R E P O R T

Wisconsin Department of Transportation

944 Vanderperren Way

Green Bay, WI 54303

Phase 2 1/2 Site Investigation Report

Wisconsin Department of Transportation

Susie's Restaurant and USH 151
Manitowoc, Wisconsin

85308XA

July 7, 1997

July 7, 1997

Ms. Rebecca Burkel
Wisconsin Department of Transportation
944 Vanderperren Way
Green Bay, Wisconsin 54303

Re: Phase 2 1/2 Investigation Report for the Susie's Restaurant and USH 151 Roadway Project Located in Manitowoc, Wisconsin – WDOT Project No. 4100-09-00 and STS Project No. 85308XA.

Dear Ms. Burkel:

STS Consultants Ltd. (STS) is pleased to submit this Phase 2 1/2 Site Investigation Report for the above-referenced site. The Report contains a summary of the information collected during the site investigation and includes our interpretations and recommendations regarding this information.

We appreciate the opportunity to be of service to you, and look forward to continuing working with you on this project. Please contact us at (414) 359-3030 if you have any questions or comments regarding this report or this project.

Sincerely,

STS CONSULTANTS, LTD.

Suzanne M. Murawski, P.E.
Project Engineer

Thomas W. Kroeger
Principal Scientist

Attachments

STS Consultants Ltd.
Consulting Engineers

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NR 700 CERTIFICATIONS

"I, Suzanne M. Murawski, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR700 to 726, Wis. Adm. Code."

Suzanne M Murawski

Suzanne M. Murawski, P.E.
Project Engineer
No. E-30239

7-7-97

Date

WISCONSIN
Suzanne M. Murawski E30239 Milwaukee, WI
PROFESSIONAL ENGINEER

"I, Anndelee J. Gregg, certify that I am a hydrogeologist as that term is defined in s.NR712.03(1), Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR700 to 726, Wis. Adm. Code."

Anndelee J Gregg

Anndelee J. Gregg, P.G., C.P.G.
Project Hydrogeologist
No. G-0025

7-7-97

Date

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EXECUTIVE SUMMARY

A Phase 2 1/2 Investigation was completed at the Susie's Restaurant/USH 151 project in Manitowoc, Wisconsin. The site includes Susie's Restaurant plus the right-of-way of USH 151. STS Consultants, Ltd. (STS) completed the work on behalf of the Wisconsin Department of Transportation (WDOT). The purpose of the investigation was to determine the extent and magnitude of residual contamination in the WDOT right-of-way, downgradient of Susie's Restaurant.

Several previous investigations were conducted by STS in the same area for the proposed USH 151 realignment project. The previous work included a Limited Phase I Investigation, Additional Phase I work, Phase 2 Subsurface Exploration and Phase 3 Subsurface Exploration. Based on the previous findings, a former dry cleaning facility was located on the Susie's Restaurant site and affected the soil and groundwater with perchloroethylene (PCE), a common dry cleaning solvent. PCE and its degradation products trichloroethylene (TCE) and vinyl chloride were found on site; however, the extent of impacts off site had not been defined. The Phase 2 1/2 investigation identified the extent of impacts off site.

Seven soil probes were advanced on June 5 and 6, 1997 to define the extent of off site impacts. The soil profile consists of 3 to 16 feet of sand and silty sand underlain by silty clay to the bottom depth of the probes, 19 feet. Groundwater was encountered in the silty sand above the clay at 7 to 11 feet below the ground surface.

The elevation of the top of the silty clay layer was measured to better understand the contours of this layer. A depression in the silty clay is observed in the northeast corner of the Susie's Restaurant site. The clay layer increases in elevation approximately 10 feet to the east and two feet to the west and south. This small depression may influence the migration of impacted groundwater and cause some ponding above the clay in the northeast corner of the site.

Three soil samples collected from one soil probe on the Susie's Restaurant site showed that the silty sand above the groundwater table is affected with PCE. This is consistent with previous investigations, which showed that the silty sand in the northern third of the site is affected with PCE and TCE. Based on previous work, the silty clay does not appear to be affected.

