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Revised 18 June 2009
24 November 2008
File No. 34507-004

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau C, 11th Floor
625 Broadway
Albany, New York 12233-7014

Attention: Mr. Douglas MacNeal, P.E.

Subject: Remedial Investigation Work Plan
Seneca Falls Former MGP Site, Site No. 8-50-010
Seneca Falls, New York

Dear Mr. MacNeal:

New York State Electric & Gas Corporation (NYSEG) retained Haley & Aldrich of New York (Haley & Aldrich) to prepare this Remedial Investigation (RI) Work Plan to address data gaps identified in the Data Summary Report by Haley & Aldrich submitted 29 July 2008 and comments provided by the New York State Department of Environmental Conservation (NYSDEC) on 9 October 2008 for the Seneca Falls Former Manufactured Gas Plant (MGP) Site located in Seneca Falls, New York. The goal of the tasks described by this Work Plan is to provide data to complete the conceptual site model (CSM) for purposes of preparing a Remedial Investigation Report.

BACKGROUND

The Former MGP Site is located at 187 Fall Street, Seneca Falls, New York. The Former MGP Site is an approximately 1.2 acre parcel of land owned by NYSEG and located in a mixed residential/commercial area. The developed portion of the parcel consists of a building currently occupied by Pick-a-Flick Video, a movie rental and cosmetic tanning business, and a paved parking lot located immediately west of the building. The building was built over portions of the former MGP, including coal sheds, the retorts, and the gas holder.

On behalf of NYSEG, Haley & Aldrich completed soil, groundwater, and soil vapor investigations over several phases of work between September 2007 and February 2008. Work was completed in accordance with the September 2007 Preliminary Site Assessment Work Plan and February 2008 Soil Vapor Intrusion and Additional Subsurface Investigation Work Plan. Data gaps identified at the conclusion of the field investigations included the following:

- Surface and subsurface analytical soil results indicated samples collected in fill material near the western Former MGP Site property boundary exceed Part 375 Restricted Commercial Soil Cleanup Objectives (SCOs) for several semi-volatile organic compounds (SVOCs) and arsenic.

The western off-site extent of fill material with SVOCs and arsenic that exceed the applicable SCOs is unknown;

- Surface and subsurface analytical soil results indicated samples collected in off-site residential backyards exceed Part 375 Unrestricted Use SCOs for several SVOCs and arsenic. The origin of fill material with SVOCs and metals that exceed the applicable SCOs is unknown; and,

- Sediment samples collected from the Seneca River and Canal along the southern Former MGP Site property boundary in 1991 detected SVOCs. The physical distribution and thickness of sediment, and the origin of the SVOCs in sediment, is unknown.

In a letter dated 9 October 2008, NYSDEC provided two additional comments regarding Remedial Investigation field activities:

- Additional sampling proposed for property west of the Former MGP Site should include the lowland area; and,

- Submission of ideas to better evaluate the connection of groundwater within the former gas holder to the overall groundwater system.

In addition to activities intended to fill data gaps described above, one additional round of groundwater sampling and elevation monitoring was recommended in the Data Summary Report to further evaluate the concentration of dissolved-phase constituents detected in samples collected from upland area monitoring wells.

The field activities described in the following sections are intended to fill data gaps identified in the July 2008 Data Summary Report and October 2008 NYSDEC comment letter. As stated in the comment letter, specific comments provided by NYSDEC will be addressed in the Remedial Investigation Report.

WESTERN PROPERTY OFF-SITE INVESTIGATION

The Former MGP Site is abutted to the west by an active Sunoco gasoline filling station. The upland portion of the Sunoco property includes the filling station pump islands, convenience store, underground fuel storage tanks, and paved parking area; the lowland portion of the property is undeveloped wooded land. Historic maps indicate that the current Sunoco property was occupied by the F. Maier Coal & Lumber Yard through 1925.

Test pits (TP-07-02 and TP-07-04), soil borings (SB-07-07 and SB-07-05), and surface soil sampling (SS-07-06 and SS-1) completed on the Former MGP Site adjacent to the western property boundary indicate that surface soil and subsurface fill materials exceed the Part 375 Restricted Commercial SCOs for several SVOCs and arsenic. As part of the Data Summary Report, Haley & Aldrich recommended additional off-site investigations beyond the western property boundary to investigate the possible off-site extent of MGP-related impacts.

A Subsurface Investigation Report by Groundwater & Environmental Services, Inc. (GES) dated 12 October 2007 was obtained to evaluate Sunoco property subsurface conditions. A copy of the report is included as Appendix A. As indicated in the GES report, two soil borings (SB8 and MW7) were advanced and one monitoring well was completed (MW7) in the northeastern portion of the Sunoco property upland area north of a monitoring well (MW3) installed during previous investigations. Results of the 2007 report by GES indicated the following:

- The gasoline station was built around 1950 and is presently active. Three 12,000-gallon gasoline underground storage tanks (USTs) and one 550-gallon fuel oil UST were removed in 1993 during gasoline filling station renovations. Field screening of soils during the fuel oil UST removal, located adjacent to the Former MGP Site along the Sunoco property eastern property boundary, indicated volatile organic compound (VOC) impacts to soils. Reportedly, approximately 20 cubic yards of impacted soil were removed during fuel oil UST removal operations.

- Boring logs for soil borings SB8 and MW7, located west of Former MGP Site test pit TP-07-02, were provided as part of the 2007 report by GES. No demolition debris or MGP-related impacts, such as coal tar, were noted on the boring logs. Field screening results for soil boring MW7 indicate VOCs were not detected, the maximum field screening detection reported for SB8 was 5.3 ppm from 10 to 12 feet below ground surface.

- Soil analytical results for samples collected from soil boring MW7 from 9 to 11 feet, 19 to 21 feet, and 21 to 23 feet below ground surface indicate PAHs were not detected.

- Benzene, toluene, ethylbenzene, and xylene (BTEX) compounds were not detected in monitoring wells MW7 or MW3 during 16 August 2007 groundwater sampling. Methyl tert-butyl ether (MTBE), a compound likely associated with gasoline dispensing operations, was detected at low concentrations at MW7 (23 ppb) and MW3 (32 ppb) during August 2007 groundwater sampling.

- Groundwater elevation contours prepared by GES indicated that overburden groundwater flows easterly beneath the Sunoco property, towards the Former MGP Site.

Based on the results presented in the Subsurface Investigation Report by GES, no additional subsurface investigations are recommended for the upland portion of the Sunoco property since:

- MGP-related impacts were not observed in soil borings completed by GES on the Sunoco property upland area adjacent to the Former MGP Site western property boundary;

- Impacts to soil related to a past release from a fuel oil UST on the Sunoco property adjacent to the Former MGP Site western property boundary resulted in soil removal activities during the tank decommissioning;

- Groundwater analytical data indicates the presence of MTBE in groundwater samples collected from monitoring wells in the upland portion of the Sunoco property; and,

- Groundwater elevation contours prepared by GES for the October 2007 Subsurface Investigation Report indicates groundwater flow towards the Former MGP Site in the upland portion of the Sunoco property.

The western extent of fill materials with MGP-related SVOCs and arsenic that exceed the Restricted Commercial SCOs in the lowland portion of the Sunoco property is unknown. To further investigate the extent of off-site fill materials west of the Former MGP Site, additional soil borings and surface soil samples on the lowland portion of the Sunoco property are recommended.

Groundwater elevation contour plans presented in the Data Summary Report by Haley & Aldrich indicate that groundwater flows north to south beneath the Former MGP Site. Groundwater analytical results for monitoring well MW-07-05, located in the southwest corner of the Former MGP Site, indicate that groundwater beneath the western portion of the Former MGP Site lowland area is not impacted by VOCs, PAHs, or cyanide. August 2007 results for Sunoco property upland area monitoring wells MW7 and MW3 indicate MTBE impacts to groundwater are likely related to gasoline dispensing operations. Therefore, no groundwater monitoring wells are proposed for the Sunoco property lowland area investigation.

Western Property Off-Site Investigation Scope of Work

The following scope of work is proposed to investigate the lateral and vertical extent of Sunoco property lowland area soils potentially impacted by constituents related to historic MGP operations:

1. Haley & Aldrich will subcontract the completion of up to five (5) test pits in the lowland portion of the Sunoco property. Proposed locations are shown on Figure 1. Actual locations may be adjusted at the time of installation based on the location of subsurface utilities and equipment access restrictions. If MGP-related impacts to surface or subsurface soil are observed during subsurface explorations, additional test pit locations may be added to attempt to delineate the lateral and vertical extent of visual impacts.

2. Each test pit will be completed to a depth of refusal (if encountered) or to the top of bedrock or other confining unit. Samples of soil recovered from each test pit will be visually characterized for color, texture, and moisture content. The presence of visible staining, NAPL (if encountered), odors, and PID headspace will be noted.

3. It is anticipated that a minimum of two (2) subsurface soil samples will be collected from each test pit. Soil sample collection criteria and methods will adhere to Section 3.2.3 paragraph 3 of the July 2007 PSA Work Plan. Soil samples will be analyzed for Target Compound List (TCL) VOCs, TCL SVOCs, and Target Analyte List (TAL) metals (including cyanide).

4. In addition to test pit sampling, up to five surface soil samples will be collected from the lowland area of the Sunoco property. Soil will be collected from the 0 to 2-inch interval. Surface soil samples will be analyzed for TCL SVOCs and TAL metals (including cyanide). The proposed surface soil sample locations are shown on Figure 1. Surface soil sampling methods will adhere to Section 3.2.2 of the July 2007 PSA Work Plan.

EASTERN PROPERTY OFF-SITE INVESTIGATION

The Former MGP Site is abutted to the east by residential properties. Subsurface explorations completed by Haley & Aldrich in 2007 indicated the residential backyards are underlain by topsoil, fill material, and glacial till. Soil sample analytical results indicate that metals and SVOCs exceed Unrestricted Use SCOs in fill material.

The origin of the fill observed in the residential backyards is uncertain. Anthropogenic materials observed in the fill material were inconsistent with on-site observations, suggesting the backyard fill may be unrelated to MGP operations. Potential sources identified in the July 2008 Data Summary Report include nearby historic industrial operations, fill material related to the construction of the Seneca River and Canal, or discarded furnace waste from residential heating systems.

Additional off-site fill material sampling is recommended to characterize the physical and chemical nature of urban fill in the vicinity of the Former MGP Site (Seneca Falls Village) for comparison with the residential backyard fill material physical observations and analytical results.

Eastern Property Off-Site Investigation Scope of Work

The following scope of work is proposed to characterize the physical nature of urban fill in the vicinity of the Former MGP Site and evaluate the ambient concentration of PAHs and metals in off-site fill. Field sampling activities for the eastern property off-site investigation are considered voluntary since sample locations are not intended to directly delineate the extent of MGP-related impacts. The proposed scope of work includes the following:

1. Haley & Aldrich will collect up to eight (8) surface/subsurface soil samples in the vicinity of the Former MGP Site. If fill material is encountered at ground surface or immediately beneath vegetative cover, a sample will be collected from the zero to 2 inch depth interval and will be considered a “surface sample” per the NYSDEC Technical Guidance for Site Investigation and Remediation. If the top of fill material underlies a layer of topsoil or other landscaping material, the sample will target the top 2 inches of fill material encountered but may be collected from a depth greater than 2 inches below ground surface. Soil conditions encountered and depth intervals sampled will be noted and included in the Remedial Investigation Report.

   The location and number of samples is contingent on landowner access permission and subsurface conditions. Potential sampling locations, pending landowner access permission, are shown on Figure 2. Potential locations were selected based on physical accessibility, proximity to the Former MGP Site, and the absence of impervious surfaces (pavement, concrete, etc.).

The sampling program will focus on the area along Fall Street in the vicinity of the Former MGP Site.

2. Soil samples will be collected with a stainless steel trowel or hand auger. Soil will be collected from the top 2 inches of fill material, targeting the zone immediately below the bottom of topsoil or landscaping material. Soil samples will be described in accordance with Section 3.2.2 of the July 2007 PSA Work Plan. Soil samples will be analyzed for TCL SVOCs, and TAL metals (including cyanide).

SEDIMENT INVESTIGATION

SVOCS were detected in sediment samples collected from the Seneca River and Canal along the southern Former MGP Site property boundary in 1991 (PSA Work Plan, Appendix C). The physical distribution and thickness of sediments and the origin of the SVOCs in sediment is currently unknown. A sediment survey is recommended to determine the distribution and thickness of sediment adjacent to the Former MGP Site shoreline and, if sediment is present, collect sediment samples to characterize the chemical nature of sediments upstream (west) of, adjacent to, and downstream (east) of the Former MGP Site.

Sediment Investigation Scope of Work

The following scope of work is proposed to characterize the physical and chemical nature of Seneca River and Canal sediment in the vicinity of the Former MGP Site:

1. For portions of the Seneca River and Canal adjacent to the Former MGP Site southern property boundary, establish up to 10 transects perpendicular to the shore spaced approximately 25 feet apart long the 240-foot shoreline. For portions of the Seneca River and Canal upstream of the Former MGP Site's western property boundary, establish up to five transects spaced approximately 75 feet apart to the near vicinity of the Rumsey Street Bridge located approximately 380 feet west of the Former MGP Site. For portions of the Seneca River and Canal downstream of the Former MGP Site's eastern property boundary, establish up to three transects spaced approximately 75 feet apart to a distance of approximately 225 feet east of the Former MGP Site. Each transect will extend into the Seneca River and Canal approximately 50 feet from the riverbank. Up to three of transects completed adjacent to the Former MGP Site will extend across the Seneca River and Canal to the southern riverbank.

2. For each transect location, Haley & Aldrich will measure the sediment layer thickness every 10 linear feet using a hand-held sediment probe. In addition, Haley & Aldrich will record observations along the riverbank, documenting vegetation, presence of cobble or debris, and any patchy or discrete sediment deposits. Haley & Aldrich anticipates a generally even sediment distribution due to the low flow velocity conditions previously observed in the Seneca River and Canal, but if deposits occur as discrete patches, the sediment thickness probing spacing will be modified to document the distribution of those deposits.

3. If petroleum-like sheens or coal tar blebs are observed during sediment thickness probing, Haley & Aldrich will investigate the lateral extent with additional probing outward from the area of observed sheens or blebs. Absorbent materials (ex: pads, booms) used to control any sheens or blebs encountered will be available on-site during this phase of investigation.

4. Assuming that sediment thickness in the river is shallow, Haley & Aldrich will collect manual or piston core samples to a maximum depth of approximately 4 feet below the sediment-water interface at the following locations:

   a. A "nearshore" core sample at each transect (18 samples);
   b. A "mid-transect" core sample at every other transect location (9 samples).
   c. A "transect terminal" core sample at transects adjacent to the Former MGP Site without a "mid-transect" core sample (5 samples).

   In addition to transect sampling locations, additional sediment samples may be collected if potential point-source features unrelated to the Former MGP Site (unmarked discharge pipe, area of erosion, roadway catchbasin outfall, etc.) are observed upstream of or adjacent to the Former MGP Site.

5. Core samples will be logged and subsectioned according to surface (0 to 6 inches) and any distinct subsurface layers. Absent any distinct subsurface layering, cores will be sectioned into 0.5 to 2 feet and 2 to 4 feet (or bottom of core) subsurface intervals.

6. Sediment sampling procedures will follow Haley &Aldrich Operating Procedure OP3004, "Sediment and Wetland Sediment/Soil Sampling" included as Appendix B. All surface sediment samples (32 samples total) will be analyzed for TCL SVOCs, total organic carbon (TOC), and grain size distribution.

FORMER GAS HOLDER GROUNDWATER HYDRAULICS

The NYSDEC comment letter dated 9 October 2008 regarding the Data Summary Report requested ideas to better evaluate the connection of groundwater within the former gas holder and the overall groundwater system. This section further summarizes observations recorded during March 2008 field exploration activities which indicate additional hydraulic evaluation is not warranted.

Three soil borings were completed in March 2008 to investigate conditions inside and immediately adjacent to the former gas holder. The three soil borings completed inside the on-site building include the following:

- SB-08-01 and SB-08-02 were completed inside the footprint of the former gas holder whose location was determined based on Sanborn Maps. Fill material inside the former gas holder generally consists of silt, fine to coarse sand, and gravel with varying amounts of coal, glass, brick, leather, and ceramic fragments. Refusal was encountered at 20.4 and 19.4 feet below ground surface, respectively.

- SB-08-03 was completed outside (to the south) of the former gas holder. Fill material with varying amounts of cinders and brick fragments was observed from 0.5 to 9.5 feet below ground surface, and glacial till was observed from 9.5 to 31.1 feet below ground surface. While the 9 October 2008 comment letter indicates high blow counts were recorded at approximately 20 feet below ground surface at SB-08-03, the boring log provided in Appendix A of the Data Summary Report indicates high blow counts (indicative of dense material) were recorded from 13 to 31.1 feet below ground surface. Soil recovered from sample intervals below 9.5 feet were identified as undisturbed dense silt to silty clay with little gravel and sand, with clay lamina from 23 to 27 feet below ground surface. These soils are indicative of natural deposits, and are similar to those observed at other Former MGP Site boring locations, and have been identified as glacial till. The glacial till observed at SB-08-03 from 9.5 feet to refusal at 31.1 feet below ground surface bears no resemblance to the loose fill material observed inside the former gas holder at boring locations SB-08-01 and SB-08-02.

Groundwater monitoring wells were competed at two of the three soil boring locations described above. The three monitoring wells installed included:

- MW-08-01 (completed adjacent to borehole SB-08-03), total well depth 15 feet below ground surface, installed south of the former gas holder. This monitoring well is installed in what is interpreted to be a localized shallow perched water table zone;

- MW-08-02 (completed in borehole SB-08-02), total well depth 19.5 feet below ground surface, installed inside the former gas holder; and,

- MW-08-03 (completed in borehole SB-08-03), total well depth 30 feet below ground surface, installed south of the former gas holder, and immediately adjacent to MW-08-01. The screened interval of MW-08-03 is generally equivalent to other Former MGP Site monitoring wells and is likely indicative of the overall groundwater system.

A typographical error was detected on Table 3-1 submitted with the Data Summary Report, in which March 2008 groundwater elevations reported for MW-08-01 and MW-08-03 were transposed. A corrected version of Table 3-1 is provided as Appendix C. Groundwater elevations summarized on revised Table 3-1 indicate the following:

- The groundwater elevation at shallow monitoring location MW-08-01, installed outside the former gas holder, declined between March 2008 and July 2008. This may indicate seasonal changes in the shallow perched water table or draining of the perched zone during well purging in March 2008;

- Groundwater elevations measured at monitoring location MW-08-03, located outside the former gas holder, were generally consistent during March, May, and July 2008 monitoring events. During these monitoring events, groundwater levels at MW-08-03 ranged from 6.94 to 5.86 feet below groundwater levels at adjacent shallow monitoring location MW-08-01; and,

- Groundwater elevations measured at monitoring location MW-08-02, located inside the former gas holder, were generally consistent during March, May, and July 2008 monitoring events. During these monitoring events, groundwater levels within MW-08-02 were 8.64 to 10.25 feet higher than levels at monitoring location MW-08-03, and 2.29 to 4.39 feet higher than levels at shallow monitoring location MW-08-01, both of which are installed outside the former gas holder.

Based on the corrected groundwater elevations presented in Table 3-1 and observed subsurface conditions, groundwater at monitoring location MW-08-02 appears to be isolated from the overall groundwater system and additional investigation is not warranted at this time. Further discussion of the geologic and hydrogeologic observations described above will be included in the Remedial Investigation Report.

GROUNDWATER MONITORING

The July 2008 Data Summary Report by Haley & Aldrich recommended one additional round of groundwater sampling and elevation monitoring to further evaluate the concentration of dissolved-phase constituents in upland area monitoring wells and confirm non-detectable analytical results for lowland area monitoring wells. Groundwater sampling and elevation monitoring is recommended during or following the month of November 2008, six months (or greater) after the last event in May 2008.

Groundwater Monitoring Scope of Work

Two rounds of groundwater sampling have been completed for monitoring wells MW-07-02 through MW-07-06 (December 2007 and May 2008) and monitoring wells MW-08-01 through MW-08-03 (March 2008 and May 2008). For purposes of completing a remedial investigation and feasibility study/remedial design, one additional round of groundwater sampling is recommended. A scope and schedule for future monitoring events, if required, will be provided as part of the post-remediation monitoring plan.

The following scope of work is proposed to complete one round of groundwater sampling and elevation monitoring:

1. Complete fluid level monitoring in each of the eight on-site groundwater monitoring wells (MW-07-02 through MW-07-06 and MW-08-01 through MW-08-03) and three Seneca River and Canal surface water elevation gauging points (SG-1 through SG-3); and,

2. Collect groundwater samples from each of the eight on-site monitoring wells pursuant to Section 3.3.3 of the PSA Work Plan. Groundwater samples will be analyzed for TCL SVOCs and TAL metals (including cyanide) using low-flow sampling techniques, and TCL VOCs using disposable bailers. Field parameters collected during groundwater sampling will consist of pH, oxidation/reduction potential (ORP), turbidity, temperature, conductivity and dissolved oxygen.

REPORTING

Results of the tasks described in this Work Plan and results presented in the Data Summary Report will be submitted in a Remedial Investigation Report. As requested in the October 2008 Data Summary Report comment letter by NYSDEC, specific comments will be addressed in the Remedial Investigation Report.

SCHEDULE

We anticipate beginning the Remedial Investigation tasks immediately following NYSDEC approval of this Work Plan. If you have any questions or require additional information, please call Douglas Allen (Haley & Aldrich) at 603.391.3320 or Tracy Blazicek (NYSEG) at 607.762.8839.

Sincerely yours,
HALEY & ALDRICH OF NEW YORK

Douglas C. Allen
Senior Hydrogeologist

Colin R. Sweeney
Vice President

Attachments:

Figure 1 – Proposed Western Property Investigation Exploration Locations
Figure 2 – Potential Off-Site Fill Material Sampling Locations
Appendix A – Subsurface Investigation Report, GES, October 2007
Appendix B – OP3004: Sediment and Wetland Sediment/Soil Sampling
Appendix C – Data Summary Report Table 3-1 (revised)

c: NYSEG; Attn: T. Blazicek

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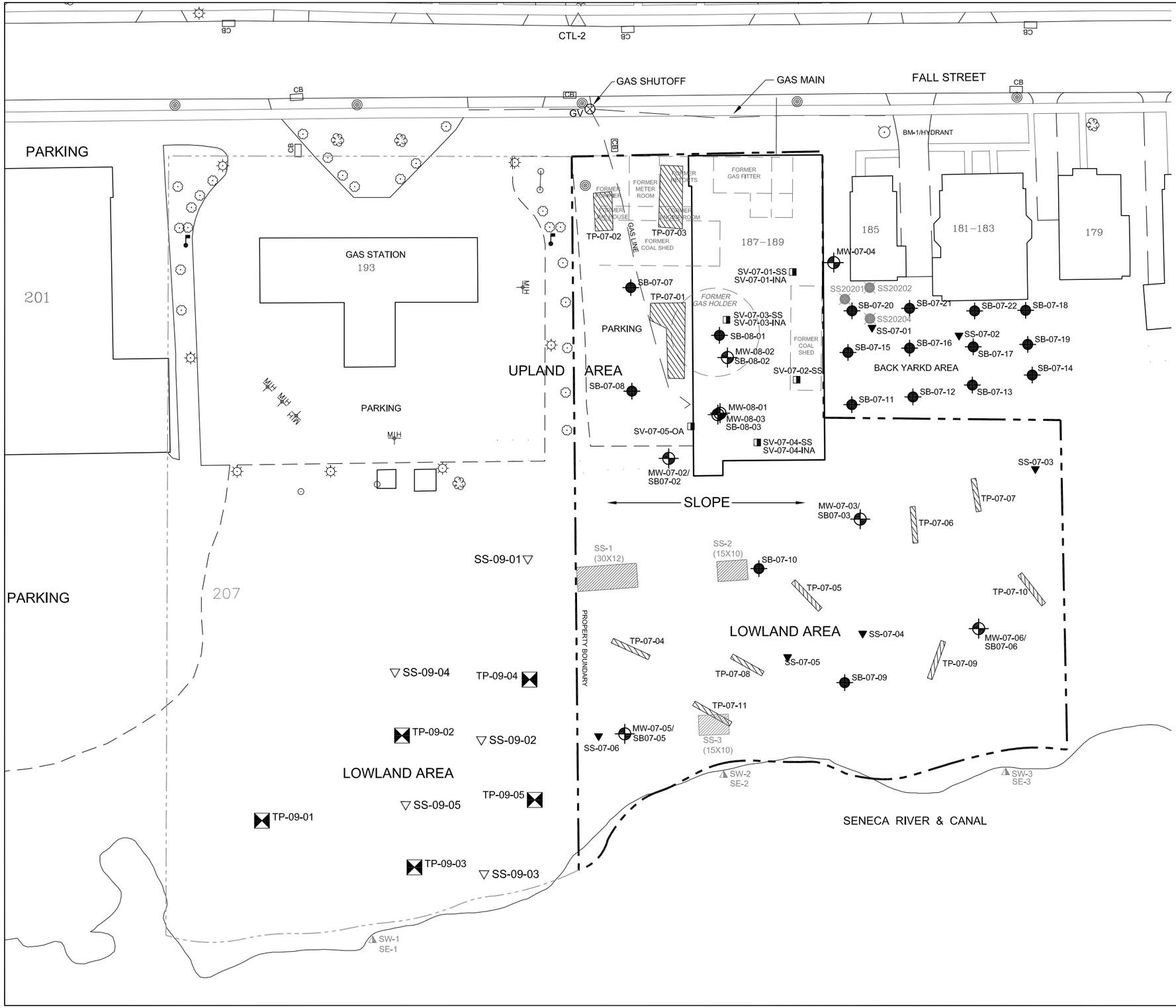

LEGEND

SB-07-09	SOIL BORING
MW-07-06/SB07-06	GROUNDWATER MONITORING WELL
TP-09-01	PROPOSED TEST PIT LOCATION
SS-09-01	PROPOSED SURFACE SOIL SAMPLE LOCATION
SV-07-02-SS	SOIL VAPOR MONITORING POINT
TP-07-07	TEST PIT
SS-07-03	SURFACE SOIL SAMPLE LOCATION
	PROPERTY LINE

NOTES:

1. BASE PLAN CREATED FROM ELECTRONIC FILE SENFMGP.DWG RECEIVED FROM NYSEG ON 18 MAY 2007.
2. PROPOSED EXPLORATION LOCATIONS ARE APPROXIMATE.

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HALEY & ALDRICH

SENECA FALLS FORMER MGP
187 FALL STREET
SENECA FALLS, NEW YORK

PROPOSED WESTERN PROPERTY INVESTIGATION EXPLORATION LOCATIONS

SCALE: AS SHOWN
JUNE 2009

FIGURE 1

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NOTE:

1. PROPOSED SOIL SAMPLE LOCATIONS ARE APPROXIMATE AND SUBJECT TO REVISION PENDING PROPERTY ACCESS AUTHORIZATION.
2. AERIAL PHOTOGRAPH DATED MAY 2007 OBTAINED ELECTRONICALLY FROM NEW YORK STATE GEOGRAPHIC INFORMATION SYSTEM CLEARINGHOUSE.

