NYSDEC: Development of Field Sampling and Chemical Data Quality Plan, Community Protection Plan, and Health and Safety Plan for a 6,000 ton PCB contaminated soil remediation in North Tonawanda NY. Work included developing a field sampling and data quality program using TCLP, EPA CLP, and unique PCB immunoassay field screening analysis. Safety and Health planning anticipated exposures by the respiratory and dermal routes. Included were field screening techniques with direct reading instrumentation, ambient air quality monitoring, specification of appropriate protective clothing and equipment, and establishing action levels and response actions.

Frontier Chemical Site, Pendelton, NY: Complete Human Health Risk Assessment for this 72 acre hazardous waste site. Hazardous wastes included heavy metals in sediments of a flooded quarry, and chlorinated solvents in soils. Work included identification of chemicals of concern from the total chemical contamination over various affected media, discerning exposure pathways to onsite and off-site receptors, contaminant fate and transport modeling by fugitive dust/volatilization/groundwater transport, and calculating chronic/acute health effects risk summaries (carcinogenic and non-carcinogenic). These calculations were then used to design a remediation approach for the site.