Groundwater samples were collected from 6 of the 7 probes and two existing groundwater monitoring wells. Groundwater impacts were observed in the northeast corner of the site and to a lesser extent further to the south. Impacted groundwater was not observed at the downgradient sampling locations. Affected groundwater appears to be present on site with the highest concentrations in the northeast corner. The affected groundwater likely extends into the roadway intersection to the northeast; however, groundwater impacts were not observed to the east, north, northeast or further to the south in the right-of-way.

Testing for natural attenuation parameters showed that natural attenuation is likely helping to reduce the chlorinated solvents concentrations. Additional groundwater sampling within the most affected area and further downgradient after roadway construction will help to further assess this remediation alternative. NR141 quality groundwater monitoring wells should be installed after the roadway construction is complete to monitor for natural attenuation and groundwater quality. Monitoring should continue until fluctuations in parameter concentrations can be evaluated and their rate of degradation and hydraulic migration downgradient can be assessed.

Affected soils may be encountered during roadway work. The affected soils, especially in the northern half of the site, should be properly handled in accordance with appropriate state requirements before disposal. Disposal of the soil should be arranged beforehand to decrease any disruptions to the construction schedule.

No further investigation is recommended at this time.

PHASE 2 1/2 SITE INVESTIGATION REPORT
SUSIE'S RESTAURANT AND USH 151
MANITOWOC, WISCONSIN

1.0 PROJECT OVERVIEW

1.1 Project Description

On behalf of the Wisconsin Department of Transportation (WDOT), STS Consultants Ltd. (STS) has prepared this report to document field observations and present analytical testing results obtained from the recent Phase 2 1/2 site investigation activities conducted in response to identification of chlorinated solvents in soil and groundwater at the former Susie's Restaurant property located at 1020 South 26th Street in Manitowoc, Wisconsin. The investigation was conducted to determine the extent and magnitude of residual contamination downgradient of the site, on the WDOT right-of-way to the northeast, and provide conclusions regarding the potential for natural attenuation to remediate the site. The site includes the Susie's Restaurant and WDOT right-of-way along USH 151. This report has been prepared in conformance with chapter NR 716.15 of the Wisconsin Administrative Code (WAC) and section 21-35-10 of the WDOT Facilities Development Manual.

1.1.1 Involved Parties

Information summaries for the parties involved with this site are listed below.

Lead Party	Wisconsin Department of Transportation 944 Vanderperren Way Green Bay, Wisconsin 54324-0080	Ms. Rebecca Burkel (414) 492-5740
Consultant and Surveyor	STS Consultants Ltd. 11425 West Lake Park Drive Milwaukee, Wisconsin 53224	Ms. Suzanne Murawski (414) 359-3030
Soil Probe Subcontractor	North Shore Environmental Inc. N117 W18493 Fulton Drive Germantown, Wisconsin 53022	Mr. Darrin Ferguson (414) 255-4468
Analytical Laboratory	Nova Environmental Laboratory 8222 W. Calumet Road Milwaukee, Wisconsin 53223	Mr. James Chang (414) 355-5800

1.1.2 Site Location

The site is currently occupied by the former Susie's Restaurant building and parking lot. The restaurant is not in business but the building remains on-site. The site location is illustrated in Figure 1 included in Appendix A and is described as follows:

Former Susie's Restaurant/USH 151
1020 South 26th Street
City of Manitowoc, Manitowoc County, Wisconsin
Northeast 1/4 of the Southeast 1/4 of Section 25
Township 19 North, Range 23 East

To the west of Susie's Restaurant is a recently built Walgreens store and parking lot followed by Schmidt Tire and Muffler service station and car wash (formerly U.S. Oil), further to the west. Remediation of gasoline and diesel affected soil and groundwater was conducted at the service station. The remediation system has been turned off and natural attenuation is remediating any remaining impacts according to Mr. Don Johnson, the representative from U.S. Oil who is responsible for the release. The property to the south of the site is occupied by residential homes. Property to the east is occupied by small businesses including two service stations, an auto rental business and a travel agency. Further to the east are residential homes. To the north is a restaurant and insurance agency surrounded by residential homes.