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HALEY & ALDRICH

SENECA FALLS FORMER MGP
187 FALL STREET
SENECA FALLS, NEW YORK

POTENTIAL OFF-SITE FILL MATERIAL SAMPLING LOCATIONS

SCALE: AS SHOWN
JUNE 2009

FIGURE 2

G:\34507_SENECA_FALLS\GLOBAL\GIS\2008-1110-HANY-PROPOSED OFFSITE SOIL-D2.MXD

APPENDIX A

Subsurface Investigation Report, GES, October 2007

Groundwater
& Environmental Services, Inc.®

300 Gateway Park Drive • North Syracuse, New York 13212 • (315) 452-5700 • Fax (315) 452-3237
October 12, 2006

Mr. Joe Marchitel
NYDSEC - Region 8
6274 E. Avon Lima Road
Avon, New York 14414-9519

RE: Subsurface Investigation Report
Sunoco Station # 0364-0158
193 West Falls Street
Seneca Falls, NY
NYSDEC Spill# 93-03031

Dear Mr. Marchitel:

On behalf of Sunoco, Inc. (R&M), Groundwater & Environmental Services, Inc. (GES) conducted environmental oversight and sampling during monitoring well installation activities on July 16 through July 18, 2007. Activities completed during the subsurface investigation included the installation of three (3) monitoring wells, and three (3) soil borings. Please find the enclosed Subsurface Investigation Report summarizing the results of this investigation.

At this time, quarterly groundwater monitoring will continue at this site for the remainder of 2007.
If you have any questions or comments related to this subsurface investigation or the project in general please contact GES at (315) 452-5700 or Kinyorda Fogleman of Sunoco, Inc. (R&M) at (315) 466-6215.

Sincerely,

GROUNDWATER & ENVIRONMENTAL SERVICES, INC.

Jonathan Bone
Geologist

For

Justin Domago
Project Manager / Geologist

Cc: Kinyorda Fogleman – Sunoco, Inc. (R&M)
Sunoco Central Files

Soil Investigation Summary Report
Sunoco Station DUNS # 0364-0158
193 West Falls Street, Seneca Falls, NY
NYSDEC Spill # 93-03031

Prepared for:

Ms. Kinyorda Fogleman
Environmental Engineer
Sunoco, Inc. (R&M)
109 Milton Avenue
Syracuse, NY 13221

Prepared by:

Groundwater & Environmental Services, Inc.
300 Gateway Park Drive
North Syracuse, New York 13212

October 12, 2007

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1.0 Introduction

Groundwater & Environmental Services, Inc. (GES) was retained by Sunoco, Inc. (R&M) to provide environmental oversight and sampling during the drilling of three (3) soil borings, and the installation of three (3) 4-inch diameter PVC monitoring wells at the property located at 193 West Falls Street, New York. This report details the observations, site conditions and the analytical results of soil samples collected at the time of monitoring well installation. Also included in this report are the analytical results from the groundwater samples collected during a groundwater monitoring and sampling events following the monitoring well installation activities.

2.0 Site Description and Background

The site is a current Sunoco retail gasoline station located in the town of Seneca Falls, NY. Public water service, sanitary and storm sewer, electric and telephone service are provided to the property. General site features and locations the of underground storage tanks (USTs) and dispenser islands are displayed on Figure 1.

Based on the historical information available to date, the station was built in the 1950. The original gasoline USTs are believed to have been removed in 1986 and replaced with three 12,000 gallon gasoline USTs. In June 1993 during station upgrade activities all three gasoline USTs, the dispenser island and associated subsurface piping was removed. One 550 gallon fuel oil tank was also removed at this time. The gasoline USTs were observed to be in excellent condition while many ¼" diameters holes were found in the fuel oil tank. Field observations indicated that there were no significant petroleum impacts in the former gasoline UST location. Soils scanned with a Photo Ionization Detector (PID) from the removal of the fuel oil tank produced readings from 42 parts per million (ppm) to 205 ppm. This area was over excavated until the PID indicated readings less than 30 ppm. Approximately 20 cubic yards of impacted soil was removed during this process. The soils encountered during the removal of the former pump island produced readings of over 1,000 ppm. Over excavation was conducted in this area until all soils with PID readings greater than 200 ppm were removed from the area. This excavation produced approximately 60 cubic yards of impacted soil. Two vapor extraction points (VP-1 & VP-2) were installed in the pump island excavation during backfilling.

All soil samples collected during the June UST system removal were analyzed by EPA method 8021 via TCLP extract. The soil sample from the bottom of the fuel oil tank pit was also analyzed by EPA method 8270 via TCLP. The results from the laboratory analysis indicated concentration of STARS compounds exceeding standards in the samples collected from the bottom of the dispenser island and the eastern sidewall of the former gasoline UST excavations.

A subsurface investigation was also conducted by Matrix Environmental Technologies, Inc. in June 1993. Three monitoring wells (MW-1, MW-2 & MW-3) were installed on the property during this investigation. Soil samples were logged in the field during well installation but were not submitted for laboratory analysis. Prior to the completion of the station upgrade, these three monitoring wells and the previously installed vapor points were connected to a common manifold location by subsurface lateral piping. A vapor extraction system was installed and began operation on points MW-1, MW-2, VP-1 and VP-2 on July 12, 1993. The system was deactivated in December 1995 when the remedial strategy switched to applying RBCA to the site. During operation the system removed approximately 3 gallons of product in vapor phase. In order to collect soil data to be used in the risk assessment, Matrix installed 6 soil borings to the north east of the current station building. Review of the historical file available at this time does not provide any details of the impacts identified during the installation of these borings.

In May 1997, GES was retained by Sunoco as the environmental consultant for this site. From June 1997 to March 1998 and in 2006, Hi-intensity Targeted Remediation (HIT) events were conducted at MW-1. A soil investigation was conducted in May 1999 in order to further delineate the impacts in the area of MW-1 and the former pump island. Six soil borings were installed during this investigation. Results for this investigation are summarized in the Second Quarter 1999 Report and are presented on the attached Figure 1. In July 2000 MW-4 was installed and MW-1 was re-drilled and replace with a 2-inch diameter well.

In July of 2001, MW-5 was installed adjacent to the station building in order to collect groundwater data to be used in the completion of a Site Specific Exposure Assessment. Soil analytical results from this location indicated excesses of NYSDEC TAGM 4046 Recommended Soil Clean-Up Objectives. In February 2002 Buck Laboratories conducted an indoor air sampling event to supplement the Site Specific Exposure Assessment. Target volatile organic compounds were not detected in the two air samples collected.

2.1 General Site Geology and Hydrology

According to the Finger Lakes Sheet of the *Surficial Geologic Map of New York* (E. H. Muller and D. H. Cadwell, 1986) the subject property is underlain by an area of lacustrine silt and clay. According to the Finger Lakes Sheet of the 1970 Geologic Map of New York State compiled by the NYS Museum and Science Service; the regional bedrock is described as Silurian, Bertie Formation Dolostone and Shale.

The soil encountered during site work was primarily compact silt with small amounts of fine to coarse gravel. At a depth of 15 to 17 ftbg a layer of clay and trace gravel was encountered. Depth to groundwater is approximately 17 ftbg. A perched unit of water also encountered on parts of the Property at approximately 5 ftbg. Bedrock was not encountered during drilling or excavation activities completed the week of July 20, 2007.

3.0 Monitoring Well Installation

During the week of July 20, 2007 GES personnel were onsite to commence monitoring well installation activities. Parratt Wolff of East Syracuse, NY provided monitoring well installations services. Drilling activities included the installation of three 4-inch PVC monitoring wells to an approximate depth of 20-23 ftbg, and the drilling of three soil borings. The purpose of the monitoring wells installation and soil boring drilling was to facilitate collection of soil samples and to determine the vertical extent of adsorbed phase petroleum hydrocarbon impacts in the soil. In addition, the new monitoring wells will provide a means to monitor dissolved phase petroleum hydrocarbon impacts. Locations of the monitoring wells are displayed on Figure 1. Boring logs from each monitoring well are available at Attachment II.

3.1 Soil Sampling and Soil Analytical Results

Soil samples were collected continuously from grade to the termination depth of each boring. The soil samples were scanned with a PID to qualitatively asses the degree of adsorbed phase petroleum hydrocarbon impacts. Soil samples from monitoring wells MW-6, 7, 8 and soil borings SB-7, 8, 9 were submitted from the intervals with the highest PID response and from the bottom of the boring, to ensure vertical delineation was attained at each location. All monitoring well soil samples were submitted under chain of custody to Lancaster Laboratories, Inc. for analysis of NYSDEC Spills Technology Remediation Series (STARS) listed compounds by U.S. EPA methods 8260. Once sample from MW-7 was also submitted for analysis of NYSDEC STARS listed compounds by U.S. EPA method 8270.

Laboratory analytical data from soil samples collected at monitoring well locations indicate various 8260 STARS compounds were detected above laboratory detection limits in all the soil samples. Samples from MW-8 (5-7'), MW-8 (15-17'), SB-8 (9-11), SB-9 (11-13), and SB-9 (15-17) contained compounds that were

above NYSDEC TAGM 4046 Recommended Clean-up Objectives. Laboratory analytical data is available on Figure 1, summarized in Table 1 and a copy of the laboratory report is available as Attachment I.

4.0 Groundwater Investigation

A groundwater monitoring and sampling event was conducted on August 16, 2007 for monitoring wells MW-1, 2, 3, 4, 5, 6, 7, and 8. Each monitoring well was gauged for depth to water, total depth and presence/absence of separate phase hydrocarbons (SPH). After gauging, each well was purged of approximately three well volumes of water to obtain a representative sample of the groundwater. All monitoring well groundwater samples were submitted under chain of custody to Lancaster for analysis of NYSDEC STARS listed compounds via U.S. EPA methods 8260 and 8270 (see Tables 3 and 4).

Laboratory analytical data from groundwater samples collected on August 16, 2007 indicate various 8260 STARS compounds detected above the Technical and Operational Guidance Series (TOGS) 1.1.1 Groundwater Standards in the samples collected from MW-1, MW-5, MW-7, and MW-8. MTBE was detected over TOGS in MW-1, MW-2, MW-3, MW-5, MW-7 and MW-8. No 8260 STARS compounds were detected above laboratory detection limits in the MW-6 sample. No 8270 STARS compounds were detected above laboratory limits in MW-7. Laboratory analytical data is available on Figure 2, summarized in Tables 3, 4 and 5 and a copy of the laboratory report is available as Attachment I.

5.0 Summary of Findings

The significant findings of the subsurface investigation and monitoring well installation were:

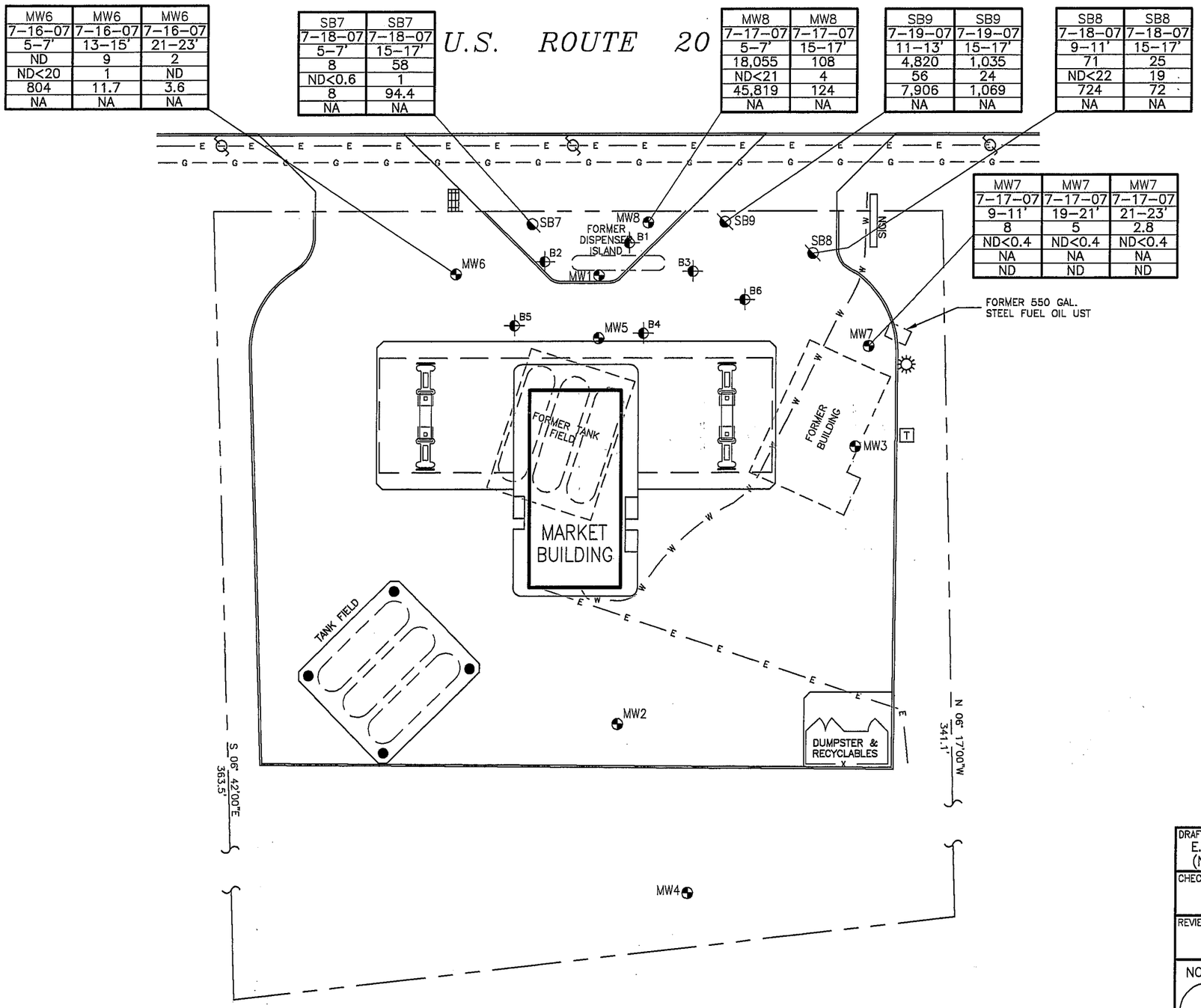
- During the week of July 20, 2007 three 4-inch diameter PVC monitoring wells were installed on site, along the drilling of three soil borings. Two soil samples were collected from each monitoring well location, the interval with the highest PID response and the interval at the bottom of the boring.

- Laboratory analytical data from soil samples collected at monitoring well locations indicate various 8260 STARS compounds were detected above laboratory detection limits in all the soil samples. Samples from MW-8 (5-7'), MW-8 (15-17'), SB-8 (9-11), SB-9 (11-13), and SB-9 (15-17) contained compounds that were above NYSDEC TAGM 4046 Recommended Clean-up Objectives. No 8260 STARS compounds were detected above laboratory detection limits in any of the MW-6 and SB-7 samples, and SB-8 (15-17). Laboratory analytical data from soil samples collected at the MW-7 location did not indicate any 8270 STARS compounds detected above laboratory detection limits.

- A groundwater monitoring and sampling event was conducted on August 16, 2007 for all wells on-site except for MW-4. Monitoring wells MW-1, 2, 3, 5, 6, 7, 8 were sampled during the event.

- Laboratory analytical data from groundwater samples collected on August 16, 2007 indicate various 8260 STARS compounds detected above the Technical and Operational Guidance Series (TOGS) 1.1.1 Groundwater Standards in the samples collected from MW-1, 5, and 8. MTBE was detected over TOGS in all samples collected except. No 8260 STARS compounds were detected above laboratory detection limits in the MW-6 sample. No 8270 STARS compounds were detected above laboratory limits in any samples collected in MW-7.

FIGURES



LEGEND

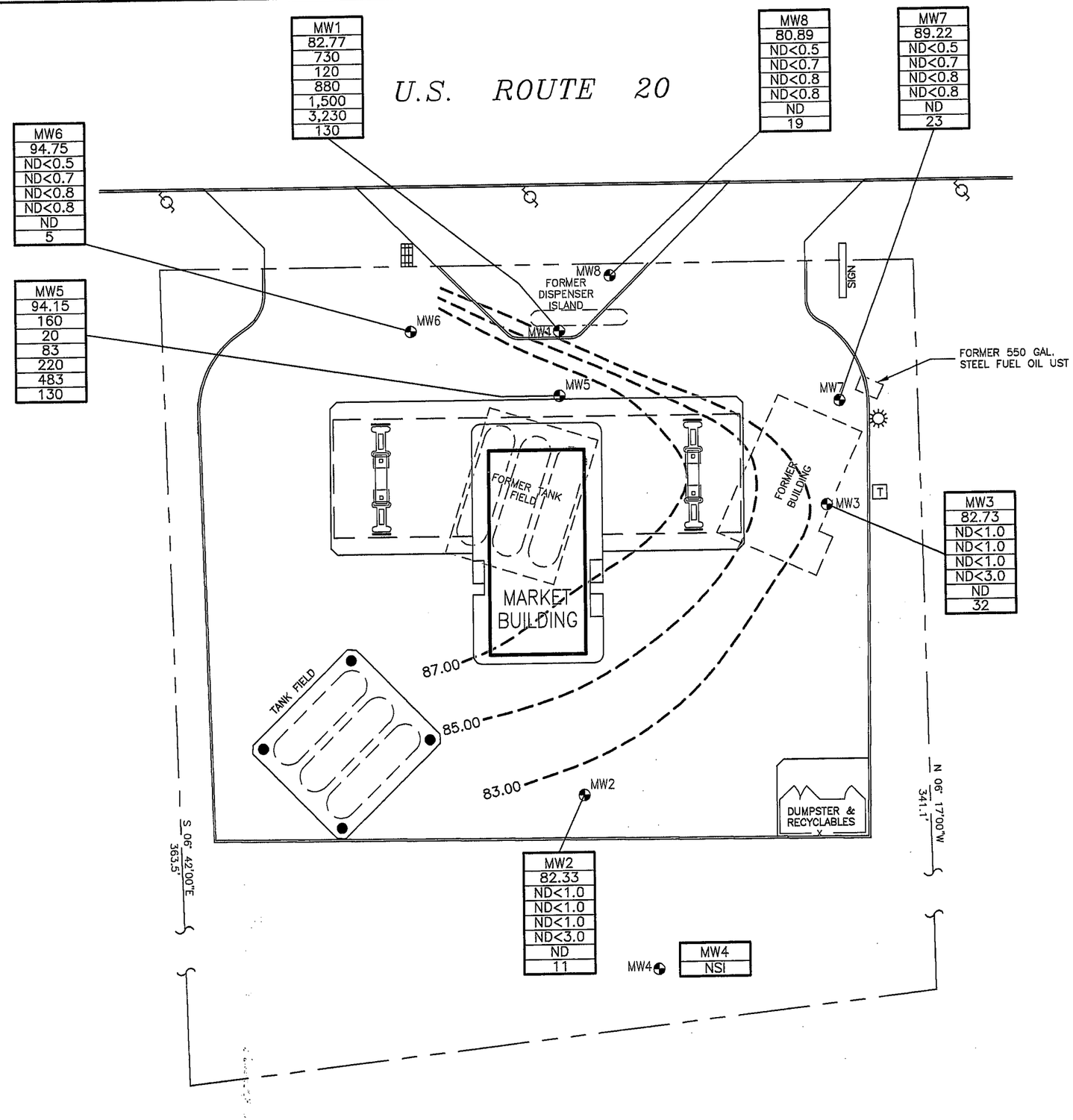
- STORM SEWER INLET
- UTILITY POLE
- LIGHT POLE
- TELEPHONE BOOTH
- DISPENSER ISLAND
- MONITORING WELL
- TANK FIELD WELL
- —W— UNDERGROUND WATER LINE
- —G— UNDERGROUND GAS LINE
- —E— ELECTRIC LINE
- SOIL BORING (INSTALLED 5/99)
- SOIL BORING

MW7	SAMPLE IDENTIFICATION
7-17-07	SAMPLE DATE
21-23'	SAMPLE DEPTH (feet)
2.8	BTEX CONCENTRATION (mg/kg)
ND<0.4	MTBE CONCENTRATION (mg/kg)
NA	TOTAL STARS 8260 CONCENTRATION (mg/kg)
ND	TOTAL STARS 8270 CONCENTRATION (mg/kg)

- mg/kg — MILLIGRAMS PER KILOGRAM
- <# — WHERE AN ANALYTE IS NOT DETECTED, A METHOD DETECTION LIMIT IS GIVEN
- ND — NOT DETECTED
- NA — NOT ANALYZED

DRAFTED BY: E.M.E. (N.J.)	SOIL ANALYTICAL MAP JULY 16, 17, & 18, 2007
CHECKED BY:	SUNOCO SERVICE STATION #0364-0158 193 WEST FALLS STREET SENECA FALLS, NEW YORK
REVIEWED BY:	
NORTH	Groundwater & Environmental Services, Inc. 300 GATEWAY PARK DRIVE, NORTH SYRACUSE, NY 13212
SCALE IN FEET: 0 30	DATE: 10-9-07
	FIGURE: 1

M:\Graphics\0600-Syracuse\Sunoco\0364-0158 Seneca Falls\0364-0158 seneca falls SM.dwg, EEdwards



LEGEND

- STORM SEWER INLET
- UTILITY POLE
- LIGHT POLE
- T — TELEPHONE BOOTH
- DISPENSER ISLAND
- MONITORING WELL
- TANK FIELD WELL

MW3	WELL IDENTIFICATION
82.73	GROUNDWATER ELEVATION (feet)
ND<1.0	BENZENE CONCENTRATION (ug/L)
ND<1.0	TOLUENE CONCENTRATION (ug/L)
ND<1.0	ETHYLBENZENE CONCENTRATION (ug/L)
ND<3.0	XYLENES CONCENTRATION (ug/L)
ND	BTEX CONCENTRATION (ug/L)
32	MTBE CONCENTRATION (ug/L)

ug/L	MICROGRAMS PER LITER
BTEX	BENZENE, TOLUENE, ETHYLBENZENE, XYLENES
MTBE	METHYL *tert*–BUTYL ETHER
ND	NOT DETECTED
<#	WHERE AN ANALYTE IS NOT DETECTED, A METHOD DETECTION LIMIT IS GIVEN
NSI	NOT SAMPLED INACESSIBLE

NOTES:

MW7 WAS NOT USED TO GENERATE GROUNDWATER CONTOURS DUE TO ANOMALOUS DATA.

DRAFTED BY: E.M.E. (N.J.)	GROUNDWATER MONITORING MAP AUGUST 16, 2007	
CHECKED BY:	SUNOCO SERVICE STATION #0364-0158 193 WEST FALLS STREET SENECA FALLS, NEW YORK	
REVIEWED BY:	Groundwater & Environmental Services, Inc. 300 GATEWAY PARK DRIVE, NORTH SYRACUSE, NY 13212	
NORTH	SCALE IN FEET 0 30	DATE 9-28-07
		FIGURE 2

TABLES

Table 1

Soil Analytical Data

Sunoco Service Station DUNS # 03640158
193 West Falls Street
Seneca Falls, New York

July 16, 2007 - July 18, 2007

Sample Location	NYSDEC TAGM 4046 Recommended Soil	MW-6	MW-6	MW-6	MW-8	MW-8	SB-7	SB-7	SB-8	SB-8	SB-9	SB-9
Sample Depth	Cleanup	(5-7)	(13-15)	(21-23)	(5-7)	(15-17)	(5-7)	(15-17)	(9-11)	(15-17)	(11-13)	(15-17)
Sample Date	Objectives	7/16/2007	7/16/2007	7/16/2007	7/17/2007	7/17/2007	7/18/2007	7/18/2007	7/18/2007	7/18/2007	7/18/2007	7/18/2007
EPA 8260 STARS												
MtBE	120	ND<20	1	ND<0.4	ND<21	4	ND<0.6	1	ND<22	19	56	24
Benzene	60	ND<20	2	0.8	51.0	65	2	9	71	17	1700	**1000**
Toluene	1,500	ND<39	4	1	44	3	4	3	ND<45	3	ND<38	10
Ethylbenzene	5,500	ND<39	ND<0.8	ND<0.8	4,300	11	ND<1	14	ND<45	2	220	8
m,p-Xylene	600	ND<39	3	ND<0.8	**13,000**	25	2	29	ND<45	3	2900	16
o-Xylene	800	ND<30	ND<0.8	ND<0.8	660	4	ND<1	3	ND<45	ND<0.9	ND<38	1
Isopropylbenzene	2,300	47	ND<0.8	ND<0.8	370	ND<0.8	ND<1	1	ND<45	ND<0.9	ND<38	ND<0.7
n-Propylbenzene	3,700	410	ND<0.8	ND<0.8	2,200	2	ND<1	6	430	1	290	2
1,3,5-Trimethylbenzene	3,300	ND<39	1	ND<0.8	**5,400**	3	ND<1	8	ND<45	ND<0.9	460	3
1,2,4-Trimethylbenzene	10,000	72	1	ND<0.8	**16,000**	7	ND<1	19	ND<45	2	2000	5
sec-Butylbenzene	10,000	55	ND<0.8	ND<0.8	170	ND<0.8	ND<1	ND<0.8	ND<45	ND<0.9	ND<38	ND<0.7
p-Isopropyltoluene	10,000	ND<39	ND<0.8	ND<0.8	110	ND<0.8	ND<1	ND<0.8	ND<45	ND<0.9	ND<38	ND<0.7
n-Butylbenzene	10,000	180	ND<0.8	ND<0.8	790	ND<0.8	ND<1	1	82	ND<0.9	ND<38	ND<0.7
Naphthalene	13,000	40	ND<0.8	ND<0.8	2,600	ND<0.8	ND<1	1	70	ND<0.9	280	ND<0.7
Total BTEX Conc.	NA	0	ND	1.8	18,055	108	8	58	71	25	4820	1035
Total STARS Conc.	NA	804	12	4	45,819	124	8	94	724	72	7906	1069

Notes:
All concentrations reported in ug/kg
ND< = none detected above laboratory limit indicated
Bold type indicates that compound exceedes NYSDEC
TAGM Recommended 4046 Soil Cleanup Objectives

Table 2

Soil Analytical Data

Sunoco Service Station DUNS # 03640158
193 West Falls Street
Seneca Falls, New York