1.2 Project History

The following is an abbreviated history of the Susie's Restaurant site and USH 151 roadway realignment project. The history was obtained from information in previous reports prepared by STS for the USH 151 realignment study. A listing of STS reports is included in the reference list (Section 7.0).

1991 and earlier - WDOT considers realignment of USH 151 located within the City of Manitowoc between 2710 Calumet Avenue and the intersection of Washington Street and South 25th Street.

May and June 1992 - STS was retained by HNTB Corporation (HNTB), the design engineers for the realignment project, to perform a limited Phase I Environmental Assessment. Ten properties were selected for review of potential environmental impairment within the roadway realignment limits. The scope was limited at the request of the City of Manitowoc such that local business owners were not contacted and a walkover of their properties was not completed. STS recommended additional review of 6 properties because of the potential for environmental impairment to exist. These properties would be partially or completely acquired for the roadway realignment. One of the properties

was the Susie's Restaurant property that in the early 1970's was used as a dry cleaning facility.

January 1993 - STS submitted a proposal to HNTB for additional Phase I work.

July 1993 - Walgreens acquires 5 properties along the alignment for development of a drug store. The acquisition did not include the Susie's Restaurant property.

July and August 1993 - STS completed the additional Phase I work including a walkover and interview with property owners. Phase 2 subsurface exploration work was recommended at 5 properties along the proposed alignment. The recommended work included soil and groundwater sampling and testing for parameters of concern.

November 1993 - STS presented the work scope for the Phase 2 work at two sites along the USH 151 alignment. The properties included the Susie's Restaurant and Walgreens property. The work included 8 soil borings with soil and groundwater sampling and testing.

December 1993 - Field work for Phase 2 investigation completed at the Susie's Restaurant property and the Walgreens property.

February 1994 - STS issued Phase 2 investigation results. Soil and groundwater testing revealed chlorinated solvent impacts on the Susie's Restaurant property. An underlying silty clay layer (about 10 feet below the ground surface) below the upper sand and silty sand appeared to retard the vertical migration of contaminants. Groundwater appeared to be at 6 to 8.5 feet below ground surface. In addition to recommending an impacted material handling plan and WDNR notification, STS also recommended a Phase 3 investigation to evaluate if remediation is required, evaluate possible sources of impacts and evaluate alternatives for remediation if needed.

July 1994 - A contract amendment was issued to conduct the Phase 3 investigation.

September 1994 - A soil probe investigation was conducted for the Phase 3 work. Twelve soil probes were advanced on the Susie's Restaurant property. Soil samples were tested in the field with a field gas chromatograph for chlorinated solvents. Select soil samples were submitted to an analytical laboratory to confirm the field results. Three groundwater samples were collected from the open probe holes and tested for chlorinated solvents. Monitoring wells and a piezometer were proposed; however, they were never installed because the data collected from the soil probes was sufficient to support the conclusion that remediation was needed. The investigation showed that sand above the clay on the Susie's Restaurant property was affected by chlorinated solvents. The clay layer was not shown to be affected. The highest concentrations

were in the northeast corner of the property. The extent of impacts off-site was not defined.

April 1997 - STS attended a meeting at the City of Manitowoc with representatives from the WDOT, Wisconsin Department of Natural Resources (WDNR) and City to discuss work conducted along the USH 151 alignment and what work needs to be completed in the future to define the extent of off-site impacts.

May 1997 - STS submitted a work scope for the Phase 2 1/2 off-site exploration work to define the extent of impacts.

June 1997 - STS completed the Phase 2 1/2 work.