July 16, 2007 - July 18, 2007

Sample Location Sample Depth Sample Date	NYSDEC TAGM 4046 Recommended Soil Cleanup Objectives	MW-7 (9-11) 7/17/2007	MW-7 (19-21) 7/17/2007	MW-7 (21-23) 7/17/2007
EPA 8260 STARS				
Benzene	60	2	2	1
n-Butylbenzene	10,000	ND<37	ND<0.8	ND<0.8
sec-Butylbenzene	10,000	ND<37	ND<0.8	ND<0.8
Ethylbenzene	5,500	ND<0.9	ND<0.8	ND<0.8
Isopropylbenzene (Cumene)	2,300	ND<0.9	ND<0.8	ND<0.8
p-Isopropyltoluene (Cymene)	10,000	ND<0.9	ND<0.8	ND<0.8
MtBE	120	ND<0.4	ND<0.4	ND<.04
Naphthalene	13,000	ND<0.9	ND<0.8	ND<0.8
n-Propylbenzene	3,700	ND<0.9	ND<0.8	ND<0.8
Toluene	1,500	4	2	1
1,2,4-Trimethylbenzene	10,000	ND<0.9	ND<0.8	ND<0.8
1,3,5-Trimethylbenzene	3,300	ND<0.9	ND<0.8	ND<0.8
m,p-Xylene	600	2	1	0.8
o-Xylene	800	ND<0.9	ND<0.8	ND<0.8
Total BTEX Concentration	NA	8	5	3
Total 8260 Compounds	10,000	8	5	3
EPA 8270 STARS				
Acenaphthene	50,000	ND<37	ND<38	ND<36
Anthracene	50,000	ND<37	ND<38	ND<36
Benzo (a) anthracene	224 or MDL	ND<37	ND<38	ND<36
Benzo (b) fluoranthene	220 or MDL	ND<37	ND<38	ND<36
Benzo (k) fluoranthene	220 or MDL	ND<37	ND<38	ND<36
Benzo (g,h,i) perylene	50,000	ND<37	ND<38	ND<36
Benzo (a) pyrene	61 or MDL	ND<37	ND<38	ND<36
Chrysene	400	ND<37	ND<38	ND<36
Dibenz (a,h) anthracene	14.3 or MDL	ND<37	ND<38	ND<36
Fluoranthene	50,000	ND<37	ND<38	ND<36
Fluorene	50,000	ND<37	ND<38	ND<36
Ideno (1,2,3-c,d) pyrene	3,200	ND<37	ND<38	ND<36
Napthalene	13,000	ND<37	ND<38	ND<36
Phenanthrene	50,000	ND<37	ND<38	ND<36
Pyrene	50,000	ND<37	ND<38	ND<36
Total 8270 Compounds	500,000	ND	ND	ND

Notes:
All concentrations reported in ug/kg
ND< = none detected above laboratory limit indicated
Bold type indicates that compound exceedes NYSDEC TAGM

Table 3

Groundwater Analytical Data - EPA 8260 STARS

Sunoco Station #0364-0158
193 West Falls Street
Seneca Falls, New York

Well ID Date Sampled	TOGS 1.1.1 Groundwater Standards	MW-6 08/16/07	MW-7 08/16/07	MW-8 08/16/07
8260 STARS				
MtBE	10	5	**23**	**19**
Benzene	1	ND<0.5	ND<0.5	ND<0.5
Toluene	5	ND<0.7	ND>0.7	ND<0.7
Ethylbenzene	5	ND<0.8	ND<0.8	ND<0.8
m,p-Xylene	10	ND<0.8	ND<0.8	ND<0.8
o-Xylene	5	ND<0.8	ND<0.8	7
Isopropylbenzene	5	ND<1	ND<1	ND<1
n-Propylbenzene	5	ND<1	ND<1	ND<1
1,3,5-Trimethylbenzene	5	ND<1	ND<1	**11**
tert-Butylbenzene	5	ND<1	ND<1	ND<1
1,2,4-Trimethylbenzene	5	ND<1	ND<1	ND<1
sec-Butylbenzene	5	ND<1	ND<1	ND<1
p-Isopropyltoluene	5	ND<1	ND<1	ND<1
n-Butylbenzene	5	ND<1	ND<1	ND<1
Naphthalene	10	ND<1	ND<1	ND<1
Total 8260 Compounds	NA	5	23	37

ND<= compound not detected above laboratory detection limits
Concentrations reported in micrograms per liter (ug/L).
Exceedences are in **Bold** type

Table 4

Groundwater Analytical Data - 8270 STARS

Sunoco Station #0364-0158
193 West Falls Street
Seneca Falls, New York

Well ID Date Sampled	TOGS 1.1.1 Groundwater Standards	MW-6 08/16/07	MW-7 08/16/07	MW-8 08/16/07
8270 STARS				
Naphthalene	10	NS	ND<0.9	NS
Acenaphthene	20	NS	ND<0.9	NS
Fluorene	50	NS	ND<0.9	NS
Phenanthrene	50	NS	ND<0.9	NS
Anthracene	50	NS	ND<0.9	NS
Fluoranthene	50	NS	4	NS
Pyrene	50	NS	9	NS
Benzo (a) anthracene	0.002	NS	ND<0.9	NS
Chrysene	0.002	NS	ND<0.9	NS
Benzo (b) fluoranthene	0.002	NS	ND<0.9	NS
Benzo (k) fluoranthene	0.002	NS	ND<0.9	NS
Benzo (a) pyrene	0.002	NS	ND<0.9	NS
Ideno (1,2,3-cd) pyrene	0.002	NS	ND<0.9	NS
Dibenz (a,h) anthracene	50	NS	ND<0.9	NS
Benzo (g,h,i) perylene	0.002	NS	ND<0.9	NS
Total 8270 Compounds	NA	NS	13	NS

ND<= compound not detected above laboratory detection limits
Concentrations reported in micrograms per liter (ug/L).
Exceedences are in **Bold** type
NS = Not Sampled for this Analysis.

Table 5

Historical Groundwater Data

SUNOCO STATION #0364-0158
193 WEST FALLS STREET, SENECA FALLS, NEW YORK

Well #	Date	Depth to Product	Depth to Water	Groundwater Elevation	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	Total BTEX (ug/l)	MTBE (ug/l)
MW-1	7/2/1996	np	15.77	83.09	3,930	2,010	ND<100	7,760	13,700	322
Original Casing Elevation: 98.89	10/4/1996	np	15.42	83.44	3,420	1,820	946	6,920	13,106	290
Top of Screen Elevation: 92.62	6/17/1997	np	15.53	83.33	4,090	318	2,990	5,420	12,818	nr
Total Depth: 22	8/5/1997	np	16.74	82.12	2,880	534	1,680	4,070	9,164	nr
	11/11/1997	np	14.73	84.13	1,800	129	1,290	3,830	7,049	nr
	3/9/1998	np	13.47	85.39	4,260	998	4,830	12,000	22,088	nr
	5/14/1998	np	14.00	84.86	2,400	2,000	530	5,700	10,630	nr
	8/31/1998	np	15.73	83.13	4,000	1,200	2,600	9,800	17,600	nr
	5/7/1999	np	15.30	83.56	5,400	3,800	1,600	11,000	21,800	230
	10/14/1999	np	14.90	83.96	3,100	1,400	1,700	11,000	17,200	ND<100
	4/19/2000	np	14.68	84.18	3,880	3,190	1,680	9,760	18,510	143
	10/4/2000	np	15.64	83.25	2,760	2,190	2,000	9,130	16,080	158
	4/27/2001	np	14.96	83.93	2,830	982	2,440	8,140	14,392	145
	10/12/2001	np	16.86	82.03	2,290	1,180	2,640	12,400	18,510	ND<250
	1/4/2002	np	16.99	81.90	1,910	1,180	2,470	10,900	16,460	115
	4/9/2002	np	15.62	83.27	2,200	960	2,300	8,700	14,160	ND<100
	7/1/2004	np	16.00	82.89	1,630	337	2,730	8,614	13,311	73
	2/28/2006	np	15.30	83.59	1,200	560	2,100	4,700	8,560	ND<100
Current Casing Elevation= 99.62	5/17/2006	np	14.57	85.05	310	270	820	2,900	4,300	ND<50
	8/16/2006	np	16.21	83.41	710	360	1,100	2,900	5,070	110
	11/20/2006	np	13.58	86.04	100	140	380	880	1,500	36
	3/27/2007	np	11.95	87.67	1,000	1,100	780	3,000	5,880	ND<100
	5/17/2007	np	14.75	84.87	530	420	1,300	2,900	5,150	84
Current Casing Elevation= 100.61	8/16/2007	np	16.85	83.76	730	120	880	1,500	3,230	130
MW-2	7/2/1996	np	15.02	82.75	nsd	nsd	nsd	nsd	nsd	nsd
Original Casing Elevation: 97.77	10/4/1996	np	15.21	82.56	nsd	nsd	nsd	nsd	nsd	nsd
Top of Screen Elevation: 88.52	6/17/1997	nsd	nsd	nsd	nsd	nsd	nsd	nsd	nsd	nsd
Total Depth: 30	8/5/1997	np	16.05	81.72	nsd	nsd	nsd	nsd	nsd	nsd
	11/11/1997	np	14.61	83.16	nsd	nsd	nsd	nsd	nsd	nsd
	3/9/1998	np	13.40	84.37	nsd	nsd	nsd	nsd	nsd	nsd
	5/14/1998	np	13.70	84.07	nsd	nsd	nsd	nsd	nsd	nsd
	8/31/1998	np	15.75	82.02	nsd	nsd	nsd	nsd	nsd	nsd
	5/7/1999	np	14.56	83.21	nsd	nsd	nsd	nsd	nsd	nsd
	10/14/1999	np	14.56	83.21	ND<1	ND<1	ND<1	ND<1	ND	71.0
	4/19/2000	np	14.00	83.77	ND<.50	ND<.50	ND<.50	ND<.50	ND	62.6
	10/4/2000	np	15.09	82.68	ND<.50	ND<.50	ND<.50	ND<.50	ND	25.7
	4/27/2001	np	14.25	83.52	ND<1	ND<1	ND<1	ND<1	ND	52.2
	10/12/2001	np	16.09	81.68	ND<1	ND<1	ND<1	ND<1	ND	16.6
	1/4/2002	np	16.00	81.77	ND<1	ND<1	ND<1	ND<1	ND	28.2
	4/9/2002	np	14.97	82.80	ND<1	ND<1	ND<1	ND<1	ND	16
	7/1/2004	np	15.14	82.63	ND<0.5	1.0	ND<0.5	ND<1	1.0	22.8
	2/28/2006	np	14.16	83.61	ND<0.2	ND<0.2	ND<0.2	ND<0.6	ND	35
Current Casing Elevation= 98.52	5/17/2006	np	14.11	84.41	ND<0.2	ND<0.2	ND<0.2	ND<0.6	ND	4.5
	8/16/2006	np	15.29	83.23	ND<0.2	ND<0.2	ND<0.2	ND<0.6	ND	18
	11/20/2006	np	13.22	85.30	ND<0.2	ND<0.2	ND<0.2	ND<0.6	ND	25
	3/27/2007	np	12.28	86.24	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND	4.3
	5/17/2007	np	14.31	84.21	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND	6.1
Current Casing Elevation= 98.53	8/16/2007	np	16.19	82.34	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND	11

Table 5

Historical Groundwater Data

SUNOCO STATION #0364-0158
193 WEST FALLS STREET, SENECA FALLS, NEW YORK

Well #	Date	Depth to Product	Depth to Water	Groundwater Elevation	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	Total BTEX (ug/l)	MTBE (ug/l)
MW-3	7/2/1996	np	15.35	83.34	nsd	nsd	nsd	nsd	nsd	nsd
Original Casing Elevation: 98.69	10/4/1996	np	14.77	83.92	nsd	nsd	nsd	nsd	nsd	nsd
Top of Screen Elevation: 92.54	6/17/1997	nsd	nsd	nsd	nsd	nsd	nsd	nsd	nsd	nsd
Total Depth: 27	8/5/1997	np	16.62	82.07	nsd	nsd	nsd	nsd	nsd	nsd
	11/11/1997	np	15.16	83.53	nsd	nsd	nsd	nsd	nsd	nsd
	3/9/1998	np	13.93	84.76	nsd	nsd	nsd	nsd	nsd	nsd
	5/14/1998	np	14.13	84.56	nsd	nsd	nsd	nsd	nsd	nsd
	8/31/1998	np	16.40	82.29	nsd	nsd	nsd	nsd	nsd	nsd
	5/7/1999	np	15.45	83.24	nsd	nsd	nsd	nsd	nsd	nsd
	10/14/1999	np	15.35	83.34	ND<1	ND<1	ND<1	ND<1	ND	99.0
	4/19/2000	np	14.83	83.86	ND<.50	ND<.50	ND<.50	ND<.50	ND	47.6
	10/4/2000	np	15.72	82.97	ND<.50	ND<.50	ND<.50	ND<.50	ND	74.1
	4/27/2001	np	15.54	83.15	ND<1	ND<1	ND<1	ND<1	ND	51.0
	10/12/2001	np	16.81	81.88	ND<1	ND<1	ND<1	ND<1	ND	61.8
	1/4/2002	np	17.29	81.40	ND<2	ND<2	ND<2	ND<2	ND	92.9
	4/9/2002	np	14.98	83.71	ND<1	ND<1	ND<1	ND<1	ND	36
	7/1/2004	np	16.00	82.69	ND<0.5	0.9	ND<0.5	ND<1	0.9	46.5
	2/28/2006	np	15.31	83.38	ND<0.2	ND<0.2	ND<0.2	ND<0.6	ND	11
Current Casing Elevation= 99.54	5/17/2006	np	14.59	84.95	ND<0.2	ND<0.2	ND<0.2	ND<0.6	ND	23
	8/16/2006	np	15.61	83.93	ND<0.2	ND<0.2	ND<0.2	ND<0.6	ND	36
	11/20/2006	np	13.52	86.02	ND<0.2	ND<0.2	ND<0.2	ND<0.6	ND	44
	3/27/2007	np	12.53	87.01	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND	4.6
	5/17/2007	np	14.97	84.57	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND	18
Current Casing Elevation= 99.53	8/16/2007	np	16.81	82.72	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND	32
MW-4	7/2/1996	ni	ni	ni	ni	ni	ni	ni	ni	ni
Original Casing Elevation: 96.53	10/4/1996	ni	ni	ni	ni	ni	ni	ni	ni	ni
Top of Screen Elevation: 91.45	6/17/1997	ni	ni	ni	ni	ni	ni	ni	ni	ni
Total Depth: 19	8/5/1997	ni	ni	ni	ni	ni	ni	ni	ni	ni
	11/11/1997	ni	ni	ni	ni	ni	ni	ni	ni	ni
	3/9/1998	ni	ni	ni	ni	ni	ni	ni	ni	ni
	5/14/1998	ni	ni	ni	ni	ni	ni	ni	ni	ni
	8/31/1998	ni	ni	ni	ni	ni	ni	ni	ni	ni
	5/7/1999	ni	ni	ni	ni	ni	ni	ni	ni	ni
	10/14/1999	ni	ni	ni	ni	ni	ni	ni	ni	ni
	4/19/2000	ni	ni	ni	ni	ni	ni	ni	ni	ni
	10/4/2000	np	17.15	79.38	ND<.50	ND<.50	ND<.50	1.2	1.2	16.3
	4/27/2001	np	17.15	79.38	ND<1	ND<1	ND<1	ND<1	ND	10.7
	10/12/2001	np	17.68	78.85	ND<1	ND<1	ND<1	ND<1	ND	13.4
	1/4/2002	np	17.46	79.07	ND<1	ND<1	ND<1	ND<1	ND	13.9
	4/9/2002	np	16.81	79.72	ND<1	ND<1	ND<1	ND<1	ND	5.6
	7/1/2004	np	17.50	79.03	ND<0.5	1.3	ND<0.5	ND<1	1.3	78.2
	2/28/2006	nsi	nsi	nsi	nsi	nsi	nsi	nsi	nsi	nsi
Current Casing Elevation= 95.45	5/17/2006	np	15.16	80.29	ND<0.2	ND<0.2	ND<0.2	ND<0.6	ND	26
	8/16/2006	np	15.78	79.67	ND<0.2	ND<0.2	ND<0.2	ND<0.6	ND	17
	11/20/2006	np	11.60	83.85	ND<0.2	ND<0.2	ND<0.2	ND<0.6	ND	17
	3/27/2007	dry	dry	dry	dry	dry	dry	dry	dry	dry
	5/17/2007	nsi	nsi	nsi	nsi	nsi	nsi	nsi	nsi	nsi
Current Casing Elevation= 95.20	8/16/2007	nsi	nsi	nsi	nsi	nsi	nsi	nsi	nsi	nsi

Table 5

Historical Groundwater Data

SUNOCO STATION #0364-0158
193 WEST FALLS STREET, SENECA FALLS, NEW YORK

Well #	Date	Depth to Product	Depth to Water	Groundwater Elevation	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	Total BTEX (ug/l)	MTBE (ug/l)
MW-5	7/2/1996	ni	ni	ni	ni	ni	ni	ni	ni	ni
Original Casing Elevation: 99.28	10/4/1996	ni	ni	ni	ni	ni	ni	ni	ni	ni
Top of Screen Elevation: 93.06	6/17/1997	ni	ni	ni	ni	ni	ni	ni	ni	ni
Total Depth: 22	8/5/1997	ni	ni	ni	ni	ni	ni	ni	ni	ni
	11/11/1997	ni	ni	ni	ni	ni	ni	ni	ni	ni
	3/9/1998	ni	ni	ni	ni	ni	ni	ni	ni	ni
	5/14/1998	ni	ni	ni	ni	ni	ni	ni	ni	ni
	8/31/1998	ni	ni	ni	ni	ni	ni	ni	ni	ni
	5/7/1999	ni	ni	ni	ni	ni	ni	ni	ni	ni
	10/14/1999	ni	ni	ni	ni	ni	ni	ni	ni	ni
	4/19/2000	ni	ni	ni	ni	ni	ni	ni	ni	ni
	10/4/2000	ni	ni	ni	ni	ni	ni	ni	ni	ni
	4/27/2001	ni	ni	ni	ni	ni	ni	ni	ni	ni
	10/12/2001	np	8.17	91.11	421	14.4	14.3	44.4	494.10	158
	1/4/2002	np	6.28	93.00	161	ND<2.5	ND<2.5	18.3	179.3	182
	4/9/2002	np	5.75	93.53	200	ND<20	59	24	283	170
	7/1/2004	np	6.19	93.09	298	39.9	215	638	1,190.9	151
	2/28/2006	np	6.03	93.25	350	11	140	280	781	160
Current Casing Elevation= 100.06	5/17/2006	np	6.54	93.52	290	7.4	23	130	450.4	ND<250
	8/16/2006	np	5.49	94.57	280	2	51	25	358	140
	11/20/2006	np	5.64	94.42	43	2	26	1.3	72	130
	3/27/2007	np	5.11	94.95	100	13	99	110	322	110
	5/17/2007	np	5.65	94.41	80	4.6	40	5.0	129.6	140
Current Casing Elevation= 100.70	8/16/2007	np	5.91	94.79	160	20	83	220	483	130
MW-6	8/16/2007	np	4.78	94.75	ND<0.5	ND<0.7	ND<0.8	ND<0.8	ND	5
Original Casing Elevation: 99.53										
Top of Screen Elevation: 86.53										
Total Depth: 23.2										
MW-7	8/16/2007	np	10.34	89.22	ND<0.5	ND<0.7	ND<0.8	ND<0.8	ND	23
Original Casing Elevation: 99.56										
Top of Screen Elevation: 99.56										
Total Depth: 23.1										
MW-8	8/16/2007	np	18.87	80.89	ND<0.5	ND<0.7	ND<0.8	ND<0.8	ND	19
Original Casing Elevation: 99.76										
Top of Screen Elevation: 89.76										
Total Depth: 20.2										

Notes
Elevation of top of casing expressed in feet relative to a common datum
np= No product detected
ND<= compound not detected above laboratory detection limits
nsd= not sampled, deleted from the sampling list
ni = well not installed
nsi = not sampled; well inaccessible
nr= analyte analysis not requested

ATTACHMENTS

ATTACHMENT I

Lancaster Laboratories

RECEIVED
SEP 04 2007

ANALYTICAL RESULTS

Prepared for:

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

315-452-5700

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 1052215. Samples arrived at the laboratory on Saturday, August 18, 2007. The PO# for this group is SENECA FALLS and the release number is 06-01879.

Client Description			Lancaster Labs Number
MW-1	Grab	Water	5132601
MW-2	Grab	Water	5132602
MW-3	Grab	Water	5132603
MW-5	Grab	Water	5132604
MW-6	Grab	Water	5132605
MW-7	Grab	Water	5132606
MW-8	Grab	Water	5132607

1 COPY TO GES, Inc. Attn: Hilary Northrop

Questions? Contact your Client Services Representative
Lynn M Frederiksen at (717) 656-2300

Respectfully Submitted,

Marla S. Lord
Senior Specialist

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 5132601

MW-1 Grab Water
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0156810 MW-1
Collected:08/16/2007 10:50 by CW

Account Number: 11038

Submitted: 08/18/2007 10:20
Reported: 08/28/2007 at 16:07
Discard: 10/28/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
08239	BTEX, MTBE (EPA 602)					
05538	Total Xylenes	1330-20-7	1,500.	15.	ug/l	5
07029	Benzene	71-43-2	730.	5.0	ug/l	5
07030	Toluene	108-88-3	120.	5.0	ug/l	5
07031	Ethylbenzene	100-41-4	880.	5.0	ug/l	5
07039	Methyl tert-Butyl Ether	1634-04-4	130.	5.0	ug/l	5

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08239	BTEX, MTBE (EPA 602)	EPA 602	1	08/22/2007 10:29	Steven A Skiles	5

Lancaster Laboratories, Inc.
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PO Box 12425
Lancaster, PA 17605-2425
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 5132602

MW-2 Grab Water
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0156810 MW-2
Collected:08/16/2007 09:45 by CW

Account Number: 11038

Submitted: 08/18/2007 10:20
Reported: 08/28/2007 at 16:07
Discard: 10/28/2007

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300 Gateway Park Drive
North Syracuse NY 13212

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
08239	BTEX, MTBE (EPA 602)					
05538	Total Xylenes	1330-20-7	< 3.0	3.0	ug/l	1
07029	Benzene	71-43-2	< 1.0	1.0	ug/l	1
07030	Toluene	108-88-3	< 1.0	1.0	ug/l	1
07031	Ethylbenzene	100-41-4	< 1.0	1.0	ug/l	1
07039	Methyl tert-Butyl Ether	1634-04-4	11.	1.0	ug/l	1

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08239	BTEX, MTBE (EPA 602)	EPA 602	1	08/22/2007 11:02	Steven A Skiles	1

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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 5132603

MW-3 Grab Water
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0156810 MW-3
Collected:08/16/2007 10:10 by CW

Account Number: 11038

Submitted: 08/18/2007 10:20
Reported: 08/28/2007 at 16:07
Discard: 10/28/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
08239	BTEX, MTBE (EPA 602)					
05538	Total Xylenes	1330-20-7	< 3.0	3.0	ug/l	1
07029	Benzene	71-43-2	< 1.0	1.0	ug/l	1
07030	Toluene	108-88-3	< 1.0	1.0	ug/l	1
07031	Ethylbenzene	100-41-4	< 1.0	1.0	ug/l	1
07039	Methyl tert-Butyl Ether	1634-04-4	32.	1.0	ug/l	1

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08239	BTEX, MTBE (EPA 602)	EPA 602	1	08/22/2007 11:34	Steven A Skiles	1

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2425 New Holland Pike
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 5132604

MW-5 Grab Water
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0156810 MW-5
Collected:08/16/2007 10:35 by CW

Account Number: 11038

Submitted: 08/18/2007 10:20
Reported: 08/28/2007 at 16:07
Discard: 10/28/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
08239	BTEX, MTBE (EPA 602)					
05538	Total Xylenes	1330-20-7	220.	3.0	ug/l	1
07029	Benzene	71-43-2	160.	1.0	ug/l	1
07030	Toluene	108-88-3	20.	1.0	ug/l	1
07031	Ethylbenzene	100-41-4	83.	1.0	ug/l	1
07039	Methyl tert-Butyl Ether	1634-04-4	130.	1.0	ug/l	1

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08239	BTEX, MTBE (EPA 602)	EPA 602	1	08/22/2007 12:07	Steven A Skiles	1

Lancaster Laboratories, Inc.
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PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 5132605

MW-6 Grab Water
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0156810 MW-6
Collected:08/16/2007 11:20 by CW

Account Number: 11038

Submitted: 08/18/2007 10:20
Reported: 08/28/2007 at 16:07
Discard: 10/28/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

FSF06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
04513	NY STARS waters by SW846 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	5.	0.5	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	ug/l	1
05407	Toluene	108-88-3	N.D.	0.7	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.8	ug/l	1
05416	m+p-Xylene	n.a.	N.D.	0.8	ug/l	1
05417	o-Xylene	95-47-6	N.D.	0.8	ug/l	1
05420	Isopropylbenzene	98-82-8	N.D.	1.	ug/l	1
05424	n-Propylbenzene	103-65-1	N.D.	1.	ug/l	1
05426	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.	ug/l	1
05428	tert-Butylbenzene	98-06-6	N.D.	1.	ug/l	1
05429	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.	ug/l	1
05430	sec-Butylbenzene	135-98-8	N.D.	1.	ug/l	1
05431	p-Isopropyltoluene	99-87-6	N.D.	1.	ug/l	1
05434	n-Butylbenzene	104-51-8	N.D.	1.	ug/l	1
05439	Naphthalene	91-20-3	N.D.	1.	ug/l	1

Trip blank vials were not received by the laboratory for this sample group.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
04513	NY STARS waters by SW846 8260B	SW-846 8260B	1	08/21/2007 11:55	Emiley A King	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	08/21/2007 11:55	Emiley A King	1

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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 5132606

MW-7 Grab Water
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0156810 MW-7
Collected:08/16/2007 10:20 by CW

Account Number: 11038

Submitted: 08/18/2007 10:20
Reported: 08/28/2007 at 16:07
Discard: 10/28/2007

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300 Gateway Park Drive
North Syracuse NY 13212

FSF07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07805	PAHs in Water by GC/MS					
03947	Naphthalene	91-20-3	N.D.	0.9	ug/l	1
03954	Acenaphthene	83-32-9	N.D.	0.9	ug/l	1
03956	Fluorene	86-73-7	N.D.	0.9	ug/l	1
03963	Phenanthrene	85-01-8	N.D.	0.9	ug/l	1
03964	Anthracene	120-12-7	N.D.	0.9	ug/l	1
03966	Fluoranthene	206-44-0	4.	0.9	ug/l	1
03967	Pyrene	129-00-0	9.	0.9	ug/l	1
03970	Benzo(a)anthracene	56-55-3	N.D.	0.9	ug/l	1
03971	Chrysene	218-01-9	N.D.	0.9	ug/l	1
03975	Benzo(b)fluoranthene	205-99-2	N.D.	0.9	ug/l	1
03976	Benzo(k)fluoranthene	207-08-9	N.D.	0.9	ug/l	1
03977	Benzo(a)pyrene	50-32-8	N.D.	0.9	ug/l	1
03978	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.9	ug/l	1
03979	Dibenz(a,h)anthracene	53-70-3	N.D.	0.9	ug/l	1
03980	Benzo(g,h,i)perylene	191-24-2	N.D.	0.9	ug/l	1
04513	NY STARS waters by SW846 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	23.	0.5	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	ug/l	1
05407	Toluene	108-88-3	N.D.	0.7	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.8	ug/l	1
05416	m+p-Xylene	n.a.	N.D.	0.8	ug/l	1
05417	o-Xylene	95-47-6	N.D.	0.8	ug/l	1
05420	Isopropylbenzene	98-82-8	N.D.	1.	ug/l	1
05424	n-Propylbenzene	103-65-1	N.D.	1.	ug/l	1
05426	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.	ug/l	1
05428	tert-Butylbenzene	98-06-6	N.D.	1.	ug/l	1
05429	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.	ug/l	1
05430	sec-Butylbenzene	135-98-8	N.D.	1.	ug/l	1
05431	p-Isopropyltoluene	99-87-6	N.D.	1.	ug/l	1
05434	n-Butylbenzene	104-51-8	N.D.	1.	ug/l	1
05439	Naphthalene	91-20-3	N.D.	1.	ug/l	1

Trip blank vials were not received by the laboratory for this sample group.