1.3 Project Scope

The goals of the Phase 2 1/2 investigative work conducted in June 1997 were to determine the following:

- the extent to which chlorinated solvents had migrated off-site to the northeast in the suspected hydraulically downgradient direction;
- the concentration of remaining soil contamination in the northeast corner of the Susie's Restaurant site (the area of highest impacts from the Phase 2 investigation);
- the water quality at the two existing groundwater monitoring well locations (the wells are owned by Schmidt Tire and Muffler);
- the depth of the underlying clay layer to develop a clay contour map; and
- groundwater testing for biological parameters to assess the possibility for remediation utilizing natural attenuation.

2.0 METHODS OF INVESTIGATION

2.1 Overview

Investigative activities were conducted using soil probes to determine the extent and magnitude of chlorinated solvents contamination off-site in the right-of-way, east of the site from past use as a dry cleaning facility. The open probe holes were used to collect groundwater samples. Two existing groundwater monitoring wells from a gasoline and diesel remediation to the west were sampled as part of the work scope. Soil probes were located during the STS investigation based on the information available from the previous investigations and on the location of utilities. Utility locations were supplied by the City of Manitowoc and utility locators working with Digger's Hotline. Activities conducted during June 1997 are briefly summarized below, and discussed in greater detail in the following sections.

- Groundwater samples were collected from one on-site monitoring well, one monitoring well located in the roadway median to the south, and the 7 open probe holes to evaluate water quality and to assess the potential for natural attenuation to complete remediation of any residual groundwater impacts.
- Groundwater samples were submitted to an analytical laboratory for testing. Field test were conducted on samples from the two groundwater monitoring wells for biological parameters to assess the potential for remediation by natural attenuation.
- Soil samples were collected from the soil probe advanced on the Susie's Restaurant site and submitted for chemical analysis to confirm that soil impacts remain on-site. Soil samples collected from all probes were screened in the field.

STS solicited bids from soil probe contractors and analytical laboratories, scheduled the work, cleared utilities and prepared a health and safety plan for the site work. The analytical laboratory is a disadvantaged business enterprise (DBE). Detailed procedures used during the field work are included in Appendix A.

2.2 Soil Probe Advancement

On June 5 and 6, 1997, North Shore Environmental Inc. advanced 7 soil probes (GP-13, GP-14, GP-15, GP-16, GP-17, GP-18, and GP-19) in the northeast corner of the Susie's Restaurant site and in the WDOT right-of-way, northeast of Susie's under the supervision of STS personnel. Probes were located primarily off-site in a hydraulically downgradient position from the probes advanced for previous investigations. The probes were advanced within the DOT right-of-way on the roadway terrace. Utilities are located in the center of the roadway. No probes were advanced in the roadway because of access constraints and traffic

control. The locations of the soil probes are illustrated on Figure 2 along with the location of probes and borings advanced for previous investigations.

Probes were advanced to a depth of 19 feet below ground surface (bgs), since groundwater was at 7 to 9 feet bgs, according to previous investigations. The depth was selected to better define the clay elevation and thickness. North Shore used a truck-mounted soil probe rig to advance the probes. Traffic control was provided by North Shore. A street opening permit was obtained from the City of Manitowoc.

Soil samples were collected continuously at 2-foot intervals from each probe hole. The soil samples were collected in duplicate. One portion of each soil sample was screened in the field with a photoionization detector (PID) for the presence of VOCs. The other portion of each soil sample was immediately placed into containers for later soil classification. Three soil samples from GP-13 were placed in laboratory-supplied containers and preserved. These three samples were transported to Nova Environmental Laboratory for analysis of volatile organic compounds (VOCs) by EPA Method 8260. Only these 3 soil samples were tested by the laboratory.

While probes were being advanced, the STS technician classified the soils in accordance with the Unified Soil Classification System (USCS) at each 2-foot interval. A boring log was prepared for each probe hole. Downhole equipment was decontaminated between boring and sampling in accordance with procedures outlined in Section 4.0 of the Operating Procedure (Appendix A).

The soil classifications were confirmed once samples were returned to the STS office. Probe holes were abandoned in accordance with NR141 WAC procedures after sample collection. Soil sampling and classification are explained in detail in Section 1.0 of the Operating Procedures (Appendix A). Boring logs and borehole abandonment forms for the 12 probe holes are included in Appendix B.