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 5132606

MW-7 Grab Water
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0156810 MW-7
Collected:08/16/2007 10:20 by CW

Account Number: 11038

Submitted: 08/18/2007 10:20
Reported: 08/28/2007 at 16:07
Discard: 10/28/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

FSF07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
07805	PAHs in Water by GC/MS	SW-846 8270C	1	08/22/2007 00:35	William T Parker	1
04513	NY STARS waters by SW846 8260B	SW-846 8260B	1	08/21/2007 12:18	Emiley A King	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	08/21/2007 12:18	Emiley A King	1
07807	BNA Water Extraction	SW-846 3510C	1	08/20/2007 13:45	Eric M Walker	1

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 5132607

MW-8 Grab Water
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0156810 MW-8
Collected:08/16/2007 11:10 by CW

Account Number: 11038

Submitted: 08/18/2007 10:20
Reported: 08/28/2007 at 16:07
Discard: 10/28/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

FSF08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
04513	NY STARS waters by SW846 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	19.	0.5	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	ug/l	1
05407	Toluene	108-88-3	N.D.	0.7	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.8	ug/l	1
05416	m+p-Xylene	n.a.	N.D.	0.8	ug/l	1
05417	o-Xylene	95-47-6	7.	0.8	ug/l	1
05420	Isopropylbenzene	98-82-8	N.D.	1.	ug/l	1
05424	n-Propylbenzene	103-65-1	N.D.	1.	ug/l	1
05426	1,3,5-Trimethylbenzene	108-67-8	11.	1.	ug/l	1
05428	tert-Butylbenzene	98-06-6	N.D.	1.	ug/l	1
05429	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.	ug/l	1
05430	sec-Butylbenzene	135-98-8	N.D.	1.	ug/l	1
05431	p-Isopropyltoluene	99-87-6	N.D.	1.	ug/l	1
05434	n-Butylbenzene	104-51-8	N.D.	1.	ug/l	1
05439	Naphthalene	91-20-3	N.D.	1.	ug/l	1

Trip blank vials were not received by the laboratory for this sample group.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
04513	NY STARS waters by SW846 8260B	SW-846 8260B	1	08/21/2007 12:41	Emiley A King	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	08/21/2007 12:41	Emiley A King	1

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Lancaster Laboratories

Quality Control Summary

Client Name: Sunoco c/o GES - N Syracuse
Reported: 08/28/07 at 04:07 PM

Group Number: 1052215

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 07232WAC026	Sample number(s): 5132606							
Naphthalene	< 5.	5.	ug/l	87	92	68-108	6	30
Acenaphthene	< 5.	5.	ug/l	89	93	68-111	4	30
Fluorene	< 5.	5.	ug/l	84	89	72-119	6	30
Phenanthrene	< 5.	5.	ug/l	93	100	68-111	7	30
Anthracene	< 5.	5.	ug/l	89	96	68-108	7	30
Fluoranthene	< 5.	5.	ug/l	85	94	66-112	9	30
Pyrene	< 5.	5.	ug/l	86	90	68-116	5	30
Benzo(a)anthracene	< 5.	5.	ug/l	76	85	70-114	11	30
Chrysene	< 5.	5.	ug/l	94	96	70-111	3	30
Benzo(b)fluoranthene	< 5.	5.	ug/l	67	72	65-124	7	30
Benzo(k)fluoranthene	< 5.	5.	ug/l	93	103	67-124	10	30
Benzo(a)pyrene	< 5.	5.	ug/l	86	96	68-121	11	30
Indeno(1,2,3-cd)pyrene	< 5.	5.	ug/l	91	100	61-124	9	30
Dibenz(a,h)anthracene	< 5.	5.	ug/l	95	106	70-131	11	30
Benzo(g,h,i)perylene	< 5.	5.	ug/l	105	116	67-126	10	30
Batch number: 07233A15B	Sample number(s): 5132601-5132604							
Total Xylenes	< 3.0	3.0	ug/l	102	93	82-120	8	30
Benzene	< 1.0	1.0	ug/l	106	97	86-119	9	30
Toluene	< 1.0	1.0	ug/l	101	93	82-119	9	30
Ethylbenzene	< 1.0	1.0	ug/l	100	92	81-119	9	30
Methyl tert-Butyl Ether	< 1.0	1.0	ug/l	106	96	82-124	10	30
Batch number: N072331AA	Sample number(s): 5132605-5132607							
Methyl Tertiary Butyl Ether	< 5.	5.	ug/l	107	104	73-119	3	30
Benzene	< 5.	5.	ug/l	108	105	78-119	3	30
Toluene	< 5.	5.	ug/l	102	99	85-115	3	30
Ethylbenzene	< 5.	5.	ug/l	100	98	82-119	2	30
m+p-Xylene	< 5.	5.	ug/l	97	95	83-113	2	30
o-Xylene	< 5.	5.	ug/l	97	94	83-113	3	30
Isopropylbenzene	< 5.	5.	ug/l	97	94	80-113	3	30
n-Propylbenzene	< 5.	5.	ug/l	103	100	78-119	3	30
1,3,5-Trimethylbenzene	< 5.	5.	ug/l	100	97	78-116	3	30
tert-Butylbenzene	< 5.	5.	ug/l	97	93	74-114	4	30
1,2,4-Trimethylbenzene	< 5.	5.	ug/l	101	98	78-117	3	30
sec-Butylbenzene	< 5.	5.	ug/l	100	97	72-120	3	30
p-Isopropyltoluene	< 5.	5.	ug/l	98	93	72-118	4	30
n-Butylbenzene	< 5.	5.	ug/l	100	96	75-120	4	30
Naphthalene	< 5.	5.	ug/l	87	90	61-116	3	30

Sample Matrix Quality Control

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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Lancaster Laboratories

Quality Control Summary

Client Name: Sunoco c/o GES - N Syracuse Group Number: 1052215
Reported: 08/28/07 at 04:07 PM
Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 07233A15B	Sample number(s): 5132601-5132604 UNSPK: 5132603								
Total Xylenes	99		84-131						
Benzene	105		78-131						
Toluene	98		78-129						
Ethylbenzene	98		75-133						
Methyl tert-Butyl Ether	76		70-134						
Batch number: N072331AA	Sample number(s): 5132605-5132607 UNSPK: P132617								
Methyl Tertiary Butyl Ether	109		69-127						
Benzene	84		83-128						
Toluene	109		83-127						
Ethylbenzene	103		82-129						
m+p-Xylene	103		82-130						
o-Xylene	108		82-130						
Isopropylbenzene	111		81-130						
n-Propylbenzene	112		74-138						
1,3,5-Trimethylbenzene	107		77-124						
tert-Butylbenzene	105		76-128						
1,2,4-Trimethylbenzene	106		80-125						
sec-Butylbenzene	111		73-137						
p-Isopropyltoluene	109		72-128						
n-Butylbenzene	111		73-134						
Naphthalene	93		57-125						

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: PAHs in Water by GC/MS
Batch number: 07232WAC026

	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
5132606	82	89	80
Blank	86	95	87
LCS	81	88	81
LCSD	85	92	83
Limits:	51-123	63-118	52-151

Analysis Name: BTEX, MTBE (EPA 602)
Batch number: 07233A15B

	Trifluorotoluene-P
5132601	103
5132602	99
5132603	101
5132604	104
Blank	101
LCS	100

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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Lancaster Laboratories

Quality Control Summary

Client Name: Sunoco c/o GES - N Syracuse Group Number: 1052215
Reported: 08/28/07 at 04:07 PM

Surrogate Quality Control

LCSD	100
MS	98
Limits:	69-129

Analysis Name: NY STARS waters by SW846 8260B
Batch number: N072331AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
5132605	96	95	96	92
5132606	97	97	96	93
5132607	96	95	96	93
Blank	96	95	96	91
LCS	98	95	96	96
LCSD	98	95	97	97
MS	98	97	98	96
Limits:	80-116	77-113	80-113	78-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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Analysis Request/ Environmental Services Chain of Custody

Lancaster Laboratories

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Acct. # 11038 Group# 1052215 Sample # 5132601-08

COC # 0156810

Please print. Instructions on reverse side correspond with circled numbers. Cooler temp 1.0°C

(1) Client: SUN Acct. #:

Project Name/#: Seneca Falls ~~Job~~ ~~PWSID~~ #: 06001879 0200 80

Project Manager: H. Northrop ~~DUNS~~ ~~P.O.#~~: 0364-0158

Sampler: Chris Wysotowski Quote #:

Name of state where samples were collected: NY

For Lab Use Only

FSC:

SCR#:

(5) Analyses Requested

Preservation Codes

(2) Sample Identification	Date Collected	Time Collected	(3) Matrix	(4) # of containers	BTEX + MTBE via 8260	8260 STARS	8270 STARS
MW-1	8-16-07	10:50	GW	3	X		
MW-2	8-16-07	9:45	GW	3	X		
MW-3	8-16-07	10:10	GW	3	X		
~~DUP-1~~ (MW-4)	none	-	-	~~3~~	~~X~~		
MW-5	8-16-07	10:35	GW	3	X		
MW-6	8-16-07	11:20	GW	3		X	
MW-7	8-16-07	10:20	GW	5		X	X
MW-8	8-16-07	11:10	GW	3		X	
QC TB							

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 O=Other

(6) Remarks

HOLD

(7) **Turnaround Time Requested** (TAT) (please circle): (Normal) Rush

(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)

Date results are needed:

Rush results requested by (please circle): Phone Fax E-mail

Phone #: 315.452.5700 Fax #:

E-mail address: hnorthrop@gesonline.com

(8) **Data Package Options** (please circle if required)

Type I (validation/NJ Reg)
Type II (Tier II)
Type III (Reduced NJ)
Type IV (CLP SOW)
Type VI (Raw Data Only)

TX TRRP-13
MA MCP CT RCP

SDG Complete? Yes No

Site-specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate volume.)

Internal COC Required? Yes / No

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	8/16/07	2:30	[signature]	8/17/07	0700
[signature]	8/17/07	1500			
			[signature]	8/18/07	10:20

(9)

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Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

2102.03

Lancaster Laboratories

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ANALYTICAL RESULTS

Prepared for:

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 1047830. Samples arrived at the laboratory on Friday, July 20, 2007. The PO# for this group is SENECA FALLS.

Client Description	Lancaster Labs Number
Waste Characterization Composite Soil	5107896
Waste Characterization Composite Soil	5107897
Waste Characterization Composite Soil	5107898

1 COPY TO GES, Inc. Attn: Justin Domago

Questions? Contact your Client Services Representative
Lynn M Frederiksen at (717) 656-2300

Respectfully Submitted,

Valerie L. Tomayko
Group Leader

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories

Lancaster Laboratories Sample No. SW 5107896

Waste Characterization Composite Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129212 Waste
Collected:07/18/2007 14:00

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 07/31/2007 at 09:43
Discard: 09/30/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

ARSNF

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Units	Dilution Factor
08270	TPH-DRO by 8015B	n.a.	< 13.	13.	mg/kg	1
00111	Moisture	n.a.	10.1	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
00394	pH in soil	n.a.	8.11	0.0100	Std. Units	1
	The pH was performed on a 1:1 slurry (25 gms. of sample and 25 ml. of deionized water) after being tumbled for 30 min.					
00542	Ignitability	n.a.	See Below			1
	The sample did not spontaneously ignite when exposed to air or water. The sample did not ignite by friction. The sample vapors did not ignite when exposed to a flame using a closed cup apparatus.					
01820	Paint Filter Test	n.a.	Negative			1
01637	TPH-GRO 8015B - soil					
01641	TPH-GRO 8015B - soil	n.a.	3.0	1.1	mg/kg	25

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis Trial#	Analysis Date and Time	Analyst	Dilution Factor
08270	TPH-DRO by 8015B	SW-846 8015B	1	07/26/2007 20:00	Diane V Do	1
00111	Moisture	SM20 2540 G	1	07/24/2007 17:40	Scott W Freisher	1
00394	pH in soil	SW-846 9045C modified	1	07/24/2007 11:00	Yolunder Y Bunch	1
00542	Ignitability	40 CFR 261.21	1	07/28/2007 10:15	Daniel S Smith	1
01820	Paint Filter Test	SW-846 9095A	1	07/28/2007 23:35	Daniel S Smith	1
01637	TPH-GRO 8015B - soil	SW-846 8015B modified	1	07/23/2007 16:19	Linda C Pape	25
01150	GC - Bulk Soil Prep	SW-846 5030A	1	07/20/2007 20:27	Eric L Vera	n.a.
07004	Extraction - DRO (Soils)	SW-846 3550B	1	07/25/2007 10:10	Ineabelle Poveda	1

Lancaster Laboratories

Lancaster Laboratories Sample No. TL 5107897

Waste Characterization Composite Soil
193 West Falls St.-Seneca Falls, NY TCLP NVE
DUNS# 03640158 COC: 0129212 Waste
Collected:07/18/2007 14:00

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 07/31/2007 at 09:43
Discard: 09/30/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

NVSNF

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
07055	Lead	7439-92-1	< 0.0150	0.0150	mg/l	1

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
07055	Lead	SW-846 6010B	1	07/25/2007 16:31	Eric L Eby	1
00947	TCLP Non-volatile Extraction	SW-846 1311	1	07/23/2007 12:15	Debora L Barsis	n.a.
05705	WW/TL SW 846 ICP Digest (tot)	SW-846 3010A	1	07/24/2007 19:08	James L Mertz	1

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Lancaster Laboratories Sample No. TL 5107898

Waste Characterization Composite Soil
193 West Falls St.-Seneca Falls, NY TCLP ZHE
DUNS# 03640158 COC: 0129212 Waste
Collected:07/18/2007 14:00

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 07/31/2007 at 09:43
Discard: 09/30/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

ZHSNF

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
08213	BTEX water by 8021					
00776	Benzene	71-43-2	< 5.0	5.0	ug/l	5

Due to the nature of the sample matrix, normal reporting limits were not attained.

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX water by 8021	SW-846 8021B	1	07/25/2007 23:54	Martha L Seidel	5
00946	TCLP Zero Headspace Extraction	SW-846 1311	1	07/24/2007 13:50	Darin P Wagner	n.a.
01146	GC VOA Water Prep	SW-846 5030B	1	07/25/2007 23:54	Martha L Seidel	5

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Lancaster Laboratories

Quality Control Summary

Client Name: Sunoco c/o GES - N Syracuse
Reported: 07/31/07 at 09:43 AM

Group Number: 1047830

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 07204A34A	Sample number(s): 5107896							
TPH-GRO 8015B - soil	< 1.0	1.0	mg/kg	91		67-119		
Batch number: 07204A51B	Sample number(s): 5107898							
Benzene	< 1.0	1.0	ug/l	96	97	86-119	1	30
Batch number: 072050037A	Sample number(s): 5107896							
TPH-DRO by 8015B	< 12.	12.	mg/kg	82	82	71-109	1	20
Batch number: 07205039401A	Sample number(s): 5107896							
pH in soil				99		99-101		
Batch number: 072055705001	Sample number(s): 5107897							
Lead	< 0.0150	0.0150	mg/l	102		90-113		
Batch number: 07205820002B	Sample number(s): 5107896							
Moisture				100		99-101		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 07204A34A	Sample number(s): 5107896			UNSPK: P108126					
TPH-GRO 8015B - soil	86	80	39-118	7	30				
Batch number: 07204A51B	Sample number(s): 5107898			UNSPK: P108922					
Benzene	107		78-131						
Batch number: 07205039401A	Sample number(s): 5107896			BKG: 5107896					
pH in soil						8.11	8.09	0	1
Batch number: 072055705001	Sample number(s): 5107897			UNSPK: P108819		BKG: P108819			
Lead	94	93	75-125	0	20	0.106	0.104	2	20
Batch number: 07205820002B	Sample number(s): 5107896			BKG: P107825					
Moisture						11.7	11.8	1	15

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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Lancaster Laboratories

Quality Control Summary

Client Name: Sunoco c/o GES - N Syracuse
Group Number: 1047830
Reported: 07/31/07 at 09:43 AM

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: TPH-GRO 8015B - soil
Batch number: 07204A34A

	Trifluorotoluene-F
5107896	74
Blank	81
LCS	84
MS	83
MSD	76
Limits:	61-122

Analysis Name: BTEX (8021)
Batch number: 07204A51B

	Trifluorotoluene-P
5107898	114
Blank	114
LCS	115
LCSD	115
MS	114
Limits:	69-129

Analysis Name: TPH-DRO by 8015B
Batch number: 072050037A

	Orthoterphenyl
5107896	98
Blank	98
LCS	149*
LCSD	147*
Limits:	59-129

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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Lancaster, PA 17605-2425
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Analysis Request/ Environmental Services Chain of Custody

Lancaster Laboratories

For Lancaster Laboratories use only

Acct. # 11038 Group# 1047830 Sample # 5107896-98

COC # 0129212

Please print. Instructions on reverse side correspond with circled numbers. Cooler temp 1.1°C

(1) Client: Sunoco DUNS# Acct. #: 0364-0158

Project Name/#: Seneca Falls PWSID #:

Project Manager: Justin Domazo P.O.#:

Sampler: Quote #:

Name of state where samples were collected:

For Lab Use Only
FSC:
SCR#:

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 O=Other

(6)

(2) Sample Identification	Date Collected	Time Collected	(3) # of containers	Matrix (4)	Analyses Requested (5) Preservation Codes	Remarks
				Drinking Water / Groundwater / Wastewater / Soil/Solid / Oil / Other / # of containers	pH, TPH, Ignitability, TCLP Benzene / TCLP LEAD PAINT FILTERS	
Waste Characterization	7/18/07	14:00	X	X	X	2	X	X	

(7) **Turnaround Time Requested** (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address: JDomazo@EESonline.com

(8) **Data Package Options** (please circle if required)
Type I (validation/NJ Reg)
Type II (Tier II)
Type III (Reduced NJ)
Type IV (CLP SOW)
Type VI (Raw Data Only)
TX TRRP-13
MA MCP CT RCP
SDG Complete? Yes No
Site-specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal COC Required? Yes / No

Relinquished by:	Date	Time	Received by:	Date	Time
	7/18/07	1652		7/19/07	0900
Wendy Stitt	7/19/07	1500			
			Shantel Noyes	7-20-07	0910

(9)

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Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

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ATTACHMENT II

Lancaster Laboratories

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ANALYTICAL RESULTS

Prepared for:

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 1047823. Samples arrived at the laboratory on Friday, July 20, 2007. The PO# for this group is SENECA FALLS.

Client Description			Lancaster Labs Number
MW-6(5-7')	Grab	Soil	5107814
MW-6(13-15')	Grab	Soil	5107815
MW-6(21-23')	Grab	Soil	5107816
MW-7(9-11')	Grab	Soil	5107817
MW-7(19-21')	Grab	Soil	5107818
MW-7(21-23')	Grab	Soil	5107819
MW-8(5-7')	Grab	Soil	5107820
MW-8(15-17')	Grab	Soil	5107821
SB-8(9-11')	Grab	Soil	5107822
SB-8(15-17')	Grab	Soil	5107823
SB-9(11-13')	Grab	Soil	5107824
SB-9(15-17')	Grab	Soil	5107825
SB-7(5-7')	Grab	Soil	5107826
SB-7(15-17')	Grab	Soil	5107827

1 COPY TO GES, Inc. Attn: Justin Domago

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories

Questions? Contact your Client Services Representative
Lynn M Frederiksen at (717) 656-2300

Respectfully Submitted,

Robin C. Runkle
Senior Specialist

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories

Lancaster Laboratories Sample No. SW 5107814

MW-6(5-7') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 MW-6(5-7')
Collected:07/16/2007 14:57 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:33
Discard: 10/01/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

SN6-5

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	12.6	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
04514	NY STARS soils by SW846 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	20.	ug/kg	34.29
05460	Benzene	71-43-2	N.D.	20.	ug/kg	34.29
05466	Toluene	108-88-3	N.D.	39.	ug/kg	34.29
05474	Ethylbenzene	100-41-4	N.D.	39.	ug/kg	34.29
05475	m+p-Xylene	n.a.	N.D.	39.	ug/kg	34.29
05476	o-Xylene	95-47-6	N.D.	39.	ug/kg	34.29
05479	Isopropylbenzene	98-82-8	47.	39.	ug/kg	34.29
05483	n-Propylbenzene	103-65-1	410.	39.	ug/kg	34.29
05485	1,3,5-Trimethylbenzene	108-67-8	N.D.	39.	ug/kg	34.29
05488	1,2,4-Trimethylbenzene	95-63-6	72.	39.	ug/kg	34.29
05489	sec-Butylbenzene	135-98-8	55.	39.	ug/kg	34.29
05490	p-Isopropyltoluene	99-87-6	N.D.	39.	ug/kg	34.29
05493	n-Butylbenzene	104-51-8	180.	39.	ug/kg	34.29
05498	Naphthalene	91-20-3	40.	39.	ug/kg	34.29
	The GC/MS volatile analysis was performed according to the high level soil method due to the level of non-target compounds. Therefore, the reporting limits were raised.					

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM20 2540 G	1	07/24/2007 17:40	Scott W Freisher	1
04514	NY STARS soils by SW846 8260B	SW-846 8260B	1	07/25/2007 21:21	Susan McMahon-Luu	34.29
02392	L/H Field Preserved Bisulfate	SW-846 5035	1	07/16/2007 14:57	Client Supplied	1
02392	L/H Field Preserved Bisulfate	SW-846 5035	2	07/16/2007 14:57	Client Supplied	1

Lancaster Laboratories

Lancaster Laboratories Sample No. SW 5107814

MW-6(5-7') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 MW-6(5-7')
Collected:07/16/2007 14:57 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:33
Discard: 10/01/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

SN6-5

07579	GC/MS-Field PreservedMeOH-NC	SW-846 5035	1	07/16/2007 14:57	Client Supplied	1

Lancaster Laboratories

Lancaster Laboratories Sample No. SW 5107815

MW-6(13-15') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 MW-6(13-15')
Collected:07/16/2007 15:00 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

SN613

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
04514	NY STARS soils by SW846 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	0.9	0.4	ug/kg	0.78
05460	Benzene	71-43-2	2.	0.4	ug/kg	0.78
05466	Toluene	108-88-3	4.	0.8	ug/kg	0.78
05474	Ethylbenzene	100-41-4	N.D.	0.8	ug/kg	0.78
05475	m+p-Xylene	n.a.	3.	0.8	ug/kg	0.78
05476	o-Xylene	95-47-6	N.D.	0.8	ug/kg	0.78
05479	Isopropylbenzene	98-82-8	N.D.	0.8	ug/kg	0.78
05483	n-Propylbenzene	103-65-1	N.D.	0.8	ug/kg	0.78
05485	1,3,5-Trimethylbenzene	108-67-8	0.8	0.8	ug/kg	0.78
05488	1,2,4-Trimethylbenzene	95-63-6	1.	0.8	ug/kg	0.78
05489	sec-Butylbenzene	135-98-8	N.D.	0.8	ug/kg	0.78
05490	p-Isopropyltoluene	99-87-6	N.D.	0.8	ug/kg	0.78
05493	n-Butylbenzene	104-51-8	N.D.	0.8	ug/kg	0.78
05498	Naphthalene	91-20-3	N.D.	0.8	ug/kg	0.78

The GC/MS volatile internal standard peak areas were outside the QC limits for both the initial analysis and the re-analysis. The values reported here are from the initial analysis of the sample.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
04514	NY STARS soils by SW846 8260B	SW-846 8260B	1	07/25/2007 16:10	Kenneth L Boley Jr	0.78
02392	L/H Field Preserved Bisulfate	SW-846 5035	1	07/16/2007 15:00	Client Supplied	1
02392	L/H Field Preserved Bisulfate	SW-846 5035	2	07/16/2007 15:00	Client Supplied	1
07579	GC/MS-Field PreservedMeOH-NC	SW-846 5035	1	07/16/2007 15:00	Client Supplied	1

Lancaster Laboratories

Lancaster Laboratories Sample No. SW 5107816

MW-6(21-23') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 MW-6(21-23')
Collected:07/16/2007 15:08 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

SN621

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
04514	NY STARS soils by SW846 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.4	ug/kg	0.76
05460	Benzene	71-43-2	0.8	0.4	ug/kg	0.76
05466	Toluene	108-88-3	1.	0.8	ug/kg	0.76
05474	Ethylbenzene	100-41-4	N.D.	0.8	ug/kg	0.76
05475	m+p-Xylene	n.a.	N.D.	0.8	ug/kg	0.76
05476	o-Xylene	95-47-6	N.D.	0.8	ug/kg	0.76
05479	Isopropylbenzene	98-82-8	N.D.	0.8	ug/kg	0.76
05483	n-Propylbenzene	103-65-1	N.D.	0.8	ug/kg	0.76
05485	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.8	ug/kg	0.76
05488	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.8	ug/kg	0.76
05489	sec-Butylbenzene	135-98-8	N.D.	0.8	ug/kg	0.76
05490	p-Isopropyltoluene	99-87-6	N.D.	0.8	ug/kg	0.76
05493	n-Butylbenzene	104-51-8	N.D.	0.8	ug/kg	0.76
05498	Naphthalene	91-20-3	N.D.	0.8	ug/kg	0.76

The GC/MS volatile internal standard peak areas were outside the QC limits for both the initial analysis and the re-analysis. The values reported here are from the initial analysis of the sample. A surrogate recovery was also outside of QC limits for the re-analysis.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis Trial#	Analysis Date and Time	Analyst	Dilution Factor
04514	NY STARS soils by SW846 8260B	SW-846 8260B	1	07/25/2007 16:33	Kenneth L Boley Jr	0.76
02392	L/H Field Preserved Bisulfate	SW-846 5035	1	07/16/2007 15:08	Client Supplied	1
02392	L/H Field Preserved Bisulfate	SW-846 5035	2	07/16/2007 15:08	Client Supplied	1
07579	GC/MS-Field PreservedMeOH-NC	SW-846 5035	1	07/16/2007 15:08	Client Supplied	1

Lancaster Laboratories

Lancaster Laboratories Sample No. SW 5107817

MW-7(9-11') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 MW-7(9-11')
Collected:07/17/2007 11:27 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