2.3 Groundwater Sampling

After the soil probes were advanced, temporary 1-inch diameter well casing was placed in the hole to allow water to collect. After enough water accumulated, the water samples were collected and placed in laboratory-supplied containers and placed on ice. A small diameter stainless steel bailer was used to purge and sample the temporary wells. The samples were submitted to Nova Environmental Laboratory for VOC analysis by EPA Method 8260. Once the water samples were collected, the well casing was removed and the probe hole was abandoned in accordance with NR 141 procedures. A water sample was collected from each soil probe except GP-17 which was dry.

Wells MW-North and MW-South were sampled on June 5, 1997 in accordance with procedures outlined in NR 141. Well locations are illustrated on Figure 2. Prior to sampling, water levels were measured and recorded at MW-North and MW-South. There was not a third well to measure water levels from, therefore, groundwater flow direction and horizontal gradients were not assessed. Both wells were purged prior to sampling with a disposable bailer in accordance with WDNR guidance documents. Well MW-South purged dry while MW-North did not purge dry. The purge water was contained in a drum on-site for later disposal by the WDOT. The drum information is included in Appendix C.

After purging the wells, groundwater samples were collected. Both wells were sampled for volatile organic compounds (VOCs, U.S. EPA Method 8260). Dissolved oxygen, iron II, oxidation reduction potential (ORP), nitrate and chloride were analyzed in the field at the two monitoring well locations to assist in determining the potential for natural attenuation of residual groundwater impacts (if any).

Containers were supplied by the laboratory and were placed in a cooler with ice and the chain-of-custody documents after sample collection. The cooler of samples and associated chain-of-custody document were delivered by STS to the Nova Laboratory in Milwaukee, Wisconsin for testing.

3.0 REGIONAL GEOLOGY AND HYDROGEOLOGY

3.1 Area Geology

The topography in the immediate vicinity of the subject site is relatively flat and consists primarily of urban and commercial areas according to the 7.5-Minute Topographic Map of the Manitowoc, Wisconsin Quadrangle. The Manitowoc River is located approximately 1/2 mile to the northeast of the subject site. Lake Michigan is located approximately 1.25 miles to the east. The subject site location and topography are shown on Figure 1.

The regional geology for the area of the alignment is described in published surficial soil and bedrock information. The Soil Survey of Manitowoc County (1971) describes the general site area as underlain by the Oakville Soil Association. This soil association is comprised of loamy fine sands with mild slopes which developed on glacial beach ridges and lake plains. The soils are generally well drained. The City of Manitowoc is located in an area which has been mapped as the northern end of the Lake Border Morainic System (Skinner and Borman, 1973). The deposits of this system are generally lake deposits consisting of organic materials and stratified clay, silt and sand.

Underlying the lake deposits is undifferentiated Silurian dolomite. Bedrock in the area is expected to be 45 to 90 feet bgs (Mudrey et al, 1982). The Silurian Dolomite is, in turn, underlain by Maquoketa Shale followed by the St. Peter and Cambrian period sandstones.

3.2 Area Hydrogeology

Surface water in the subject site area and on-site is controlled by the City of Manitowoc curb and gutter and the storm sewer system. Storm sewer pipes are located within the roadway right-of-ways.

Field observations from this most recent phase of investigation indicate that the groundwater table is approximately 9 to 11 feet below ground surface. The piezometric head in the shallowest aquifer (Niagara Aquifer) is reported at approximately 30 feet below the ground surface (Erickson and Cotter, 1983). Therefore, the shallow water observed in the soil probes may represent a perched groundwater condition. Monitoring wells and piezometers would be needed to confirm the groundwater levels, and to determine the direction of groundwater flow. Available literature indicates that regional groundwater flow is to the east.

4.0 INVESTIGATION RESULTS

This section presents the soil and groundwater sampling and testing results. No generic Residual Contaminant Levels (RCLs) have been developed in NR 720.19 for chlorinated solvents in soil. The soil data is compared to previous soil concentrations. Groundwater analytical results are compared to NR140, WAC Enforcement Standards (ES) and Preventive Action Limits (PALs).

4.1 Soil

4.1.1 Soil Conditions

Soils encountered during the soil probe investigation consisted primarily of sand and silty sand over silty clay soil. The sand layer ranged from 3 to 16 feet in thickness. Below the sand, the silty clay was present to the bottom of the soil probes, 19 feet below the ground surface. The clay layer appears to be continuous with no or very few intermittent sand layers. Soil probes advanced to a deeper depth (24 feet below ground surface) during the Phase 3 investigation supports the conclusion that the clay layer is continuous.

This clay layer may act as a confining layer and prevents the vertical migration of contaminants. Groundwater piezometers would need to be installed to confirm that it acts as an aquitard. The clay layer is first encountered between 5 to 13 feet below the ground surface. Groundwater is present above the clay in the sand at 7 to 11 feet below the ground surface. At one soil probe location advanced during the most recent work, groundwater was not observed (depth of clay at 5 feet). Generally, the clay layer is first encountered at 8 feet below the ground surface. It appears that shallow groundwater occurrence and flow may be strongly influenced by the clay layer.

The contours of the clay layer were mapped on Figure 3 to show the surface of the clay layer. A depression in the clay is present in the northeast corner of the Susie's Restaurant site. As discussed in subsequent sections, this area coincides with the highest soil and groundwater impacts. The clay layer increases in elevation to the east (nearly 10 feet) compared to the lowest clay layer elevations observed in the northeast corner of the site. Surveyed elevations to the south and west are fairly consistent and show an increase in elevation of approximately 2 feet.

A geologic cross-section extending from west to east along the northern portion of the Susie's Restaurant site is included as Figure 4. This cross-section shows the depression of the clay layer.

4.1.2 Soil Sampling Results

Soil samples from GP-13, on the Susie's Restaurant property, were the only soil samples submitted for analysis. The remaining soil probes were advanced off-site and no soil samples were prepared for laboratory testing.

Soil samples from each probe were screened with the photoionization detector (PID). The PID readings are summarized on the boring logs in Appendix B. The soil samples with the highest PID readings and a sample from the soil/groundwater interface were selected for laboratory analysis from GP-13. The PID readings from GP-13 ranged from 0.7 to 7.7 units. The highest PID readings were observed at GP-15 located northeast of the site across South 26th Street near Custer Street Towing, where a PID reading of 604 units was observed just above the groundwater table in the sand. A petroleum type odor was observed in this sample. No soil samples were analyzed from GP-15. PID readings from the remaining soil probes were generally less than 1 PID units.

Laboratory analytical results indicate that residual soil contamination is present at the Susie's Restaurant site. The contaminants in the soil at GP-13 were tetrachloroethene (PCE) and cis 1,2-Dichloroethene (Cis 1,2-DCE). Cis 1,2-Dichloroethene is a degradation product of PCE. The soil testing results are presented on Table 1. No trichloroethylene (TCE - also a degradation product of PCE) or petroleum compounds were observed in the soil. Laboratory analytical reports and associated chain-of-custody are included in Appendix D.

Soil contamination at GP-13 was detected in the sand soils from approximately 3 feet below the ground surface (bgs) to the groundwater table at 8.5 feet bgs (PCE of 39 ug/kg at 3 to 5 feet and 292 ug/kg at 7 to 9 feet). The highest concentrations of contaminants were detected in the silty clay soils below the sand (PCE of 13,900 ug/kg at 13.5 to 15 feet). The elevated concentration of PCE in the silty clay below the water table may be erroneously high because contaminants in the groundwater could have affected the soil sample as it was being retrieved. Previous samples collected from the silty clay and tested for VOCs did not have impacts.

Soil concentrations of TCE and PCE from the soil sampling efforts in 1993, 1994 and 1997 are summarized on Figures 5 and 6, respectively. The highest concentrations of PCE are observed in the northern 1/3 of the site from 2 feet below the ground surface to the groundwater table. In general, the underlying silty clay was not affected except at GP-13 as discussed above. TCE was observed in the soil at lower concentrations and less frequently than PCE. TCE impacts were observed on the northern 1/2 of the site.