SN7-9

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	9.9	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
07804	PAHs in Soil by GC/MS					
01191	Acenaphthene	83-32-9	N.D.	37.	ug/kg	1
01195	Pyrene	129-00-0	N.D.	37.	ug/kg	1
03761	Naphthalene	91-20-3	N.D.	37.	ug/kg	1
03768	Fluorene	86-73-7	N.D.	37.	ug/kg	1
03775	Phenanthrene	85-01-8	N.D.	37.	ug/kg	1
03776	Anthracene	120-12-7	N.D.	37.	ug/kg	1
03778	Fluoranthene	206-44-0	N.D.	37.	ug/kg	1
03781	Benzo(a)anthracene	56-55-3	N.D.	37.	ug/kg	1
03782	Chrysene	218-01-9	N.D.	37.	ug/kg	1
03786	Benzo(b)fluoranthene	205-99-2	N.D.	37.	ug/kg	1
03787	Benzo(k)fluoranthene	207-08-9	N.D.	37.	ug/kg	1
03788	Benzo(a)pyrene	50-32-8	N.D.	37.	ug/kg	1
03789	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	37.	ug/kg	1
03790	Dibenz(a,h)anthracene	53-70-3	N.D.	37.	ug/kg	1
03791	Benzo(g,h,i)perylene	191-24-2	N.D.	37.	ug/kg	1
04514	NY STARS soils by SW846 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.4	ug/kg	0.8
05460	Benzene	71-43-2	2.	0.4	ug/kg	0.8
05466	Toluene	108-88-3	4.	0.9	ug/kg	0.8
05474	Ethylbenzene	100-41-4	N.D.	0.9	ug/kg	0.8
05475	m+p-Xylene	n.a.	2.	0.9	ug/kg	0.8
05476	o-Xylene	95-47-6	N.D.	0.9	ug/kg	0.8
05479	Isopropylbenzene	98-82-8	N.D.	0.9	ug/kg	0.8
05483	n-Propylbenzene	103-65-1	N.D.	0.9	ug/kg	0.8
05485	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.9	ug/kg	0.8
05488	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.9	ug/kg	0.8
05489	sec-Butylbenzene	135-98-8	N.D.	0.9	ug/kg	0.8
05490	p-Isopropyltoluene	99-87-6	N.D.	0.9	ug/kg	0.8
05493	n-Butylbenzene	104-51-8	N.D.	0.9	ug/kg	0.8
05498	Naphthalene	91-20-3	N.D.	0.9	ug/kg	0.8

Lancaster Laboratories

Lancaster Laboratories Sample No. SW 5107817

MW-7(9-11') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 MW-7(9-11')
Collected:07/17/2007 11:27 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

SN7-9

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM20 2540 G	1	07/24/2007 17:40	Scott W Freisher	1
07804	PAHs in Soil by GC/MS	SW-846 8270C	1	07/25/2007 14:57	Joseph M Gambler	1
04514	NY STARS soils by SW846 8260B	SW-846 8260B	1	07/25/2007 17:01	Kenneth L Boley Jr	0.8
02392	L/H Field Preserved Bisulfate	SW-846 5035	1	07/17/2007 11:27	Client Supplied	1
02392	L/H Field Preserved Bisulfate	SW-846 5035	2	07/17/2007 11:27	Client Supplied	1
07579	GC/MS-Field PreservedMeOH-NC	SW-846 5035	1	07/17/2007 11:27	Client Supplied	1
07806	BNA Soil Extraction	SW-846 3550B	1	07/25/2007 00:30	Patricia L Foreman	1

Lancaster Laboratories

Lancaster Laboratories Sample No. SW 5107818

MW-7(19-21') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 MW-7(19-21')
Collected:07/17/2007 11:37 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

SN719

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	11.9	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
07804	PAHs in Soil by GC/MS					
01191	Acenaphthene	83-32-9	N.D.	38.	ug/kg	1
01195	Pyrene	129-00-0	N.D.	38.	ug/kg	1
03761	Naphthalene	91-20-3	N.D.	38.	ug/kg	1
03768	Fluorene	86-73-7	N.D.	38.	ug/kg	1
03775	Phenanthrene	85-01-8	N.D.	38.	ug/kg	1
03776	Anthracene	120-12-7	N.D.	38.	ug/kg	1
03778	Fluoranthene	206-44-0	N.D.	38.	ug/kg	1
03781	Benzo(a)anthracene	56-55-3	N.D.	38.	ug/kg	1
03782	Chrysene	218-01-9	N.D.	38.	ug/kg	1
03786	Benzo(b)fluoranthene	205-99-2	N.D.	38.	ug/kg	1
03787	Benzo(k)fluoranthene	207-08-9	N.D.	38.	ug/kg	1
03788	Benzo(a)pyrene	50-32-8	N.D.	38.	ug/kg	1
03789	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	38.	ug/kg	1
03790	Dibenz(a,h)anthracene	53-70-3	N.D.	38.	ug/kg	1
03791	Benzo(g,h,i)perylene	191-24-2	N.D.	38.	ug/kg	1
04514	NY STARS soils by SW846 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.4	ug/kg	0.74
05460	Benzene	71-43-2	2.	0.4	ug/kg	0.74
05466	Toluene	108-88-3	2.	0.8	ug/kg	0.74
05474	Ethylbenzene	100-41-4	N.D.	0.8	ug/kg	0.74
05475	m+p-Xylene	n.a.	1.	0.8	ug/kg	0.74
05476	o-Xylene	95-47-6	N.D.	0.8	ug/kg	0.74
05479	Isopropylbenzene	98-82-8	N.D.	0.8	ug/kg	0.74
05483	n-Propylbenzene	103-65-1	N.D.	0.8	ug/kg	0.74
05485	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.8	ug/kg	0.74
05488	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.8	ug/kg	0.74
05489	sec-Butylbenzene	135-98-8	N.D.	0.8	ug/kg	0.74
05490	p-Isopropyltoluene	99-87-6	N.D.	0.8	ug/kg	0.74
05493	n-Butylbenzene	104-51-8	N.D.	0.8	ug/kg	0.74
05498	Naphthalene	91-20-3	N.D.	0.8	ug/kg	0.74
	The GC/MS volatile internal standard peak areas were outside the QC limits for both the initial analysis and the re-analysis. The values reported here					

Lancaster Laboratories

Lancaster Laboratories Sample No. SW 5107818

MW-7(19-21') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 MW-7(19-21')
Collected:07/17/2007 11:37 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

SN719

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor

are from the initial analysis of the sample. A surrogate recovery was also outside of QC limits for the re-analysis.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM20 2540 G	1	07/24/2007 17:40	Scott W Freisher	1
07804	PAHs in Soil by GC/MS	SW-846 8270C	1	07/25/2007 15:19	Joseph M Gambler	1
04514	NY STARS soils by SW846 8260B	SW-846 8260B	1	07/25/2007 17:27	Kenneth L Boley Jr	0.74
02392	L/H Field Preserved Bisulfate	SW-846 5035	1	07/17/2007 11:37	Client Supplied	1
02392	L/H Field Preserved Bisulfate	SW-846 5035	2	07/17/2007 11:37	Client Supplied	1
07579	GC/MS-Field PreservedMeOH-NC	SW-846 5035	1	07/17/2007 11:37	Client Supplied	1
07806	BNA Soil Extraction	SW-846 3550B	1	07/25/2007 00:30	Patricia L Foreman	1

Lancaster Laboratories

Lancaster Laboratories Sample No. SW 5107819

MW-7(21-23') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 MW-7(21-23')
Collected:07/17/2007 11:44 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

SN721

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	8.3	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
07804	PAHs in Soil by GC/MS					
01191	Acenaphthene	83-32-9	N.D.	36.	ug/kg	1
01195	Pyrene	129-00-0	N.D.	36.	ug/kg	1
03761	Naphthalene	91-20-3	N.D.	36.	ug/kg	1
03768	Fluorene	86-73-7	N.D.	36.	ug/kg	1
03775	Phenanthrene	85-01-8	N.D.	36.	ug/kg	1
03776	Anthracene	120-12-7	N.D.	36.	ug/kg	1
03778	Fluoranthene	206-44-0	N.D.	36.	ug/kg	1
03781	Benzo(a)anthracene	56-55-3	N.D.	36.	ug/kg	1
03782	Chrysene	218-01-9	N.D.	36.	ug/kg	1
03786	Benzo(b)fluoranthene	205-99-2	N.D.	36.	ug/kg	1
03787	Benzo(k)fluoranthene	207-08-9	N.D.	36.	ug/kg	1
03788	Benzo(a)pyrene	50-32-8	N.D.	36.	ug/kg	1
03789	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	36.	ug/kg	1
03790	Dibenz(a,h)anthracene	53-70-3	N.D.	36.	ug/kg	1
03791	Benzo(g,h,i)perylene	191-24-2	N.D.	36.	ug/kg	1
04514	NY STARS soils by SW846 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.4	ug/kg	0.69
05460	Benzene	71-43-2	1.	0.4	ug/kg	0.69
05466	Toluene	108-88-3	1.	0.8	ug/kg	0.69
05474	Ethylbenzene	100-41-4	N.D.	0.8	ug/kg	0.69
05475	m+p-Xylene	n.a.	0.8	0.8	ug/kg	0.69
05476	o-Xylene	95-47-6	N.D.	0.8	ug/kg	0.69
05479	Isopropylbenzene	98-82-8	N.D.	0.8	ug/kg	0.69
05483	n-Propylbenzene	103-65-1	N.D.	0.8	ug/kg	0.69
05485	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.8	ug/kg	0.69
05488	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.8	ug/kg	0.69
05489	sec-Butylbenzene	135-98-8	N.D.	0.8	ug/kg	0.69
05490	p-Isopropyltoluene	99-87-6	N.D.	0.8	ug/kg	0.69
05493	n-Butylbenzene	104-51-8	N.D.	0.8	ug/kg	0.69
05498	Naphthalene	91-20-3	N.D.	0.8	ug/kg	0.69
	The GC/MS volatile internal standard peak areas were outside the QC limits for both the initial analysis and the re-analysis. The values reported here					

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Lancaster Laboratories Sample No. SW 5107819

MW-7(21-23') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 MW-7(21-23')
Collected:07/17/2007 11:44 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

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300 Gateway Park Drive
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SN721

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor

are from the initial analysis of the sample.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM20 2540 G	1	07/24/2007 17:40	Scott W Freisher	1
07804	PAHs in Soil by GC/MS	SW-846 8270C	1	07/25/2007 15:41	Joseph M Gambler	1
04514	NY STARS soils by SW846 8260B	SW-846 8260B	1	07/25/2007 17:49	Kenneth L Boley Jr	0.69
02392	L/H Field Preserved Bisulfate	SW-846 5035	1	07/17/2007 11:44	Client Supplied	1
02392	L/H Field Preserved Bisulfate	SW-846 5035	2	07/17/2007 11:44	Client Supplied	1
07579	GC/MS-Field PreservedMeOH-NC	SW-846 5035	1	07/17/2007 11:44	Client Supplied	1
07806	BNA Soil Extraction	SW-846 3550B	1	07/25/2007 00:30	Patricia L Foreman	1

Lancaster Laboratories

Lancaster Laboratories Sample No. SW 5107820

MW-8(5-7') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 MW-8(5-7')
Collected:07/17/2007 16:00 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

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SN8-5

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	8.8	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
04514	NY STARS soils by SW846 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	21.	ug/kg	38.52
05460	Benzene	71-43-2	51.	21.	ug/kg	38.52
05466	Toluene	108-88-3	44.	42.	ug/kg	38.52
05474	Ethylbenzene	100-41-4	4,300.	42.	ug/kg	38.52
05475	m+p-Xylene	n.a.	13,000.	42.	ug/kg	38.52
05476	o-Xylene	95-47-6	660.	42.	ug/kg	38.52
05479	Isopropylbenzene	98-82-8	370.	42.	ug/kg	38.52
05483	n-Propylbenzene	103-65-1	2,200.	42.	ug/kg	38.52
05485	1,3,5-Trimethylbenzene	108-67-8	5,400.	42.	ug/kg	38.52
05488	1,2,4-Trimethylbenzene	95-63-6	16,000.	84.	ug/kg	77.04
05489	sec-Butylbenzene	135-98-8	170.	42.	ug/kg	38.52
05490	p-Isopropyltoluene	99-87-6	110.	42.	ug/kg	38.52
05493	n-Butylbenzene	104-51-8	790.	42.	ug/kg	38.52
05498	Naphthalene	91-20-3	2,600.	42.	ug/kg	38.52

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM20-2540 G	1	07/24/2007 17:40	Scott W Freisher	1
04514	NY STARS soils by SW846 8260B	SW-846 8260B	1	07/25/2007 21:44	Susan McMahon-Luu	77.04
04514	NY STARS soils by SW846 8260B	SW-846 8260B	1	07/26/2007 02:19	Susan McMahon-Luu	38.52
02392	L/H Field Preserved Bisulfate	SW-846 5035	1	07/17/2007 16:00	Client Supplied	1
02392	L/H Field Preserved Bisulfate	SW-846 5035	2	07/17/2007 16:00	Client Supplied	1
07579	GC/MS-Field PreservedMeOH-NC	SW-846 5035	1	07/17/2007 16:00	Client Supplied	1

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Lancaster Laboratories Sample No. SW 5107821

MW-8(15-17') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 MW-8(15-17')
Collected:07/17/2007 16:10 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

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SN815

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	12.6	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
04514	NY STARS soils by SW846 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	4.	0.4	ug/kg	0.67
05460	Benzene	71-43-2	65.	0.4	ug/kg	0.67
05466	Toluene	108-88-3	3.	0.8	ug/kg	0.67
05474	Ethylbenzene	100-41-4	11.	0.8	ug/kg	0.67
05475	m+p-Xylene	n.a.	25.	0.8	ug/kg	0.67
05476	o-Xylene	95-47-6	4.	0.8	ug/kg	0.67
05479	Isopropylbenzene	98-82-8	N.D.	0.8	ug/kg	0.67
05483	n-Propylbenzene	103-65-1	2.	0.8	ug/kg	0.67
05485	1,3,5-Trimethylbenzene	108-67-8	3.	0.8	ug/kg	0.67
05488	1,2,4-Trimethylbenzene	95-63-6	7.	0.8	ug/kg	0.67
05489	sec-Butylbenzene	135-98-8	N.D.	0.8	ug/kg	0.67
05490	p-Isopropyltoluene	99-87-6	N.D.	0.8	ug/kg	0.67
05493	n-Butylbenzene	104-51-8	N.D.	0.8	ug/kg	0.67
05498	Naphthalene	91-20-3	N.D.	0.8	ug/kg	0.67

The GC/MS volatile internal standard peak areas were outside the QC limits for both the initial analysis and the re-analysis. The values reported here are from the initial analysis of the sample. A surrogate recovery was also outside of QC limits for the re-analysis.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM20 2540 G	1	07/24/2007 17:40	Scott W Freisher	1
04514	NY STARS soils by SW846 8260B	SW-846 8260B	1	07/25/2007 18:12	Kenneth L Boley Jr	0.67
02392	L/H Field Preserved Bisulfate	SW-846 5035	1	07/17/2007 16:10	Client Supplied	1

Lancaster Laboratories

Lancaster Laboratories Sample No. SW 5107821

MW-8(15-17') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 MW-8(15-17')
Collected:07/17/2007 16:10 by JB

Account Number: 11038

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Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

SN815

02392	L/H Field Preserved Bisulfate	SW-846 5035	2	07/17/2007 16:10	Client Supplied	1
07579	GC/MS-Field PreservedMeOH-NC	SW-846 5035	1	07/17/2007 16:10	Client Supplied	1

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Lancaster Laboratories Sample No. SW 5107822

SB-8(9-11') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 SB-8(9-11')
Collected:07/18/2007 10:00 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

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North Syracuse NY 13212

SN8-9

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	11.0	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
04514	NY STARS soils by SW846 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	22.	ug/kg	39.94
05460	Benzene	71-43-2	71.	22.	ug/kg	39.94
05466	Toluene	108-88-3	N.D.	45.	ug/kg	39.94
05474	Ethylbenzene	100-41-4	N.D.	45.	ug/kg	39.94
05475	m+p-Xylene	n.a.	N.D.	45.	ug/kg	39.94
05476	o-Xylene	95-47-6	N.D.	45.	ug/kg	39.94
05479	Isopropylbenzene	98-82-8	N.D.	45.	ug/kg	39.94
05483	n-Propylbenzene	103-65-1	430.	45.	ug/kg	39.94
05485	1,3,5-Trimethylbenzene	108-67-8	N.D.	45.	ug/kg	39.94
05488	1,2,4-Trimethylbenzene	95-63-6	N.D.	45.	ug/kg	39.94
05489	sec-Butylbenzene	135-98-8	N.D.	45.	ug/kg	39.94
05490	p-Isopropyltoluene	99-87-6	N.D.	45.	ug/kg	39.94
05493	n-Butylbenzene	104-51-8	82.	45.	ug/kg	39.94
05498	Naphthalene	91-20-3	70.	45.	ug/kg	39.94
	The GC/MS volatile analysis was performed according to the high level soil method due to the level of non-target compounds. Therefore, the reporting limits were raised.					

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM20 2540 G	1	07/24/2007 17:40	Scott W Freisher	1
04514	NY STARS soils by SW846 8260B	SW-846 8260B	1	07/25/2007 22:30	Susan McMahon-Luu	39.94
02392	L/H Field Preserved Bisulfate	SW-846 5035	1	07/18/2007 10:00	Client Supplied	1
02392	L/H Field Preserved Bisulfate	SW-846 5035	2	07/18/2007 10:00	Client Supplied	1

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Lancaster Laboratories Sample No. SW 5107822

SB-8(9-11') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 SB-8(9-11')
Collected:07/18/2007 10:00 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

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SN8-9

07579	GC/MS-Field PreservedMeOH-NC	SW-846 5035	1	07/18/2007 10:00	Client Supplied	1

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Lancaster Laboratories Sample No. SW 5107823

SB-8(15-17') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 SB-8(15-17')
Collected:07/18/2007 10:10 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

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SB815

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	11.9	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
04514	NY STARS soils by SW846 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	19.	0.5	ug/kg	0.8
05460	Benzene	71-43-2	17.	0.5	ug/kg	0.8
05466	Toluene	108-88-3	3.	0.9	ug/kg	0.8
05474	Ethylbenzene	100-41-4	2.	0.9	ug/kg	0.8
05475	m+p-Xylene	n.a.	3.	0.9	ug/kg	0.8
05476	o-Xylene	95-47-6	N.D.	0.9	ug/kg	0.8
05479	Isopropylbenzene	98-82-8	N.D.	0.9	ug/kg	0.8
05483	n-Propylbenzene	103-65-1	1.	0.9	ug/kg	0.8
05485	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.9	ug/kg	0.8
05488	1,2,4-Trimethylbenzene	95-63-6	2.	0.9	ug/kg	0.8
05489	sec-Butylbenzene	135-98-8	N.D.	0.9	ug/kg	0.8
05490	p-Isopropyltoluene	99-87-6	N.D.	0.9	ug/kg	0.8
05493	n-Butylbenzene	104-51-8	N.D.	0.9	ug/kg	0.8
05498	Naphthalene	91-20-3	N.D.	0.9	ug/kg	0.8
	The GC/MS volatile internal standard peak areas were outside the QC limits for both the initial analysis and the re-analysis. The values reported here are from the initial analysis of the sample. A surrogate recovery was also outside of QC limits for the re-analysis.					

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM20 2540 G	1	07/24/2007 17:40	Scott W Freisher	1
04514	NY STARS soils by SW846 8260B	SW-846 8260B	1	07/25/2007 22:48	Kenneth L Boley Jr	0.8
02392	L/H Field Preserved Bisulfate	SW-846 5035	1	07/18/2007 10:10	Client Supplied	1

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Lancaster Laboratories Sample No. SW 5107823

SB-8(15-17') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 SB-8(15-17')
Collected:07/18/2007 10:10 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

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SB815

02392	L/H Field Preserved Bisulfate	SW-846 5035	2	07/18/2007 10:10	Client Supplied	1
07579	GC/MS-Field PreservedMeOH-NC	SW-846 5035	1	07/18/2007 10:10	Client Supplied	1

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Lancaster Laboratories Sample No. SW 5107824

SB-9(11-13') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 SB-9(11-13')
Collected:07/18/2007 13:30 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

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SN911

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	12.0	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
04514	NY STARS soils by SW846 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	56.	19.	ug/kg	33.47
05460	Benzene	71-43-2	1,700.	19.	ug/kg	33.47
05466	Toluene	108-88-3	N.D.	38.	ug/kg	33.47
05474	Ethylbenzene	100-41-4	220.	38.	ug/kg	33.47
05475	m+p-Xylene	n.a.	2,900.	38.	ug/kg	33.47
05476	o-Xylene	95-47-6	N.D.	38.	ug/kg	33.47
05479	Isopropylbenzene	98-82-8	N.D.	38.	ug/kg	33.47
05483	n-Propylbenzene	103-65-1	290.	38.	ug/kg	33.47
05485	1,3,5-Trimethylbenzene	108-67-8	460.	38.	ug/kg	33.47
05488	1,2,4-Trimethylbenzene	95-63-6	2,000.	38.	ug/kg	33.47
05489	sec-Butylbenzene	135-98-8	N.D.	38.	ug/kg	33.47
05490	p-Isopropyltoluene	99-87-6	N.D.	38.	ug/kg	33.47
05493	n-Butylbenzene	104-51-8	N.D.	38.	ug/kg	33.47
05498	Naphthalene	91-20-3	280.	38.	ug/kg	33.47

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM20 2540 G	1	07/24/2007 17:40	Scott W Freisher	1
04514	NY STARS soils by SW846 8260B	SW-846 8260B	1	07/25/2007 22:53	Susan McMahon-Luu	33.47
02392	L/H Field Preserved Bisulfate	SW-846 5035	1	07/18/2007 13:30	Client Supplied	1
02392	L/H Field Preserved Bisulfate	SW-846 5035	2	07/18/2007 13:30	Client Supplied	1
07579	GC/MS-Field PreservedMeOH-NC	SW-846 5035	1	07/18/2007 13:30	Client Supplied	1

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Lancaster Laboratories Sample No. SW 5107825

SB-9(15-17') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 SB-9(15-17')
Collected:07/18/2007 13:35 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

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SN915

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	11.7	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
04514	NY STARS soils by SW846 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	24.	0.4	ug/kg	0.66
05460	Benzene	71-43-2	1,000.	19.	ug/kg	33.03
05466	Toluene	108-88-3	10.	0.7	ug/kg	0.66
05474	Ethylbenzene	100-41-4	8.	0.7	ug/kg	0.66
05475	m+p-Xylene	n.a.	16.	0.7	ug/kg	0.66
05476	o-Xylene	95-47-6	1.	0.7	ug/kg	0.66
05479	Isopropylbenzene	98-82-8	N.D.	0.7	ug/kg	0.66
05483	n-Propylbenzene	103-65-1	2.	0.7	ug/kg	0.66
05485	1,3,5-Trimethylbenzene	108-67-8	3.	0.7	ug/kg	0.66
05488	1,2,4-Trimethylbenzene	95-63-6	5.	0.7	ug/kg	0.66
05489	sec-Butylbenzene	135-98-8	N.D.	0.7	ug/kg	0.66
05490	p-Isopropyltoluene	99-87-6	N.D.	0.7	ug/kg	0.66
05493	n-Butylbenzene	104-51-8	N.D.	0.7	ug/kg	0.66
05498	Naphthalene	91-20-3	N.D.	0.7	ug/kg	0.66
	The GC/MS volatile internal standard peak areas were outside the QC limits for both the initial analysis and the re-analysis. The values reported here are from the initial analysis of the sample.					

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM20 2540 G	1	07/24/2007 17:40	Scott W Freisher	1
04514	NY STARS soils by SW846 8260B	SW-846 8260B	1	07/25/2007 18:35	Kenneth L Boley Jr	0.66
04514	NY STARS soils by SW846 8260B	SW-846 8260B	1	07/26/2007 14:19	Kerri E Koch	33.03
02392	L/H Field Preserved Bisulfate	SW-846 5035	1	07/18/2007 13:35	Client Supplied	1

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Lancaster Laboratories Sample No. SW 5107825

SB-9(15-17') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 SB-9(15-17')
Collected:07/18/2007 13:35 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

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SN915

02392	L/H Field Preserved Bisulfate	SW-846 5035	2	07/18/2007 13:35	Client Supplied	1
07579	GC/MS-Field PreservedMeOH-NC	SW-846 5035	1	07/18/2007 13:35	Client Supplied	1

Lancaster Laboratories

Lancaster Laboratories Sample No. SW 5107826

SB-7(5-7') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 SB-7(5-7')
Collected:07/18/2007 14:34 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

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SN7-5

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	9.7	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
04514	NY STARS soils by SW846 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.6	ug/kg	1.13
05460	Benzene	71-43-2	2.	0.6	ug/kg	1.13
05466	Toluene	108-88-3	4.	1.	ug/kg	1.13
05474	Ethylbenzene	100-41-4	N.D.	1.	ug/kg	1.13
05475	m+p-Xylene	n.a.	2.	1.	ug/kg	1.13
05476	o-Xylene	95-47-6	N.D.	1.	ug/kg	1.13
05479	Isopropylbenzene	98-82-8	N.D.	1.	ug/kg	1.13
05483	n-Propylbenzene	103-65-1	N.D.	1.	ug/kg	1.13
05485	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.	ug/kg	1.13
05488	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.	ug/kg	1.13
05489	sec-Butylbenzene	135-98-8	N.D.	1.	ug/kg	1.13
05490	p-Isopropyltoluene	99-87-6	N.D.	1.	ug/kg	1.13
05493	n-Butylbenzene	104-51-8	N.D.	1.	ug/kg	1.13
05498	Naphthalene	91-20-3	N.D.	1.	ug/kg	1.13
	The GC/MS volatile internal standard peak areas were outside the QC limits for both the initial analysis and the re-analysis. The values reported here are from the initial analysis of the sample.					

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM20 2540 G	1	07/24/2007 17:40	Scott W Freisher	1
04514	NY STARS soils by SW846 8260B	SW-846 8260B	1	07/26/2007 07:21	Holly Berry	1.13
02392	L/H Field Preserved Bisulfate	SW-846 5035	1	07/18/2007 14:34	Client Supplied	1
02392	L/H Field Preserved Bisulfate	SW-846 5035	2	07/18/2007 14:34	Client Supplied	1

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
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Lancaster Laboratories

Lancaster Laboratories Sample No. SW 5107826

SB-7(5-7') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 SB-7(5-7')
Collected:07/18/2007 14:34 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

SN7-5

07579	GC/MS-Field PreservedMeOH-NC	SW-846 5035	1	07/18/2007 14:34	Client Supplied	1

Lancaster Laboratories

Lancaster Laboratories Sample No. SW 5107827

SB-7(15-17') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 SB-7(15-17')
Collected:07/18/2007 14:40 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

SN715

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	13.7	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
04514	NY STARS soils by SW846 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	0.5	0.4	ug/kg	0.7
05460	Benzene	71-43-2	9.	0.4	ug/kg	0.7
05466	Toluene	108-88-3	3.	0.8	ug/kg	0.7
05474	Ethylbenzene	100-41-4	14.	0.8	ug/kg	0.7
05475	m+p-Xylene	n.a.	29.	0.8	ug/kg	0.7
05476	o-Xylene	95-47-6	3.	0.8	ug/kg	0.7
05479	Isopropylbenzene	98-82-8	0.9	0.8	ug/kg	0.7
05483	n-Propylbenzene	103-65-1	6.	0.8	ug/kg	0.7
05485	1,3,5-Trimethylbenzene	108-67-8	8.	0.8	ug/kg	0.7
05488	1,2,4-Trimethylbenzene	95-63-6	19.	0.8	ug/kg	0.7
05489	sec-Butylbenzene	135-98-8	N.D.	0.8	ug/kg	0.7
05490	p-Isopropyltoluene	99-87-6	N.D.	0.8	ug/kg	0.7
05493	n-Butylbenzene	104-51-8	1.	0.8	ug/kg	0.7
05498	Naphthalene	91-20-3	1.	0.8	ug/kg	0.7
	The GC/MS volatile internal standard peak areas were outside the QC limits for both the initial analysis and the re-analysis. The values reported here are from the initial analysis of the sample. A surrogate recovery was also outside of QC limits for the re-analysis.					