TABLE 1
SOIL ANALYTICAL RESULTS
USH 151
MANITOWOC, WISCONSIN

Parameters	Soil Probe Number			
	NR 720 RCL*	GP-13 S-2	GP-13 S-4	GP-13 S-7A
Soil Type		Sand	Sand	Silty Clay
Depth (a)		3 to 5	7 to 9	13.5 to 15
PID Screening (b)		0.7	1.2	7.7
VOCs (ug/kg)				
cis 1,2 Dichloroethene		< 12	< 12	**653**
Tetrachloroethene (PCE)		**39**	**292**	**13900**
Trichloroethylene (TCE)		< 13	< 13	< 60

Notes:

1. The samples were analyzed for the complete EPA 8260 list by NOVA Environmental Laboratory.
2. Soil samples were collected on June 5, 1997. Soil samples were not analyzed from probes GP-14 through GP-19.
3. Bolded data indicates parameter detected above the detection limit.
4. Only detected parameters are listed.
5. *RCL - Generic Residual Contaminant Level. No RCL's have been established for these parameters.
6. (a) - Depth in feet below ground surface.
7. (b) - Reading in parts per million isobutylene equivalent, lamp energy at 10.0 and 10.6 eV.

4.2 Groundwater

4.2.1 Groundwater Flow Direction

Only two monitoring wells are located in the vicinity of the site. A groundwater flow direction and groundwater gradient could not be estimated with only these two wells. Additional monitoring wells and piezometers would be needed to evaluate the groundwater flow direction.

Based on regional groundwater data, topographic contours and the location of water bodies, regional groundwater flow is anticipated to be to the east and northeast in the direction of the Manitowoc River and Lake Michigan. The shallow groundwater table on-site may be locally influenced by the contours of the silty clay layer. The depression of the clay layer in the northeast corner of the site appears to pool water at this location, inhibiting the migration of groundwater downgradient.

4.2.2 Groundwater Sampling Results

Groundwater samples were collected from the open probe holes GP-13 through GP-19 with the exception of GP-17 which was dry. GP-17 did not have sufficient groundwater to collect during the day of sampling and was therefore not sampled. The two monitoring wells were also sampled (MW-North and MW-South). A total of 8 groundwater samples were collected for VOC testing.

The groundwater sampling results are tabulated and compared to the respective NR 140 ESs and PALs in Table 2. The groundwater results are also presented on Figure 7. No NR 140 ESs or PALs were exceeded during this sampling event at GP-14, GP-15, GP-18 or GP-19. These four soil probe locations are in the assumed hydraulically downgradient position to the Susie's Restaurant site.

TCE at 3 parts per billion (ppb) was detected in the water sample collected from GP-16 which is above the NR 140 PAL of 0.5 ppb. The ES for TCE is 5 ppb. PCE was not detected in the water sample collected from GP-16. TCE is a degradation product of PCE. GP-16 is located to the north across Custer Street.

TCE and PCE were detected in the water samples collected from GP-13 and MW-North on the Susie's Restaurant property. TCE and PCE exceeded the ES's at GP-13 while both parameters exceeded PALs at MW-North. Vinyl chloride was detected at MW-North at 2.6 ppb, above its ES of 0.2 ppb. Vinyl chloride was not detected at any other sampling locations. Chloroform and cis-1,2-dichloroethene were also detected at MW-North above their PALs. Cis-1,2-dichloroethene is a degradation product of chlorinated solvents (PCE and TCE).