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis Trial#	Date and Time	Analyst	Dilution Factor
00111	Moisture	SM20 2540 G	1	07/24/2007 17:40	Scott W Freisher	1
04514	NY STARS soils by SW846 8260B	SW-846 8260B	1	07/26/2007 07:43	Holly Berry	0.7
02392	L/H Field Preserved Bisulfate	SW-846 5035	1	07/18/2007 14:40	Client Supplied	1

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Lancaster, PA 17605-2425
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Lancaster Laboratories

Lancaster Laboratories Sample No. SW 5107827

SB-7(15-17') Grab Soil
193 West Falls St.-Seneca Falls, NY
DUNS# 03640158 COC: 0129211 SB-7(15-17')
Collected:07/18/2007 14:40 by JB

Account Number: 11038

Submitted: 07/20/2007 09:10
Reported: 08/01/2007 at 15:34
Discard: 10/01/2007

Sunoco c/o GES - N Syracuse
300 Gateway Park Drive
North Syracuse NY 13212

SN715

02392	L/H Field Preserved Bisulfate	SW-846 5035	2	07/18/2007 14:40	Client Supplied	1
07579	GC/MS-Field PreservedMeOH-NC	SW-846 5035	1	07/18/2007 14:40	Client Supplied	1

Lancaster Laboratories

Quality Control Summary

Client Name: Sunoco c/o GES - N Syracuse
Reported: 08/01/07 at 03:34 PM

Group Number: 1047823

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 07205820002A	Sample number(s): 5107814,5107817-5107824							
Moisture				100		99-101		
Batch number: 07205820002B	Sample number(s): 5107825-5107827							
Moisture				100		99-101		
Batch number: 07205SLJ026	Sample number(s): 5107817-5107819							
Acenaphthene	N.D.	33.	ug/kg	95		74-110		
Pyrene	N.D.	33.	ug/kg	96		67-116		
Naphthalene	N.D.	33.	ug/kg	90		70-107		
Fluorene	N.D.	33.	ug/kg	94		66-115		
Phenanthrene	N.D.	33.	ug/kg	97		70-107		
Anthracene	N.D.	33.	ug/kg	95		69-109		
Fluoranthene	N.D.	33.	ug/kg	94		66-109		
Benzo(a)anthracene	N.D.	33.	ug/kg	87		72-112		
Chrysene	N.D.	33.	ug/kg	96		71-112		
Benzo(b)fluoranthene	N.D.	33.	ug/kg	82		66-123		
Benzo(k)fluoranthene	N.D.	33.	ug/kg	102		67-121		
Benzo(a)pyrene	N.D.	33.	ug/kg	99		71-119		
Indeno(1,2,3-cd)pyrene	N.D.	33.	ug/kg	97		66-123		
Dibenz(a,h)anthracene	N.D.	33.	ug/kg	96		70-130		
Benzo(g,h,i)perylene	N.D.	33.	ug/kg	103		66-120		
Batch number: Q072062AA	Sample number(s): 5107814,5107820,5107822,5107824							
Methyl Tertiary Butyl Ether	N.D.	25.	ug/kg	91	99	72-117	9	30
Benzene	N.D.	25.	ug/kg	102	99	84-115	2	30
Toluene	N.D.	50.	ug/kg	100	98	81-116	2	30
Ethylbenzene	N.D.	50.	ug/kg	98	97	82-115	1	30
m+p-Xylene	N.D.	50.	ug/kg	98	97	82-117	2	30
o-Xylene	N.D.	50.	ug/kg	101	97	82-117	4	30
Isopropylbenzene	N.D.	50.	ug/kg	97	94	82-110	2	30
n-Propylbenzene	N.D.	50.	ug/kg	100	96	76-122	4	30
1,3,5-Trimethylbenzene	N.D.	50.	ug/kg	99	95	74-112	4	30
1,2,4-Trimethylbenzene	N.D.	50.	ug/kg	101	96	74-117	4	30
sec-Butylbenzene	N.D.	50.	ug/kg	94	92	72-112	1	30
p-Isopropyltoluene	N.D.	50.	ug/kg	96	91	72-113	6	30
n-Butylbenzene	N.D.	50.	ug/kg	91	87	68-116	4	30
Naphthalene	N.D.	50.	ug/kg	108	99	52-121	8	30
Batch number: Q072071AA	Sample number(s): 5107825							
Benzene	N.D.	25.	ug/kg	103	105	84-115	3	30
Batch number: X072062AA	Sample number(s): 5107815-5107819,5107821,5107823,5107825							
Methyl Tertiary Butyl Ether	N.D.	0.5	ug/kg	95	97	72-117	2	30
Benzene	N.D.	0.5	ug/kg	97	97	84-115	0	30
Toluene	N.D.	1.	ug/kg	96	98	81-116	2	30

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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Quality Control Summary

Client Name: Sunoco c/o GES - N Syracuse Group Number: 1047823
Reported: 08/01/07 at 03:34 PM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Ethylbenzene	N.D.	1.	ug/kg	99	101	82-115	2	30
m+p-Xylene	N.D.	1.	ug/kg	97	95	82-117	2	30
o-Xylene	N.D.	1.	ug/kg	97	98	82-117	1	30
Isopropylbenzene	N.D.	1.	ug/kg	99	99	82-110	0	30
n-Propylbenzene	N.D.	1.	ug/kg	110	108	76-122	1	30
1,3,5-Trimethylbenzene	N.D.	1.	ug/kg	105	106	74-112	2	30
1,2,4-Trimethylbenzene	N.D.	1.	ug/kg	106	107	74-117	1	30
sec-Butylbenzene	N.D.	1.	ug/kg	108	108	72-112	0	30
p-Isopropyltoluene	N.D.	1.	ug/kg	104	102	72-113	2	30
n-Butylbenzene	N.D.	1.	ug/kg	108	105	68-116	3	30
Naphthalene	N.D.	1.	ug/kg	110	107	52-121	3	30
Batch number: X072062AB	Sample number(s): 5107826-5107827							
Methyl Tertiary Butyl Ether	N.D.	0.5	ug/kg	95	97	72-117	2	30
Benzene	N.D.	0.5	ug/kg	97	97	84-115	0	30
Toluene	N.D.	1.	ug/kg	96	98	81-116	2	30
Ethylbenzene	N.D.	1.	ug/kg	99	101	82-115	2	30
m+p-Xylene	N.D.	1.	ug/kg	97	95	82-117	2	30
o-Xylene	N.D.	1.	ug/kg	97	98	82-117	1	30
Isopropylbenzene	N.D.	1.	ug/kg	99	99	82-110	0	30
n-Propylbenzene	N.D.	1.	ug/kg	110	108	76-122	1	30
1,3,5-Trimethylbenzene	N.D.	1.	ug/kg	105	106	74-112	2	30
1,2,4-Trimethylbenzene	N.D.	1.	ug/kg	106	107	74-117	1	30
sec-Butylbenzene	N.D.	1.	ug/kg	108	108	72-112	0	30
p-Isopropyltoluene	N.D.	1.	ug/kg	104	102	72-113	2	30
n-Butylbenzene	N.D.	1.	ug/kg	108	105	68-116	3	30
Naphthalene	N.D.	1.	ug/kg	110	107	52-121	3	30

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 07205820002A	Sample number(s): 5107814,5107817-5107824 BKG: 5107821								
Moisture						12.6	12.3	3	15
Batch number: 07205820002B	Sample number(s): 5107825-5107827 BKG: 5107825								
Moisture						11.7	11.8	1	15
Batch number: 07205SLJ026	Sample number(s): 5107817-5107819 UNSPK: P109547								
Acenaphthene	93	95	48-129	2	30				
Pyrene	94	96	28-155	2	30				
Naphthalene	88	89	33-137	1	30				
Fluorene	92	95	30-146	3	30				
Phenanthrene	95	97	4-176	1	30				
Anthracene	92	95	17-161	3	30				
Fluoranthene	90	94	23-142	4	30				
Benzo(a)anthracene	88	90	22-158	3	30				
Chrysene	94	97	19-158	3	30				
Benzo(b)fluoranthene	82	116	12-165	34*	30				

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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Lancaster Laboratories

Quality Control Summary

Client Name: Sunoco c/o GES - N Syracuse Group Number: 1047823
Reported: 08/01/07 at 03:34 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Benzo(k)fluoranthene	100	100	21-154	0	30				
Benzo(a)pyrene	97	100	25-154	3	30				
Indeno(1,2,3-cd)pyrene	97	105	28-149	7	30				
Dibenz(a,h)anthracene	100	113	36-151	12	30				
Benzo(g,h,i)perylene	98	113	28-148	15	30				

Batch number: X072062AA Sample number(s): 5107815-5107819,5107821,5107823,5107825 UNSPK: P108919

Methyl Tertiary Butyl Ether	103	47-130
Benzene	110	59-120
Toluene	109	38-131
Ethylbenzene	110	54-116
m+p-Xylene	107	44-127
o-Xylene	106	44-127
Isopropylbenzene	109	41-120
n-Propylbenzene	131*	46-121
1,3,5-Trimethylbenzene	122*	52-117
1,2,4-Trimethylbenzene	120	47-122
sec-Butylbenzene	131*	38-124
p-Isopropyltoluene	121*	43-117
n-Butylbenzene	125	17-131
Naphthalene	104	10-123

Batch number: X072062AB Sample number(s): 5107826-5107827 UNSPK: P108919

Methyl Tertiary Butyl Ether	103	47-130
Benzene	110	59-120
Toluene	109	38-131
Ethylbenzene	110	54-116
m+p-Xylene	107	44-127
o-Xylene	106	44-127
Isopropylbenzene	109	41-120
n-Propylbenzene	131*	46-121
1,3,5-Trimethylbenzene	122*	52-117
1,2,4-Trimethylbenzene	120	47-122
sec-Butylbenzene	131*	38-124
p-Isopropyltoluene	121*	43-117
n-Butylbenzene	125	17-131
Naphthalene	104	10-123

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: PAHs in Soil by GC/MS
Batch number: 07205SLJ026

	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
5107817	82	84	87
5107818	82	84	84
5107819	74	77	81

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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Quality Control Summary

Client Name: Sunoco c/o GES - N Syracuse Group Number: 1047823
Reported: 08/01/07 at 03:34 PM

Surrogate Quality Control

Blank	79	81	89	
LCS	82	84	87	
MS	81	83	87	
MSD	82	84	88	
Limits:	47-128	55-123	51-158	

Analysis Name: NY STARS soils by SW846 8260B
Batch number: Q072062AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
5107814	82	81	80	83
5107820	97	100	96	100
5107822	86	87	85	86
5107824	99	101	97	99
Blank	95	96	91	93
LCS	94	94	91	93
LCSD	95	98	95	99
Limits:	71-114	70-109	70-123	70-111

Analysis Name: 8260 Master Scan (soil)
Batch number: Q072071AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
Blank	102	105	96	93
LCS	100	105	101	102
LCSD	101	104	100	100
Limits:	71-114	70-109	70-123	70-111

Analysis Name: NY STARS soils by SW846 8260B
Batch number: X072062AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
5107815	85	82	101	79
5107816	94	87	104	71
5107817	90	87	98	79
5107818	94	85	99	72
5107819	92	88	95	78
5107821	88	81	102	75
5107823	87	84	98	77
5107825	87	82	119	60*
Blank	90	84	95	82
LCS	89	86	97	88
LCSD	89	88	98	89
MS	88	82	99	83
Limits:	71-114	70-109	70-123	70-111

Analysis Name: NY STARS soils by SW846 8260B
Batch number: X072062AB

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
5107826	92	88	99	78
5107827	84	81	99	77
Blank	90	83	95	78

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Lancaster Laboratories

Quality Control Summary

Client Name: Sunoco c/o GES - N Syracuse Group Number: 1047823
Reported: 08/01/07 at 03:34 PM

Surrogate Quality Control

LCS	89	86	97	88
LCSD	89	88	98	89
MS	88	82	99	83
Limits:	71-114	70-109	70-123	70-111

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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Analysis Request/ Environmental Services Chain of Custody

Lancaster Laboratories

For Lancaster Laboratories use only
Acct. # 11038 Group# 1047823 Sample # 5107814-27

COC # 0129211

Please print. Instructions on reverse side correspond with circled numbers. Cooler temp 1.1°C

(1) Client: ~~Sunoco~~ Sunoco DUNS# ~~Acct.#~~ 0364-0158
Project Name/#: Seneca Falls PWSID #:
Project Manager: Justin Domago P.O.#:
Sampler: Jonathan Bonc Quote #:
Name of state where samples were collected: NY

(4) Matrix: Drinking Water | Groundwater | Wastewater | Other | Total # of Containers

(5) Analyses Requested — Preservation Codes

(2) Sample Identification | Date Collected | Time Collected | (3) Grab | Composite

Sample Identification	Date Collected	Time Collected	Grab	Composite	Drinking Water	Groundwater	Wastewater	Other	Total # of Containers	STARS via 8260	STARS via 8270							
											None							
MW-6 (5-7')	7/16/07	1457	X	X					4	X								
MW-6 (13-15')	7/16/07	1500	X	X					3	X								
MW-6 (21-23')	7/16/07	1508	X	X					3	X								
MW-7 (9-11')	7/17/07	1127	X	X					5	X	X							
MW-7 (19-21')	7/17/07	1137	X	X					5	X	X							
MW-7 (21-23')	7/17/07	1144	X	X					5	X	X							
MW-8 (5-7')	7/17/07	1600	X	X					4	X								
MW-8 (15-17')	7/17/07	1610	X	X					4	X								
SB-8 (9-11')	7/18/07	1000	X	X					4	X								
SB-8 (15-17')	7/18/07	1010	X	X					4	X								

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 O=Other

(6) Sample Specific Reporting Limits

For Lab Use Only
FSC:
SCR#:

Remarks

(7) **Turnaround Time Requested** (TAT) (please circle): (Normal) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address: JDomago@GESonline.com.

(8) **Data Package Options** (please circle if required)
Type I (validation/NJ Reg)
Type II (Tier II)
Type III (Reduced NJ)
Type IV (CLP SOW)
Type VI (Raw Data Only)
TX TRRP-13
MA MCP CT RCP
SDG Complete? Yes No
Site-specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal COC Required? Yes / No

Relinquished by:	Date	Time	Received by:	Date	Time
	7/18/07	1652		7/19/07	1900
Relinquished by:	Date	Time	Received by:	Date	Time
	7/19/07	1500			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
				7-20-07	0910

(9)

Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 (717) 656-2300 Fax: (717) 656-6766
Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

2102.03

Analysis Request/ Environmental Services Chain of Custody

Lancaster Laboratories

For Lancaster Laboratories use only

Acct. # 11038 Group# 1047823 Sample # 5107814-27

COC # 0156565

Please print. Instructions on reverse side correspond with circled numbers. Cooler temp 1.1°C

(1)
Client: Sunoco DUNS# Acct. #: 0364-0158
Project Name/#: Seneca Falls PWSID #:
Project Manager: Justin Domago P.O.#:
Sampler: Jonathan Bone Quote #:
Name of state where samples were collected: NY

For Lab Use Only
FSC:
SCR#:

(2) Sample Identification | Date Collected | Time Collected | (3) Composite | Grab | Matrix | (4) # of containers | (5) Analyses Requested: Preservation Codes — STARS via 8260 | Remarks

Sample Identification	Date Collected	Time Collected	Composite	Grab	Matrix	# of containers	STARS via 8260	Remarks
SB-9 (11-13')	7/18/07	1330	X	X		4	X	
SB-9 (15-17')	7/18/07	1335	X	X		4	X	
SB-7 (5-7')	7/18/07	1434	X	X		4	X	
SB-7 (15-17')	7/18/07	1440	X	X		4	X	

(6) Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 O=Other

(7) **Turnaround Time Requested** (TAT) (please circle): (Normal) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address: JDomago@gesonline.com

(8) **Data Package Options** (please circle if required)
Type I (validation/NJ Reg)
Type II (Tier II)
Type III (Reduced NJ)
Type IV (CLP SOW)
Type VI (Raw Data Only)
TX TRRP-13
MA MCP CT RCP
SDG Complete? Yes No
Site-specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal COC Required? Yes / No

Relinquished by:	Date	Time	Received by:	Date	Time
	7/18/07	1652		7/19/07	0700
Relinquished by:	Date	Time	Received by:	Date	Time
	7/19/07	1800			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
				7-20-07	0910

(9)

Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 (717) 656-2300 Fax: (717) 656-6766
Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

2102.03

BORING LOG

ID NO. **MW-6**

Groundwater and Environmental Services, Inc.

PROJECT:	Sunoco #0364-0158 / Seneca Falls	SURFACE ELEV.:	NA	TOTAL DEPTH:	23 Feet
ADDRESS:	193 Fall Street, Seneca Falls, New York	WATER DEPTH	17 Feet	CASING EL.:	NA
JOB NO.	0601879	BOREHOLE DIA.:	8.25 inches	WELL DIA.:	4 Inches

Logged By:	J.Bone	Drilling Method:	Hollow Stem Auger
Dates Drilled:	7/18/07	Sampling Method:	Split Spoon
Drilling Company:	Parratt Wolff	Soil Class. System:	Burmister
		Field Screening:	PID (Readings in ppm)

Depth (feet)	Sample Interval	Field Screen	Recovery (%)	SAMPLE LITHOLOGY	Comments	COMPLETION DETAILS
0				Asphalt		
	0-2	0.0	Hand clear to 5 feet below grade surface	Brown SILT		Flushmount manway set in concrete
2				Brown SILT, trace Gravel		
4	2-5	9.2				
				Brown SILT, trace brown Clay, trace gravel	Perched Water Table	Sand: .25-11 fbgs
6	5-7	156	20			
				Brown SILT, some brown Clay, trace Gravel		
8	7-9	9.6	100			Casing: 0-13 fbgs
				Brown SILT, trace Gravel		
10	9-11	0.0	100			
				Brown SILT, trace brown Sand, trace gravel		Bentonite: 11-12 fbgs
12	11-13	1.3	100			
				Brown SILT, trace gravel		
14	13-15	4.2	100			
				Brown CLAY, some Silt, trace Gravel		
16	15-17	0.0	100		Moist	Sand: 12-23 fbgs
18	17-19	0.0	100			
				Brown Clay, trace gravel		
20	19-21	0.0	100			Screen: 13-23 fbgs
22	21-23	0.0	100			

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum:
Vertical Datum:

General Comments:
Bottom of boring at 23 feet
NR=No Recovery

Symbol Key:
Apparent Water Level
Lab Sample Location

BORING LOG

ID NO. **MW-7**

Groundwater and Environmental Services, Inc.

PROJECT:	Sunoco #0364-0158 / Seneca Falls	SURFACE ELEV.:	NA	TOTAL DEPTH:	23 Feet
ADDRESS:	193 Fall Street, Seneca Falls, New York	WATER DEPTH	17 Feet	CASING EL.:	NA
JOB NO.	0601879	BOREHOLE DIA.:	8.25 inches	WELL DIA.:	4 Inches

Logged By:	J.Bone	Drilling Method:	Hollow Stem Auger
Dates Drilled:	7/17/07	Sampling Method:	Split Spoon
Drilling Company:	Parratt Wolff	Soil Class. System:	Burmister
		Field Screening:	PID (Readings in ppm)

Depth (feet)	Sample Interval	Field Screen	Recovery (%)	SAMPLE LITHOLOGY	Comments	COMPLETION DETAILS
0				Asphalt		
	0-2	0.0	Hand clear to 5 feet below grade surface	Brown SILT, some brown fine to medium Sand, trace Gravel		Flushmount manway set in concrete
2						
4	2-5	0.0				
						Sand: .25-11 fbgs
6	5-7	0.0	40			
					Very Compact	
8	7-9	0.0	30			Casing: 0-13 fbgs
				Brown SILT, trace gravel		
10	9-11	0.0	50			
				Brown SILT, some brown Clay, trace medium to coarse Sand		Bentonite: 11-12 fbgs
12	11-13	0.0	70			
				Brown SILT, trace Gravel		
14	13-15	0.0	100			
				Brown SILT, some brown Clay, trace Gravel		
16	15-17	0.0	80			Sand: 12-23 fbgs
18	17-19	0.0	20			
20	19-21	0.0	100			Screen: 13-23 fbgs
22	21-23	0.0	100		Moist	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum:
Vertical Datum:

General Comments:
Bottom of boring at 23 feet
NR=No Recovery

Symbol Key:
Apparent Water Level
Lab Sample Location

BORING LOG

ID NO. **MW-8**

Groundwater and Environmental Services, Inc.

PROJECT:	Sunoco #0364-0158 / Seneca Falls	SURFACE ELEV.:	NA	TOTAL DEPTH:	23 Feet
ADDRESS:	193 Fall Street, Seneca Falls, New York	WATER DEPTH	15 Feet	CASING EL.:	NA
JOB NO.	0601879	BOREHOLE DIA.:	8.25 Inches	WELL DIA.:	4 Inches

Logged By:	J.Bone	Drilling Method:	Hollow Stem Auger
Dates Drilled:	7/18/07	Sampling Method:	Split Spoon
Drilling Company:	Parratt Wolff	Soil Class. System:	Burmister
		Field Screening:	PID (Readings in ppm)

Depth (feet)	Sample Interval	Field Screen	Recovery (%)	SAMPLE LITHOLOGY	Comments	COMPLETION DETAILS
0				Asphalt		
	0-2	0.0	Hand clear to 5 feet below grade surface	Backfill, gravel		Flushmount manway set in concrete
2				Brown CLAY, some brown Silt, trace Gravel		Sand: .25-8 fbgs
	2-5	0.0			Wet/Perched water/Oder	
4						
				Brown SILT, trace gravel		Casing: 0-10 fbgs
6	5-7	1560	100		Compact	
					Very Compact	
8	7-9	545	100			Bentonite: 8-9 fbgs
10	9-11	23.0	100			
				Brown SILT, some brown Clay, trace Gravel		
12	11-13	56.1	100			
				Brown SILT, trace Gravel		
14	13-15	46.5	15			
				Brown CLAY, trace Gravel	Wet	Sand: 9-20 fbgs
16	15-17	21.0	20			
18	17-19	0.0	100			Screen: 10-20 fbgs
20						

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum:
Vertical Datum:

General Comments:
Bottom of boring at 23 feet
NR=No Recovery

Symbol Key:
Apparent Water Level
Lab Sample Location

BORING LOG

ID NO. **SB-7**

Groundwater and Environmental Services, Inc.

PROJECT:	Sunoco #0364-0158 / Seneca Falls	SURFACE ELEV.:	NA	TOTAL DEPTH:	17 Feet
ADDRESS:	193 Fall Street, Seneca Falls, New York	WATER DEPTH	17 Feet	CASING EL.:	NA
JOB NO.	0601879	BOREHOLE DIA.:	8.25 inches	WELL DIA.:	NA

Logged By:	J.Bone	Drilling Method:	Hollow Stem Auger
Dates Drilled:	7/16/07	Sampling Method:	Split Spoon
Drilling Company:	Parratt Wolff	Soil Class. System:	Burmister
		Field Screening:	PID (Readings in ppm)

Depth (feet)	Sample Interval	Field Screen	Recovery (%)	SAMPLE LITHOLOGY	Comments	COMPLETION DETAILS
0				Topsoil		Top Soil
	0-2	0.0	Hand clear to 5 feet below grade surface	Brown SILT, trace Gravel	Compact	
2				Brown SILT, trace fine to medium Sand		Sand: .25-17 fbgs
	2-5	0.3				
4						
				Brown SILT, trace Gravel		
6	5-7	0.0	60			
8	7-9	0.0	70			
10	9-11	0.0	70			
12	11-13	0.0	100			
14	13-15	0.0	60			
				Brown SILT, some brown Clay, trace Gravel		
16	15-17	0.0	60			

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum:
Vertical Datum:

General Comments:
Bottom of boring at 17 feet
NR=Not Recorded

Symbol Key:
Apparent Water Level
Lab Sample Location

BORING LOG

ID NO. **SB-8**

Groundwater and Environmental Services, Inc.

PROJECT:	Sunoco #0364-0158 / Seneca Falls	SURFACE ELEV.:	NA	TOTAL DEPTH:	17 Feet
ADDRESS:	193 Fall Street, Seneca Falls, New York	WATER DEPTH	17 Feet	CASING EL.:	NA
JOB NO.	0601879	BOREHOLE DIA.:	8.25 inches	WELL DIA.:	NA

Logged By:	J.Bone	Drilling Method:	Hollow Stem Auger
Dates Drilled:	7/18/07	Sampling Method:	Split Spoon
Drilling Company:	Parratt Wolff	Soil Class. System:	Burmister
		Field Screening:	PID (Readings in ppm)

Depth (feet)	Sample Interval	Field Screen	Recovery (%)	SAMPLE LITHOLOGY	Comments	COMPLETION DETAILS
0				Asphalt		Asphalt
	0-2	0.2	Hand clear to 5 feet below grade surface	Brown SILT, trace medium to coarse Sand, trace gravel		
2				Brown Medium to Coarse SAND, some brown Silt, trace Gravel		Sand: .25-17 fbgs
	2-5	0.0				
4						
				Brown SILT, trace Gravel		
6	5-7	0.0	10		Compact	
8	7-9	1.0	20			
				Brown SILT, some brown Clay, trace Gravel		
10	9-11	5.3	80			
12	11-13	2.6	80			
14	13-15	1.0	70		Moist	
16	15-17	0.4	60		Moist	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum:
Vertical Datum:

General Comments:
Bottom of boring at 17 feet
NR=Not Recorded

Symbol Key:
Apparent Water Level
Lab Sample Location

BORING LOG

ID NO. **SB-9**

Groundwater and Environmental Services, Inc.

PROJECT:	Sunoco #0364-0158 / Seneca Falls	SURFACE ELEV.:	NA	TOTAL DEPTH:	17 Feet
ADDRESS:	193 Fall Street, Seneca Falls, New York	WATER DEPTH	17 Feet	CASING EL.:	NA
JOB NO.	0601879	BOREHOLE DIA.:	8.25 inches	WELL DIA.:	NA

Logged By:	J.Bone	Drilling Method:	Hollow Stem Auger
Dates Drilled:	7/18/07	Sampling Method:	Split Spoon
Drilling Company:	Parratt Wolff	Soil Class. System:	Burmister
		Field Screening:	PID (Readings in ppm)

Depth (feet)	Sample Interval	Field Screen	Recovery (%)	SAMPLE LITHOLOGY	Comments	COMPLETION DETAILS
0				Asphalt		Asphalt
	0-2	0.0	Hand clear to 5 feet below grade surface	Brown SILT, trace fine to medium Sand, trace gravel		
2						Sand: .25-17 fbgs
	2-5	0.2				
4						
				Brown SILT, trace Gravel		
6	5-7	25.1	80			
				No Recovery		
8	7-9	NR	NR			
				Brown SILT, trace fine to medium Sand, trace Gravel		
10	9-11	45.5	100			
12	11-13	104	90			
				Brown SILT, some brown Clay, trace Gravel		
14	13-15	0.0	80			
16	15-17	0.0	100		Moist	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum:
Vertical Datum:

General Comments:
Bottom of boring at 17 feet
NR=No Recovery

Symbol Key:
Apparent Water Level
Lab Sample Location

APPENDIX B

OP3004: Sediment and Wetland Sediment/Soil Sampling

OPERATING PROCEDURE: OP3004

SEDIMENT AND WETLAND SEDIMENT/SOIL SAMPLING

LEVEL II (Interim)

PREPARATION AND APPROVALS

VERSION	AUTHORED / DATE	REVIEWED / DATE	REVIEWED / DATE	REVIEWED / DATE	APPROVED / DATE
Ver. 0.1	ABD: 3/04/04	RVE: 8/09/04			
Ver. 0.2	RWS: 04/09/2008	HJC 06/04/2008			

Total Pages: 30

Haley & Aldrich categorizes Operating Procedures by Levels, to facilitate their preparation and use. The Levels are defined as follows:

Level III - miscellaneous procedure from a variety of sources; not sanctioned as appropriate for any particular use by the company but provided on the Intranet as a potential resource when current company operating procedure is not available; (e.g., project-specific procedure submitted by staff member, old procedures, ASTM procedures, etc.)

Level II - in-progress or draft procedure, typically written in the standard format; in various stages of review; has not yet been sanctioned an official operating procedure but could be suitable for project-specific application upon verification by project staff

Level I - company sanctioned operating procedure suitable for use on projects

The company encourages and welcomes feedback regarding its Operating Procedures. If staff members have recommendations related to the use or improvement of any procedures, or suggestions for developing new procedures, please contact the Boston Office Field Services Manager or a Service Delivery Leader.

TABLE OF CONTENTS

LIST OF FIGURES

OPERATING PROCEDURE OP3004

SEDIMENT AND WETLAND SEDIMENT/SOIL SAMPLING

1. PURPOSE

The purpose of this Operating Procedure (OP) is to describe the procedures for the collection of representative stream sediment and wetland soils samples. Sediment and wetland sediment/soil as referenced herein mean deposited sediment or soil-like material below both flowing and standing surface water. Wetlands are lands transitional between terrestrial and aquatic systems where the water table is typically at or near the surface, or the land is covered by shallow water. Wetland sediment/soils exhibit features characteristic of the wetland conditions of saturation, flooding, or ponding, which must occur long enough during the growing season to develop anaerobic and reducing conditions in the upper horizons of the soils. Hydric soil indicators are currently termed "redoximorphic" features of the soils, a term used to replace descriptions of "soil mottling" due to wetness. Wetland sediment/soils include organic and mineral soils ranging from poorly drained to well drained.

Stream sediment and wetland sediment/soil samples may contain contaminants that are insoluble in water, persistent in the environment, relatively immobile in the soil, and/or exhibit low volatility. Accordingly, the procedures are intended specifically to minimize the alteration of samples.

Refer to OP3000 for General Environmental Field Procedures and Protocol, including procedures for decontamination of sampling equipment and containers. Refer to OP3001 for Operating Procedures on Preservation and Shipment of Environmental Samples.

Refer to OP3003 for Operating Procedures on Surficial Soil Sampling, and OP3007 for Operating Procedures on Surface Water Sampling.

Haley & Aldrich (H&A) personnel are to use the techniques in OP3004 to collect stream sediment and wetland sediment/soil samples. These operating procedures may be varied or changed as required, depending upon site conditions, equipment limitations, or limitations imposed by the procedure. In all instances, the actual procedures used should be documented and described in an appropriate site report.

2. EQUIPMENT & SUPPLIES

Required:

1. Site map(s)/plan(s), including Work Plan (WP), Field Sampling Plan (FSP), Quality Assurance Project Plan (QAPP), or other applicable project planning document

2. Safety equipment, as specified in the site-specific Health & Safety Plan (HASP)
3. Field book and/or field data sheets (H&A Sampling Record Form #3004)
4. Tape measure (100 ft)
5. Global Positioning System (GPS) unit to document station locations
6. Stainless steel, plastic, or other appropriate composition bucket, bowl or pan
7. Appropriate environmental sample containers (4 oz., 8 oz., or wide mouth glass jars, with Teflon lined lids)
8. Plastic zip-lock bags
9. Sample labels
10. Chain-of custody records and custody seals
11. Cooler(s)
12. Ice
13. Decontamination supplies/equipment

Sampling equipment may include one or more of the following:

1. Stainless steel spade or shovel
2. Stainless steel trowel(s) or scoop(s)
3. Bucket auger with thin-wall tube attachment (stainless steel)
4. Bit auger with thin-wall tube attachment (stainless steel)
5. Thin-wall tube sampler
6. Split-spoon sampler
7. Gravity corer
8. Ponar grab sampler
9. Ekman dredge
10. Lexan® tubes
11. Peristaltic pump
12. Russian peat corer
13. Piston corer

Optional:

1. Camera and film
2. Survey equipment or global positioning system (GPS) to locate sampling points
3. Survey stakes, flags or buoys and anchors
4. Nylon rope
5. Plastic sheeting or cover

3. PROCEDURE

Decontaminate equipment as described in Haley & Aldrich Operating Procedure OP3027 Decontamination Procedure.

Disposed of drill cuttings as described in Haley & Aldrich Operating Procedure OP3028 Investigation Derived Wastes.

Please refer to Haley & Aldrich Operating Procedure OP3001 Preservation and Shipment of Environmental Samples, for naming, labeling, handling, and shipping information.

3.1 Preparation

- Determine the extent of the sampling effort, the sampling methods to be employed, and the types and amounts of equipment and supplies required.
- Obtain the necessary sampling and monitoring equipment.
- Obtain the necessary personal protection equipment (PPE) in accordance with the site-specific HASP.
- Decontaminate or pre-clean equipment, and ensure that it is in working order.
- Prepare schedules and coordinate staff, client and regulatory agencies, if appropriate.
- Perform a general site survey prior to site entry in accordance with the site-specific HASP.
- Use stakes, flagging, or buoys to identify and mark all sampling locations within wetlands. Verify and/or document locations using calibrated GPS unit. Use GPS to locate sediment stations and deploy anchor(s) alongside or downstream of intended sampling locations. Occupy river stations in an upstream sequence whenever possible. All wetland staked locations and in-water sampling areas should be utility-cleared by the property owner or the On-Scene-Coordinator prior to sampling. Utility clearance should always be confirmed prior to beginning work.

3.2 Pre-sampling Observations, Notes and Required Entries

Field measurements and observations should be recorded in the field at the time of sampling. A Sampling Record Form is included as Appendix C. Typically required information is listed below and will be recorded in a project Field Log Book or Sampling Record Form, whichever is more appropriate:

- Sample location number
- Date collected
- Time collected
- Samplers (names of individuals who actually collected the sample)
- Sample destination (Analytical laboratory) to receive samples

- Description of sample location with sketch or map (i.e. sludge lagoon, stream, wetland, etc.)
- GPS coordinates of sampled locations
- Sample depth (i.e. distance in feet from ground surface)
- Depth of water above sample (distance in feet from top of water surface to top of sediment)
- Indicate photograph number and roll used (if applicable)
- Observable physical characteristics
  - Odor
  - Color
  - Texture
  - Layering
  - Other
- Samples collected (enter all sample numbers colleted at this location)

3.3 Sampling Procedures

- After all entries are completed, label and number required sample bottles. Fill our label in indelible ink and carefully and clearly address all categories and parameters.
- Sampling instructions have been provided for various optional sampling devices which may be used to collect sediment and wetland sediment/soil samples. Select the prescribed sampling device, or an appropriate alternative to meet project objectives. Any change in sampling device should be cleared first with an authorized project team member.
- Decontaminate sampling device and/or container immediately prior to and following its use according to Operation Procedure OP#3000 – General Environmental Field Procedures and Protocol.
- Sub-sampled sediment samples must be homogenized or when called for, composited and homogenized, before placing in containers. Homogenization is appropriate for most chemical analytical parameters, including but not limited to: metals, pesticides/PCBs, herbicides, semi-volatile organic compounds (SVOCs). However, samples for volatile organic compounds (VOCs) should not be homogenized prior to adding to VOC sample containers.
- Because sediment samples may be stored frozen to extend holding time, sample containers should be filled approximately two-thirds to three-quarters of their capacity, depending on their water content. For high-moisture sediments, jars should be filled no more than two-thirds full. Specific instructions will be should be provided by the analytical laboratory for VOC samples. Refer to a project WP, FSP, or QAPP for required sample volumes and appropriate containers for given analyses. Only VOC

sample containers should contain any laboratory-provided preservatives. An additional, unpreserved VOC sample is required for moisture content of the unhomogenized sediment. All container caps will include an inner Teflon septa or lining and must be tightly secured. Refer to OP#3001 for operating procedures on sample handling and preservation.

- Check for appropriate liner in cap and secure cap tightly. Store the samples with ice in a cooler, following these sealing and packing instructions:
  - Ice will be placed in plastic zip-lock bags to contain ice and water. Sample containers will be adequately layered in bubble wrap to prevent breakage. Samples will be positioned upright in the cooler to prevent breakage, and samples will be stored and shipped at 4ºC.
  - All VOC vials will be sealed in a thick or heavy duty plastic zip-lock bag, bubble wrap, or foam VOC vial holders provided by the laboratory.
  - Check to make sure all appropriate information is in the Field Log Book or the Sampling Record Form and Chain-of-Custody document using indelible ink.
  - If samples are to be shipped to a laboratory for analysis, a Chain-of-Custody record, custody seals, "Fragile" markers, and reinforced nylon tape will all be properly affixed to or on the sample cooler. If samples are to be delivered to the lab by courier, only the Chain-of-Custody record is required.
    - Chain-of-Custody Record – enclose in a large zip-lock bag and tape to inside of top of cooler lid.
    - Custody Seals – place custody seal over cooler gasket separating cooler lid from the cooler bottom at all sides except the hinged location.
    - Nylon Tape – tape completely around cooler at two locations. Tape reinforcement will prevent cooler from opening if the lid locking mechanism fails.
    - Fragile Markers – fragile markers and upright stickers will be affixed to each side of the cooler.

3.4 Sampling Device Instructions

The sampling devices presented below may be used to collect sediment and wetland sediment/soil samples within several feet of the ground surface. The specific procedures and equipment for sediment and wetland sediment/soil sampling may be specified in the project WP, FSP, QAPP or related document. The most appropriate device for a specific sampling program may be based on the depth of water at a sampling location, the physical characteristics of the sediment to be sampled, and/or site conditions (accessibility, type of soil or sediment, desired depth of samples, etc.).

3.4.1 Trowels, Hand Scoops, Spades & Shovels

This method is probably the simplest, most expeditious, direct method for sampling accessible sediment. These devices are easy to operate, decontaminate, and work well for sampling low-mositure, exposed (e.g., intertidal or wetland surface) locations. Stainless steel or rigid non-contaminating plastic are the preferred material for these tools.

Surface material is sampled to the specified depth using a stainless steel or plastic scoop, trowel, spade or shovel. In wetlands, vegetation may or may not be considered part of the sediment/soil sample; any such distinction must be discussed and cleared with an authorized project team leader, unless addressed in the project WP, FSP, or QAPP. For the purpose of this method, surface sediment or wetland sediment/soil is considered to range from 0 to 6 inches in depth and a shallow aqueous layer is considered to range from 0 to 12 inches in depth. Scoops or trowels can be disruptive to the liquid/sediment interface and may cause substantial alteration of the sample. Thus, these methods are limited in application to bulk surface "grab" sampling.

Procedures for Use

1. Carefully remove the top layer of sediment or wetland sediment/soil to the desired sample depth with a cleaned, stainless steel spade, shovel, trowel or scoop. In the case of sludges exposed to air, it may be desirable to remove the first 1-2 centimeters of material prior to collecting the sample.

2. Using a cleaned, stainless steel scoop or trowel, collect the desired quantity of sediment.

3. If compositing a series of grab samples, use a stainless steel mixing bowl or Teflon tray for mixing.

4. Surface water should be decanted from the sample or the composition mixing bowl prior to sealing or transfer to the sample container. Care should be taken to retain the fine sediment fraction during this procedure.

5. If volatile organic analysis is to be performed, transfer the sample directly into an appropriate, labeled sample container with a laboratory-supplied cut-off syringe or Encore® sampler. Place the remainder of the sample into a stainless steel, plastic, or other appropriate compositing container, and mix thoroughly to obtain a homogenous sample representative of the entire sampling interval. Then, place the sample into the appropriate labeled containers.

6. Check that a Teflon liner is present in cap if required. Secure cap tightly.

7. The chemical preservation of solids is generally not recommended, except in the case of VOC samples. Refrigeration is usually the best approach for solid samples supplemented by minimal holding time. Sediment samples may be stored frozen to extend holding times up to one year for most analyses.

3.4.2 Bucket and Bit Augers with Thin-Wall Tube Attachment

This method should only be attempted on very consolidated sediment absent overlying surface water, such as within an intertidal zone during low tide, or for wetland sediment/soil. Collection of a sub-surface sediment or wetland sediment/soil sample can be accomplished with a system consisting of a bucket or bit auger, a series of extensions, a "T" handle, and a thin wall tube attachment (Figure 1). The use of additional extensions in conjunction with a bucket auger can increase the sampling depth from which sediment can be collected.

A cleaned bucket or bit auger is used to bore a hole to the desired sample depth and then is withdrawn. When using a bucket auger, the soil sample must be removed from the bucket with a cleaned, stainless steel spoon or trowel. The bucket auger can collect a large sediment sample (up to 24 ounces) but is limited in penetrating depth to approximately two feet under ideal conditions. The bit auger has a greater penetrating depth (up to six feet) but collects a lesser volume of sediment. The bit auger tip is removed from the auger when the desired sampling depth is reached and replaced with the thin wall tube attachment. The system is then lowered back into the cored hole and driven into the sediment at the completion depth. The corer is then withdrawn and the sample collected from the thin wall tube sampler. The various depths represented by the core are homogenized for the appropriate depth. This equipment can be used in a wide variety of sediment and wetland sediment/soil conditions. This equipment is inexpensive, easy to operate, and generally works well to sample most sediments.

Procedures for Use

1. Attach the cleaned auger head to the required length of extensions, then attach the "T" handle to the upper extension.

2. Clear the area to be sampled of any surface debris (twigs, rocks, litter). It may be advisable or necessary to remove the first 8 to 15 cm of surface sediment for an area approximately 15 cm in radius around the sampling location.

3. Insert the bucket auger or bit auger into the sediment at a 0^{o} to 20^{o} angle from vertical. This orientation minimizes spillage of the sampler upon extraction from the sediment.

4. Begin drilling by rotation of the "T" handle, to cut a core of sediment. If desired sample location is at a depth, periodically remove accumulated sediment in the auger and place on a plastic sheet spread near the hole. This prevents accidentally brushing loose material back down the borehole when removing the auger or adding extensions. It also facilitates refilling the hole, and avoids possible contamination of the surrounding area.

5. After reaching the desired depth, slowly and carefully remove auger from boring.

6. If a bucket auger is being used, remove soil sample with cleaned, stainless steel spoon or trowel.

7. If a bit auger is being used, remove auger tip from the extension rods and replace with cleaned thin wall tube sampler. Install proper cutting tip.

8. Carefully lower the tube sampler down the borehole. Gradually press the tube sampler into the sediment. Take care to avoid scraping the borehole side. Avoid hammering the drill rods to facilitate coring, as the vibrations may cause the boring walls to collapse.

9. Remove the tube sampler and the unscrew drill rods.

10. Remove the cutting tip and remove the core from the device.

11. Discard the tope of the core (approximately 1 inch), as this represents material collected before penetration of the layer of concern. Transfer the remaining sample or a specified aliquot of sample into an appropriate sample container.

12. If VOC analysis is to be performed, transfer the sample into an appropriate methanol preserved, labeled container with a stainless steel spoon, wooden tongue depressor or equivalent, and secure the cap tightly.

13. If another sample is to be collected in the same hole, but at a greater depth, reattach the auger bit to the drill and assembly, and repeat previous steps, making sure to decontaminate the auger and tube sampler between samples.

14. Abandon the hole according to applicable state regulations. Generally, shallow holes can simply be backfilled with the removed sediment or wetland soil material.

3.4.3 Hand Held Corer

This device consists of a "T" handle and cylindrical core tube (Figure 2). The device is equipped with a check valve at the top to prevent washout during retrieval through overlying water, if applicable, and a nosepiece at the bottom to help contain the sample. This device can be used in a wide variety of sediment conditions. Hand corers can also be fitted with brass or polycarbonate plastic liners.

Procedures of Use

1. Inspect the corer for proper pre-cleaning.

2. Press the corer in with a smooth, continuous motion.

3. Twist the corer, and then withdraw the corer in a single smooth motion.

4. Remove the nosepiece and withdraw the sample into a stainless steel, plastic or other appropriate homogenization container.

5. Transfer the sample into an appropriate sample container with a stainless steel spoon, wooden tongue depressor or equivalent.

6. Check that a Teflon liner is present in the cap, if required. Secure the cap tightly.

3.4.4 Gravity Corer (with Stabilizing Fins)

This method consists of a cylindrical metal tube with a detachable tapered nosepiece on the bottom and a ball or check valve located on the top. The device may have stabilizing fins to maintain vertical positioning as the device is moving through a liquid. The tapered nosepiece facilitates cutting and reduces core disturbances during penetration. Gravity corers are capable of collecting benthic sediment samples ranging from 15 to 30 inches depending upon the density of the sampled material and weight of the device. This device works well to collect sediment samples in a marine environment or from a low velocity stream, pond or river. Some gravity corers have attachable weights and may accept plastic or brass liners.

Procedures for Use

1. Attach a pre-cleaned corer to the required length of a sample line. Solid braided 5-millimeter (3/16 inch) nylon line is sufficient; 20-millimeter (3/4 inch) nylon, however, is easier to grasp during hand hoisting.

2. Secure the free end of the line to a fixed support to prevent accidental loss of the corer.

3. Lower the corer through the water column to the top of sediment; push the corer manually through the sediment to the desired depth, or refusal.

4. Retrieve the corer slowly using a smooth, continuous lifting motion. Do not bump the corer as this may result in some sample loss.

5. Remove the nosepiece from the corer and slide the sample out of the corer into a stainless steel, plastic or other appropriate homogenization container. For vertical sub-sampling, the core tube may be cut along its entire length and opened to facilitate observation of lithology.

6. When subsampling for homogenization and chemical analysis, scrape the outer layer of sediment in contact with the core tube prior to homogenizing. This outer layer may be used for grain size analysis, which is not compromised by cross-contamination.

7. Transfer the homogenized sample into an appropriate sample jar with a stainless steel spoon, wooden tongue depressor or equivalent.

8. Check that a Teflon liner is present in the cap, if required. Secure the cap tightly.

3.4.5 Ponar Grab Sampler

Collection of surface sediment can be accomplished with a system consisting of a remotely activated device (Ponar Grab or Ponar Dredge) and a deployment system. The Ponar Grab is a weighted, clamshell-type grab sampling device with jaws that are lever- or spring-activated. This technique consists of manually opening the sampler and latching it in place, then slowly lowering the Ponar Grab sampler to the surface of the sediment by use of nylon rope, cable, or extended handle. When the tension in the drop line is released and a lifting action is applied to the lowering line, the level system snaps the clamshell device closed. The mechanism is activated, and the device entraps sediment in spring loaded or lever operated jaws.

This device is used to collect consolidated fine- to coarse-textured sediment. The sampler is only capable of collecting a shallow surface sediment sample (from 1 to 4 inches), depending on the dimensions of the sampler.

Procedures for Use

1. Attach a sturdy nylon rope or steel cable to the ring provided on top of the pre-cleaned Ponar Grab sampler. Solid braided 5-millimeter (3/16 inch) nylon line is sufficient; 20-millimeter (3/4 inch) nylon, however, is easier to grasp during hand hoisting.

2. Measure and mark the distance to the sediment surface on the sample line. A secondary mark, slightly shallower will indicate proximity, so that the lowering rate can be reduced, this preventing unnecessary bottom disturbance.

3. Tie the free end of the sample line to a fixed point to prevent accidental loss of sampler.

4. Arrange the Ponar sampler with the jaws latched in the open position, setting the trip bar so the sampler remains open when lifted from the top. If the sampler is so equipped, place the spring loaded pin into the aligned holes in the trip bar. From this point on, support sampler by its lift line or the sampler will be tripped and the jaws will close.

5. Begin lowering the sampler until the proximity mark is reached, or to a point approximately 2 inches above the sediment.

6. Drop the sampler to the sediment. Slack on the line (several centimeters) will release the trip bar or spring loaded pin. In strong currents more slack may be necessary to release mechanism. Pull up sharply on the line closing the sampler.

7. Slowly raise the sampler to the surface and slowly decant any free liquid through the screens on the top of the sampler. Care should be taken to retain the fine sediment fraction during this operation.

8. Open the sampler and transfer the sediment to a stainless steel, plastic or other appropriate composition container. Ensure that non-dedicated containers have been adequately decontaminated. If necessary, continue to collect additional sediment samples until sufficient material has been secured to fulfill laboratory requirements. Thoroughly homogenize and then transfer the sediment to sample containers appropriate for the analysis requested. Samples for VOCs must be collected directly from the bucket before homogenization to minimize volatilization of contaminants.

Check for a Teflon liner in the cap, if required, and secure cap tightly

3.4.6 Thin-Tube Hand-Held Sampling Trier

The system consists of a trier, a long hollow cylindrical tube with a slot extending almost its entire vertical length, and a "T" handle (Figure 3). The trier is driven into the sediment or wetland sediment/soil to be sampled and used to extract a core sample from the appropriate depth. The tip and edges of the tube are sharp to allow the trier to cut a core by rotation of the "T" handle once it is completely pushed-down or manually driven to the depth of collection. Triers range from approximately 20 to 60 inches in length and from approximately 0.5 to 1 inch in diameter.

Procedures for Use

1. Insert the cleaned trier into the sediment or wetland soil at a 0 to 45° angle from horizontal. This orientation minimizes spillage of sample from the sampler. Extraction of sample might require tilting of the containers.

2. Rotate the trier once or twice to cut a core of material.

3. Slowly withdraw the trier, making sure the slot is facing upward.

4. Transfer the sample into an appropriate labeled container with a stainless steel scoop, wooden tongue depressor or equivalent and secure caps tightly.

3.4.7 Telescopic Mechanical Sampling Arm

The device consists of an aluminum pole approximately 1 to 2 inches in diameter divided into three 4-foot sections. Attached to the end of the pole is a stainless steel sampling beaker (usually with an 18-ounce capacity). The pole is capable of telescoping from 4 to 12 feet. This mechanical sampling arm is used to collect sediment or wetland sediment/soil samples from excavations, or water bodies with high banks. It allows a sample to be collected from a location that would otherwise be difficult to access.

Procedures of Use

1. Attach the cleaned, stainless steel beaker to the end of the pole either by tightening a clamp or wing nuts.

2. Make sure your feet are safely and securely positioned.

3. Telescope the pole to the required length.

4. Lower the pole end into the excavation or otherwise difficult to reach sediment or wetland soils.

5. Collect the sample.

Remove the sample from the beaker with a cleaned, stainless steel scoop, trowel or new wooden tongue depressor.

3.4.8 Sediment Sampling with Lexan® Coring Tube

This method consists of a coring tube that samples soft sediments to depths of approximately 1-2 meters. Sampling with a Lexan® coring tube extracts an undisturbed sediment sample which allows the study of the sediment-water interface. Using a vacuum pump allows the tube to be capped without disturbing the sample. The process described below can be facilitated if necessary by creating a sharp edge on the coring tube prior to advancing the tube into the sediment. The sharp edge will help advance the coring tube.

Procedures for Use

1. If using a boat to access the sampling location, anchor the boat if necessary to remain within a radius of approximately 1-5 meters from the originally identified sample location.

2. Identify the proposed sample location in the field notebook along with other appropriate information collected during sediment sampling activities.

3. Measure the total depth of water with a weighted tape.

4. At each sample location, lower a section of Lexan® tube until it reaches the top of the sediment.

5. Push the Lexan® tube into the sediment by hand, or using a core driver block, to the desired depth, or until refusal. If the procedure is being performed to determine sediment depth (probing), a calibrated rod may be used in place of the Lexan® tube. If the procedure is being performed to collect samples for laboratory analysis, continue with Step 5.

6. Drive the tube several more inches using a core driver block and measure the distance. This procedure is performed to obtain a “plug” at the bottom of the core and prevent the loose sediment from escaping.

7. Place a vacuum pump on top of the Lexan® tube, or even a plastic core tube cap to create suction, which should prevent the sediments/plug from escaping.

8. Slowly pull the tube from the sediment, twisting it slightly as it is removed (if necessary).

9. Before the tube is fully removed from the water, place a cap on the bottom end of the tube while it is still submerged.

10. Keeping the tube upright, wipe the bottom end dry and seal the cap with duct tape and label. Measure the length of sediment recovered and evaluate the integrity of the core. If the core is not suitably intact, repeat coring procedure within 5 to 10 feet of the first location attempted.

11. While still keeping the core upright, use a hacksaw to make a horizontal cut in the tube approximately one inch above the sediment.

12. Re-cap the cut end of the tube, seal the cap with duct tape, and mark this end as "top".

13. Wipe the tube dry.

14. Slice tube open or push sediment from tube onto pre-cleaned aluminum foil; scrape the outer surface of the sediment core that was in contact with the coreing tube wall to prevent vertical smearing.

15. Sediment samples to be analyzed for volatile organic compounds (VOCs) will be transferred directly from the sample collection device to the sample containers.

16. All other surface sediment samples will be transferred to a stainless-steel mixing bowl for homogenization. Additional samples may be required to collect the volume of sediment specified in the study design. The mixing bowl should be covered with aluminum foil while additional samples are being collected to prevent sample contamination (e.g., from precipitation, splashing water). After a sufficient volume of sediment is transferred to the mixing bowl, homogenize the contents of the bowl using stainless-steel spoons until the texture and color of the sediment appears to be uniform.

17. After the sample is homogenized, distribute sub-samples to the various containers and preserve the samples.

18. Place filled sample containers on ice in a cooler.

3.4.9 Piston Corer

The method of using a piston corer utilizes the general procedure as described above for using a Lexan® tube. The piston inserted into the core tube aids in maintaining suction to minimize loss of

unconsolidated material from the bottom of the tube. Piston corers are typically used when undisturbed sediment samples at significant penetration depths are required.

Procedures for Use

1. If using a boat to access the sampling location, anchor the boat if necessary to remain within a radius of approximately 1-5 meters from the originally identified sample location.

2. As provided in the WP, FSP, or QAPP, determine how deep of a penetration is needed at the specific sampling location. Prepare the appropriate length of tubing to be able to achieve the desired penetration depth plus an additional couple of feet.

3. Run the line through the tubing and connect to the piston stopper. Insert the piston stopper approximately 0.5 inches from the end of the tube.

4. Attach the tubing to the piston core with provided clamps and/or other mechanism.

5. Slowly lower the tube/piston unit through the water column until it reaches the top of sediment. When the tube has reached the sediment, try to minimize movement of the tube therefore minimizing sediment disturbance. Tie off the line attached to the stopper to a permanent anchor on the vessel.

6. Drive the tubing into the sediment to the penetration depth required.

7. Remove the line and attach to the piston corer. Bring up tube and core and position horizontally on the boat or ground.

8. Immediately cap the open end of the tube. Remove piston corer from the tube and cap the other end.

9. After both ends are capped and properly secured, the core should be stored vertically to allow for the sediment to settle. Once settled, cut Lexan® tube where necessary to accommodate the size of the extracted core.

10. If the required depth was not reached and or there was not the acceptable retrieval. Redeploy the piston corer prior to capping the ends. There may be debris in the way of the tube and/or other hard objects that impede penetration. In the event that the desired penetration depth is not achieved, slightly change the sample location (within the 1-5 m radius of the original sample location). If the area continues to be problematic, contact an authorized project team leader.

11. Once an acceptable core is extracted, capped and left to settle. Cut tube open and describe and sample from the core as described in Section 3.3.

3.4.10 Sediment Sampling in Wetlands with Russian Peat Corer

The Russian peat corer is a chamber-type instrument that collects an unconsolidated sediment/soil sample in wetlands. The side-filling corer is inserted into the sediment in the closed position to the desired depth. Once at the desired depth, the corer is rotated and the sample stored within the core. The following steps outline the procedure for using the Russian peat corer:

Procedures for Use

1. Manually insert the bottom point of the Russian Peat Corer with the blunt edge of the core tube turned against the cover plate to prevent sediment/soil from entering the tube during advancement. If the sediment is highly consolidated or otherwise hard to penetrate, a slide hammer can be used to aid in driving the sampler.

2. When the Russian Peat Corer is driven to the required depth, turn the core tube clockwise 180 degrees allowing to tube to rotate and allowing the sharp edge to cut through the sediment longitudinally.

3. Pull up the corer and retrieve the sample by turning the core tube counterclockwise. The sample will be exposed on the core cover plate.

4. Describe physical characteristics of the sediment/soil in accordance with H&A OP2001 – Identification and Description of Soils in the Field and Using Visual-Manual Methods.

5. Sub-sample and/or homogenize the sample for chemical analyses as decribed previously.

3.4.11 Sediment Sampling with Peristaltic Pump

The method of sediment sampling with a peristaltic pump consists of lowering tubing to a desired sampling location and using the peristaltic pump to extract the sediment from the bottom of the water body. This method of sediment sampling may be efficient for the collection of flocculent, unconsolidated sediments with very high water content.

Procedures for Use

1. If using a boat to access the sampling location, anchor the boat if necessary to remain within a radius of approximately 1-5 meters from the originally identified sample location.

2. Identify the proposed sample location ID in the field notebook along with other appropriate information collected during sediment sampling activities.

3. Measure the total depth of water using a weighted tape.

4. Lower a new piece of Waterra tubing of sufficient length (potentially with weight added) to a depth 1-2 feet above measurement from step 3.

5. Initiate pump and purge 3 tube volumes. Deactivate pump, but do not allow backflow.

6. Lower tubing to a depth 6 inches above measurement from step 3.

7. Initiate pump, wait until flocculate 'floc' comes to end of line, then collect floc in a beaker. When sufficient volume is available, fill sample container.

8. Label each sample container with the following: date, time, sample location, and depth of sample.

9. Place samples in a cooler on ice.

10. After the sampling at a sample location is completed and the appropriate sample jars filled, decontaminate re-useable sampling equipment in accordance with the section entitled Decontamination. Discard Waterra tubing.

3.4.12 Sediment Sampling with Ekman Dredge

The method of sediment sampling with the Ekman dredge consists of slowly lowering the grab sampler, in the open position, through the water column to the sediment surface with a cable or nylon rope. Once the sampler has reached the top of sediment, the dredge buckets are released, collecting a surface grab sample (depth depending on the dimensions of the dredge bucket). The Ekman dredge can be used in water of various depths and can be released from a boat, or off-water from a pier or bridge. This type of sediment sampler is most efficient in waters with little to no current. reached the sediment dredge method is best employed on consolidated, fine textured sediments as well as soft sediments, such as silt, muck and sludge in water.

Procedures for Use

1. Once at the predetermined sample location, anchor the boat if necessary to remain within a radius of approximately 1-5 meters from the originally identified sample location.

2. Identify the proposed sample location ID in the field notebook along with other appropriate information collected during sediment sampling activities.

3. Measure the total depth of water using a weighted tape.

4. Thread a study nylon cable through the top bracket of the sampler.

5. Arrange the Ekman dredge sampler so that the jaws are in the open position and trip cables are positioned over the release studs. Take extra precaution to ensure that there is nothing in the

way of the jaws during this step in the event of accidental deployment of the spring loaded jaw.

6. Slowly lower the sampler over the side of the boat to a point just above the sediment surface. When the sampler hits the surface of the sediment, the field person should be able to feel the impact.

7. Raise the dredge 6 inches above sediment surface.

8. Trigger the jaw release mechanism by lowering a messenger down the line.

9. Raise the sampler back up through the water column keeping the sampler upright.

10. Open the flaps of the sampler to get access to the collected sediment. Estimate the sample volume and percent water by volume. Record on sampling sheet.

11. Label each sample container with the following: date, time, sample location, and depth of sample.

12. Place samples in a cooler on ice.

3.5 Chain-of-Custody Forms

All samples submitted to the contract analytical laboratory for analyses, will be accompanied by a Chain-of-Custody form. Appropriate Chain-of-Custody procedures will be followed at all times during a sampling event and subsequent transport to the contract analytical laboratory. Refer to OP3026 for operation procedures on completing a Chain-of-Custody form and Chain-of-Custody procedures.

3.6 Decontamination

Sediment and wetlands soil sampling equipment brought into actual contact with a laboratory sample, other than sample containers, will be cleaned prior to and between each use according to Operating Procedure OP3000 – General Environmental Field Procedures and Protocol. After decontamination, the equipment will be wrapped in aluminum foil and placed on clean racks off the ground until it is used.

3.7 Quality Assurance/Quality Control

To assure quality of field sampling procedures, the following procedures must be followed:

- All data must be documented on field data sheets or within site logbooks.

- All instrumentation must be operated in accordance with operating instructions as supplied by the manufacturer, unless otherwise specified in a Site work plan or related document. Equipment checkout and calibration activities must occur prior to sampling/operation, and they must be

documented.

Additional, project-specific collection of field quality control samples (e.g., field duplicates, equipment blanks, trip blanks, etc.) should be specified in the project WP, FSP, or QAPP. Project-specific QA/QC requirements supersede procedures described herein for that particular project.

Figure 1:
Sampling Augers

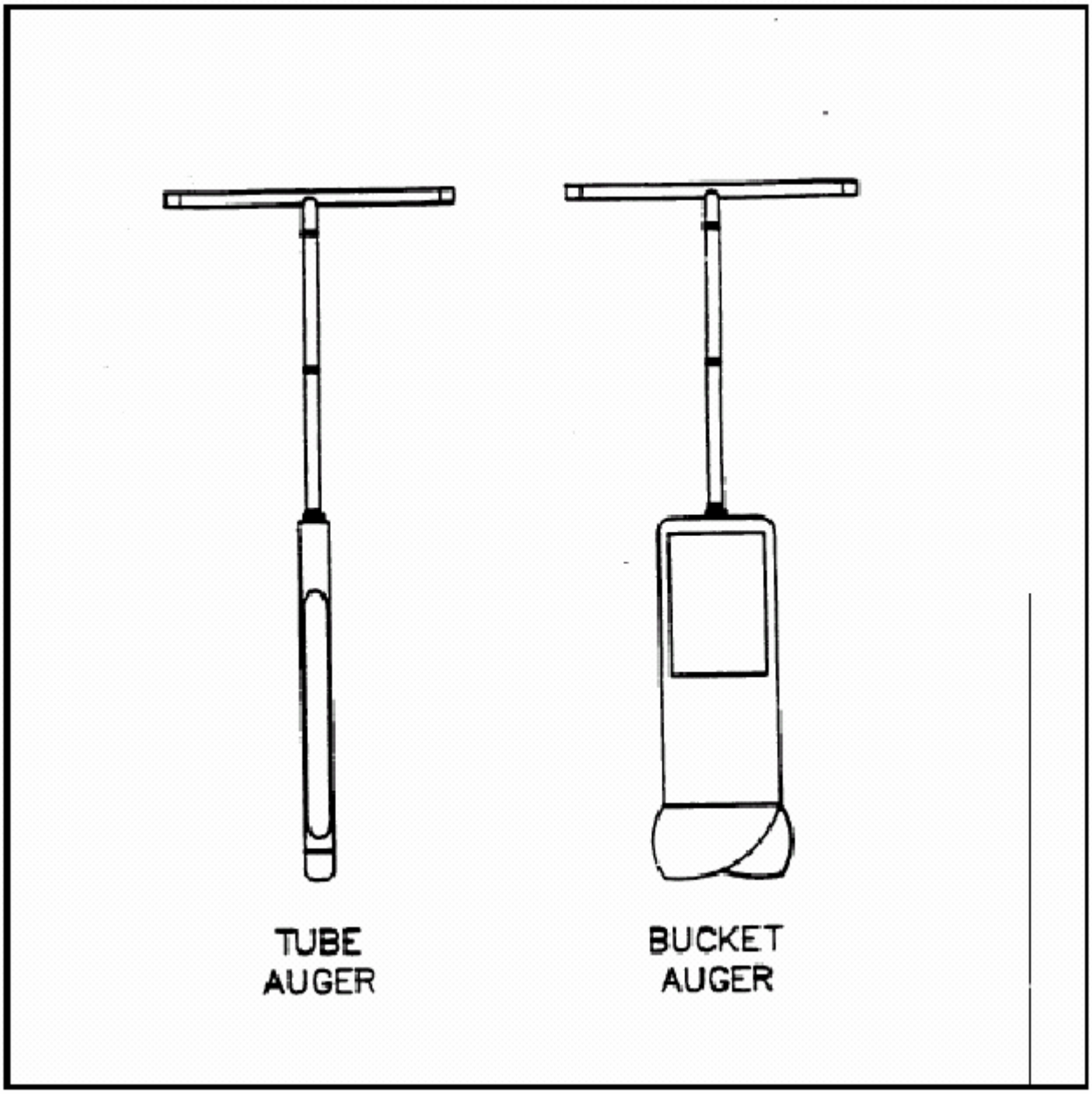


Figure 2:
Sample Coring Device

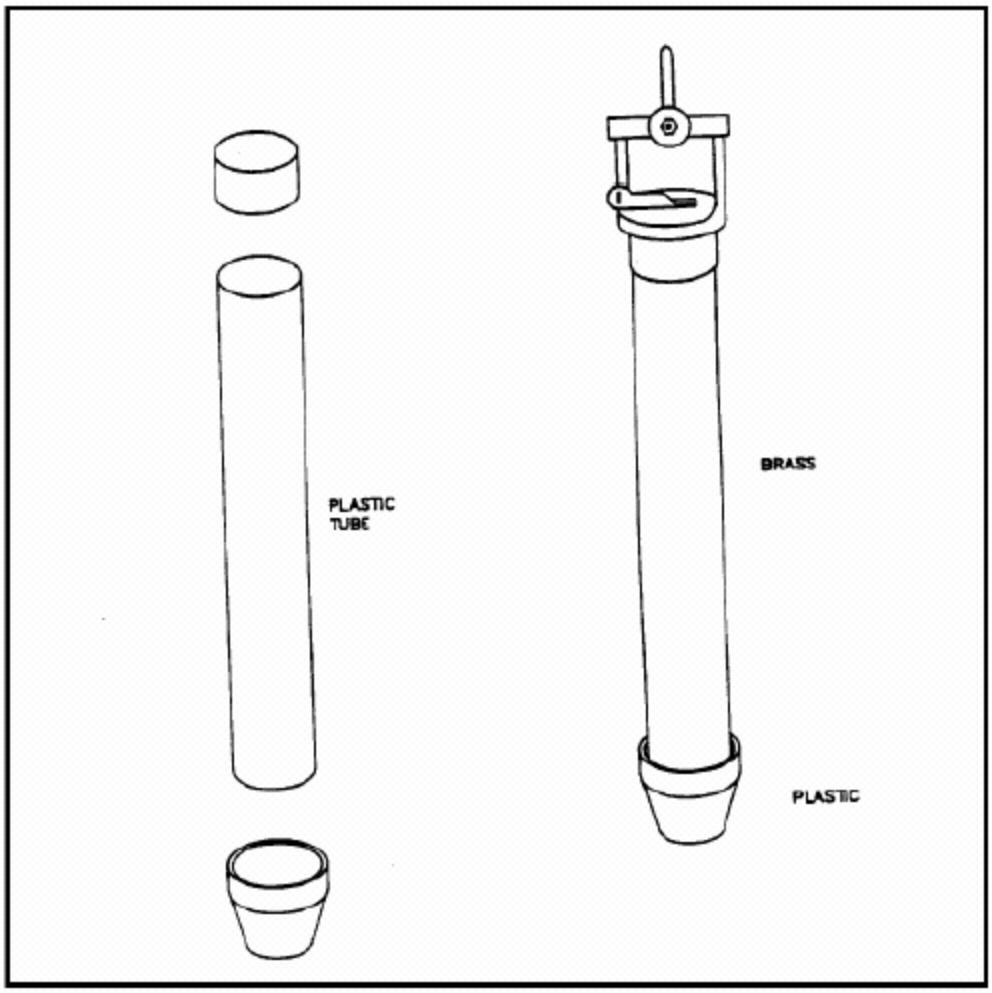
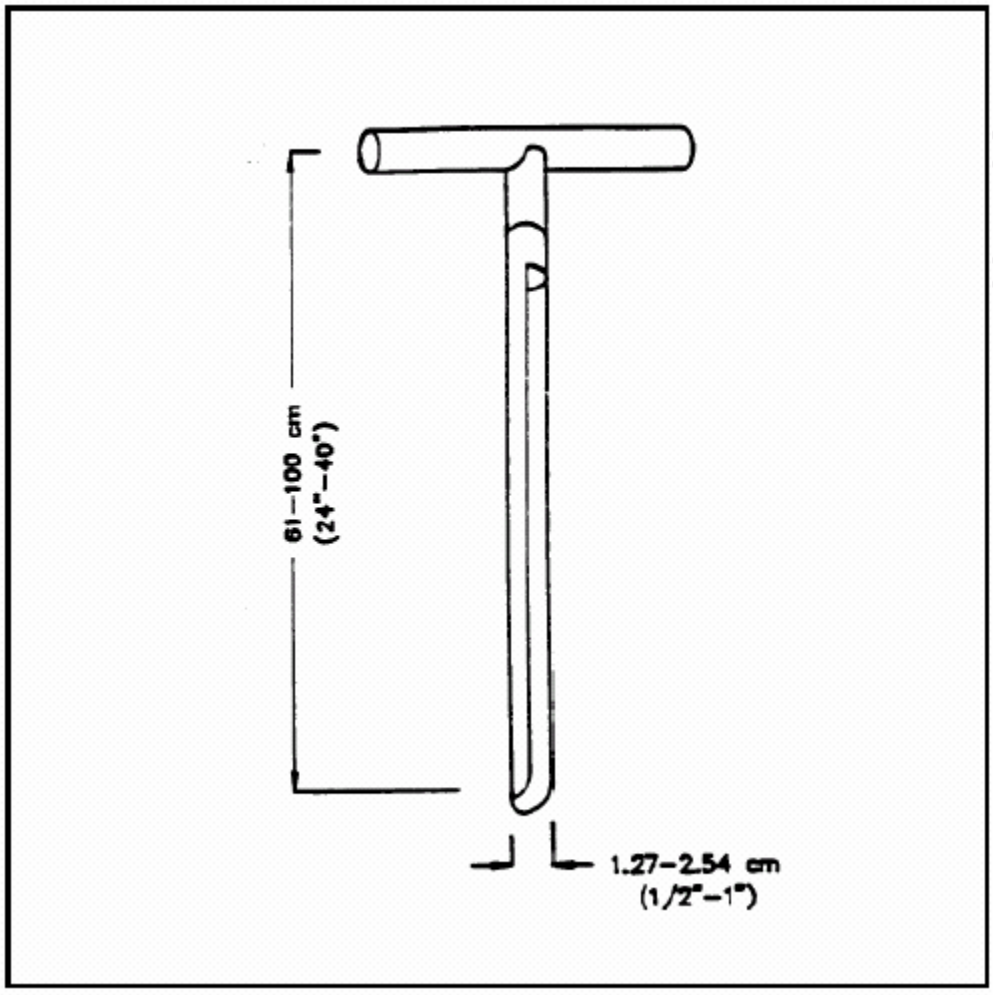


Figure 3:
Sampling Trier



APPENDIX A
REFERENCES

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3. United States Environmental Protection Agency, (1983) A Methods Manual-Volume II Available Sampling Methods, U.S. EPA-600/X-83-018, March 1983.

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5. Barth, D.S., Mason, B.J. (1984) Soil Sampling Quality Assurance Guide, Environmental Research Center, University of Nevada, U.S. EPA-600/4-84-043, May 1984.

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8. United States Environmental Protection Agency Environmental Response Team (1994), Standard Operating Procedures: Sediment Sampling, SOP 2016, Rev. 0.0, p. 11, dated 11/17/94.

9. United States Environmental Protection Agency Environmental Response Team (2000), Standard Operating Procedures: Soil Sampling, SOP 2012, Rev. 0.0, pp. 1-13, dated 02/18/00.

10. United States Environmental Protection Agency (2003), A Compendium of Chemical, Physical and Biological Methods for Assessing and Monitoring the Remediation of Contaminated Sediment Sites. P. 113.

APPENDIX B
RELATED HALEY & ALDRICH PROCEDURES

- OP2001 Identification and Description of Soils in the Field Using Visual-Manual Methods
- OP2005 Test Borings, Sampling, Standard Penetration Testing and Borehole Abandonment
- OP2026 Exploratory Test Pits
- OP3000 General Environmental Field Procedures and Protocol
- OP3001 Preservation and Shipment of Environmental Samples
- OP3003 Surficial Soil Sampling
- OP3006 Procedures for Subsurface Soil Sampling for Chemical Analysis
- OP3026 Chain of Custody

APPENDIX C
FORMS

All Haley & Aldrich field forms are maintained on the server at K:\techproc\sop\Forms. The following forms are attached:

- Form 3001 Sampling Labels (Environmental)
- Form 3002 Chain of Custody (Electronic)
- Form 3003 Chain of Custody (Field)
- Form 3004 Sampling Record

HALEY & ALDRICH

Sediment Sampling Data Sheet

Project		Report No.	
Location		Date	
Client		File No.	
Contractor		Field Rep.	
Weather		Outdoor Temp	

Sample Location ____________ Sample ID ______________________________ Time ______________

Pond Depth ____________

Sampling Device ____________ Decon ______________

Easting ____________ Northing ____________

Remarks: (ie: field filtrations, persons communicated with at site, etc.)

LOCATION ID:

Sample Location ____________ Sample ID ______________________________ Time ______________

Pond Depth ____________

Sampling Device ____________ Decon ______________

Easting ____________ Northing ____________

Remarks: (ie: field filtrations, persons communicated with at site, etc.)

LOCATION ID:

Sample Location ____________ Sample ID ______________________________ Time ______________

Pond Depth ____________

Sampling Device ____________ Decon ______________

Easting ____________ Northing ____________

Remarks: (ie: field filtrations, persons communicated with at site, etc.)

LOCATION ID:

Designation: D 4544 – 86 (Reapproved 2002)

Standard Practice for Estimating Peat Deposit Thickness[1]

This standard is issued under the fixed designation D 4544; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice uses a technique of probing to estimate the thickness of surficial peat deposits overlying mineral soil or bedrock. These estimates may be needed for energy, horticultural, or geotechnical purposes.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.3 *This practice offers a set of instructions for performing one or more specific operations. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.*

2. Referenced Documents

2.1 *NRC Canada Document:*
Peat Testing Manual [2]

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *peat*—a naturally occurring organic substance derived primarily from plant materials.

4. Summary of Practice

4.1 The resistance to penetration of a pushed or driven rod will increase sharply at the boundary of a peat layer with underlying mineral soil or bedrock. When this abrupt change is measured in a series of probings with an appropriate spacing, the thickness and areal extent of peat can be defined and the volume of peat may be calculated.

4.2 Sampling of the peat may be required to determine the peat characteristics.

5. Significance and Use

5.1 This practice allows the determination of the depth at which the resistance to penetration of a pushed or driven rod increases sharply. When the overlying material is peat and the underlying one is mineral soil or bedrock, the depth of change may be interpreted as the thickness of peat. Successive areal determinations of this depth, in combination with surface measurements of the lateral extent of peat will allow calculation of the volume of peat in the deposit.

6. Interferences

6.1 Sampling of the zone of contact of peat with underlying material is usually necessary to verify the interpretations of material change from the rod penetration resistances.

6.2 Where the peat – mineral transition zone is of significant thickness, or where the peat is underlain by soft clays or marls, further sampling and testing will be required (see 7.2).

6.3 The frequency of sampling is highly dependent upon the physical details of the deposit.

6.4 Penetration of the rod may be prevented by wood pieces in the peat deposit. Data should be examined and rechecked if this occurrence is suspected.

6.5 The thin and flexible nature of the rod strings will limit the depths of penetrating and sampling.

7. Apparatus

7.1 *Graduated Steel Rods*—Penetration is achieved with graduated steel rods of 9.5 ± 1.0-mm diameter and 1.0 or 1.2-m length,[3] which can be threaded together to penetrate a range of thickness. The rods are ringed at 200-mm intervals for easy estimation of depth. A ring with a short threaded end is

[1] This practice is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.22 on Soil as a Medium for Plant Growth.

Current edition approved Feb. 21, 1986. Published April 1986.

[2] Available from the National Research Council of Canada, Publications Section, Building R-88, Ottawa, Ontario, Canada K1A OR6.

[3] For further information, see Jeglum, J. K., "Method for Measurement of Peat Thickness," *Peat Testing Manual*, Technical Memorandum No. 125, NRC Canada, May 1979, pp. 33–34.

screwed into the last section and another rod or stick inserted horizontally to facilitate pulling out the rod.

7.2 *Piston-Type Sampler*—Sampling is achieved, as necessary, with a piston-type or similar exploratory type sampler, the head of which is threaded into the bottom rod.[4]

8. Procedure

8.1 Align the rod vertically.

8.2 Penetrate the peat with the rod by pushing or driving. Add sections of rod as required.

8.3 Measure the thickness of peat when the resistance to penetration of the rod increases sharply owing to the resistance of the material underlying the peat. It may be possible to hear the scraping of the rod in the underlying soil, especially when it is sand.

8.4 Pull up the rod and seek verification of the resistance change by the presence of mineral material in the threads of the bottom rod.

8.5 Record the lateral position of the sounding.

8.6 Repeat steps 8.1-8.5 as necessary to define the thickness of the peat and its lateral extent.

8.7 At selected locations, attach the sampler and obtain peat and peat – mineral soil contact zone samples. When a piston-type sampler is attached to the bottom rod, the head is pushed down until resistance is met, the rod is pulled up until the central core catches at the end of the outer cylinder, and the open cylinder is then pushed a little further to obtain mineral material.

9. Report

9.1 The report shall include the following specific information:

9.1.1 Name and location of project; names of field party,

9.1.2 A map of the positions penetrated or sampled. Show surface elevations and water levels, where available,

9.1.3 A table of peat depths showing areal locations and noting whether depth was determined by penetration or sampling,

9.1.4 Descriptions of samples taken, along with locations,

9.1.5 Any test data run on samples taken, and

9.1.6 Appropriate description and classification of the peat in the deposit.

10. Keywords

10.1 deposit thickness; peat; probing

[4] This piston-type sampler and its use is described in *Muskeg Engineering Handbook*, I. C. MacFarlane, ed. Muskeg Subcommittee of the NRC Canada, 1969, pp. 144–145.

APPENDIX C

Data Summary Report Table 3-1 (revised)

TABLE 3-1
GROUNDWATER AND SURFACE WATER ELEVATION MONITORING SUMMARY
SENECA FALLS FORMER MGP SITE
SENECA FALLS, NEW YORK

Monitoring Well or Surface Point Identification	Northing	Easting	Ground Surface Elevation (feet msl)	Top of Casing or Reference Elevation (feet msl)	Total Well Depth (feet bgs)	11 December 2007		31 March 2008		14 May 2008		1 July 2008	
						depth (feet)	elevation (feet msl)	depth (feet)	elevation (feet msl)	depth (feet)	elevation (feet msl)	depth (feet)	elevation (feet msl)
MW-07-02	1060354.54	761021.99	455.85	455.39	32	13.86	441.53	13.94	441.45	15.89	439.50	15.11	440.28
MW-07-03	1060324.25	761117.46	435.78	437.51	12	4.65	432.86	4.84	432.67	5.07	432.44	6.91	430.60
MW-07-04	1060452.14	761104.26	453.25	452.45	30	11.65	440.80	11.61	440.84	12.87	439.58	14.61	437.84
MW-07-05	1060217.24	761000.06	430.36	431.88	12	2.14	429.74	2.41	429.47	2.2	429.68	2.94	428.94
MW-07-06	1060269.71	761176.54	431.53	433.61	9.4	4.00	429.61	4.03	429.58	4.38	429.23	5.7	427.91
MW-08-01	1060377.04	761047.58	456.82	456.57	15	NA	NA	8.72	447.85	9.85	446.72	10.79	445.78
MW-08-02	1060404.82	761051.26	456.76	456.50	19.5	NA	NA	6.36	450.14	6.89	449.61	6.33	450.17
MW-08-03	1060376.33	761046.48	456.81	456.53	30	NA	NA	15.03	441.50	16.75	439.78	16.61	439.92
SG-1	1059962.67	760610.52	NA	460.64	NA	32.40	428.24	32.29	428.35	32.37	428.27	32.4	428.24
SG-2	1059957.67	761053.29	NA	430.03	NA	1.73	428.30	1.58	428.45	1.70	428.33	1.49	428.54
SG-3	1060140.74	761931.67	NA	449.85	NA	22.10	427.75	21.51	428.34	21.85	428.00	21.59	428.26

Notes:
1. "feet bgs" indicates feet below ground surface.
2. "feet msl" indicates elevation relative to mean sea level.