TABLE 2
GROUNDWATER ANALYTICAL RESULTS
USH 151
(all units are given in Φg/l)

Parameters	NR140, WAC Standards ES	NR140, WAC Standards PAL	Temporary Well/Soil Probe Number GP-13	GP-14	GP-15	GP-16	GP-17	GP-18	GP-19	MW North	MW South
VOCs											
Benzene	5	0.5	<2.5	<0.3	0.3 (j)	<0.3	Well	0.3 (j)	0.3 (j)	<0.3	<0.3
Acetone	1000	200	47 (j)	<3.9	131	9 (j)	Dry	15	8.1 (j)	<3.9	<3.9
Bromodichloromethane	0.6	0.06	<0.6	<0.06	<0.06	<0.06		<0.06	<0.06	<0.06	1.2
Chloroform	6	0.6	<1.8	<0.2	<0.2	<0.2		<0.2	0.4 (j)	1.1	8.2
cis-1,2-Dichloroethene	70	7	<0.6	<0.6	<0.6	<0.6		<0.6	<0.6	25	<0.6
Dibromochloromethane	60	6	<5.5	<0.6	0.7 (j)	<0.6		<0.6	<0.6	<0.6	<0.6
n-Propylbenzene	NE	NE	<3	<0.3	<0.3	<0.3		<0.3	<0.3	0.4 (j)	<0.3
Naphthalene	40	8	<4.4	<0.4	0.7 (j)	<0.4		<0.4	<0.4	<0.4	<0.4
p-Isopropyltoluene	NE	NE	<3.3	<0.3	1.7	<0.3		<0.3	<0.3	<0.3	<0.3
sec-Butylbenzene	NE	NE	<3.9	<0.4	<0.4	<0.4		<0.4	<0.4	0.5 (j)	<0.4
tert-Butylbenzene	NE	NE	<3.4	<0.3	<0.3	<0.3		<0.3	<0.3	0.9 (j)	<0.3
Tetrachloroethene	5	0.5	403	0.5 (j)	<0.4	<0.4		<0.4	<0.4	4.7	0.4 (j)
Toluene	343	68.6	<4.5	<0.5	<0.5	0.5 (j)		<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethene	100	20	<3.2	<0.3	<0.3	<0.3		<0.3	<0.3	1.4	<0.3
Trichloroethene	5	0.5	14	<0.2	<0.2	3		<0.2	<0.2	3.9	<0.2
Vinyl Chloride	0.2	0.02	<2.3	<0.2	<0.2	<0.2		<0.2	<0.2	2.6	<0.2

Notes:

1. Existing wells MW-North and MW-South were sampled on June 5, 1997. The wells were sampled with permission from U.S. Oil, the remediation system owner.
2. Temporary wells GP-13 through GP-17 and GP-19 were installed, sampled and abandoned on June 5, 1997. Temporary well GP-18 was installed, sampled and abandoned on June 6, 1997.
3. Bolded data indicates parameter detected above the reporting limit.
4. VOCs - Volatile Organic Compounds, analyzed using EPA Method 8260.
5. j = Results between the Limit of Detection and Limit of Quantitation.
6. ES - NR140, WAC Enforcement Standard exceedance
7. PAL - NR140, WAC Preventive Action Limit exceedance
8. NE - Not established for this parameter.
9. All samples analyzed by NOVA Environmental Laboratory.
10. Only detected parameters are listed.
11. GP-17 was not sampled.

Bromodichloromethane and chloroform were detected at MW-South at concentrations above ESs. MW-South is located south of the Susie's Restaurant site across Calumet Avenue. The source of these compounds is unknown. Chlorinated solvents were not observed at MW-South above the laboratory limit of quantitation.

The highest concentration of groundwater impacts is observed at GP-13 which coincides with the clay surface depression. No impacts were observed to the northeast and slight impacts were observed to the south. The highest groundwater impacts are in the northeast corner of the site and extend into the roadway intersection.

4.2.3 Natural Attenuation Sampling Results

Some indicators of natural attenuation that were tested for at the two groundwater monitoring wells (MW-North and MW-South) include dissolved oxygen, nitrate, ferrous iron, chloride and redox potential. The results are summarized on Table 3. The reference used to evaluate the data was the Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater, Air Force Center for Environmental Excellence, draft November 1996.

Testing results of natural attenuation factors indicate that natural attenuation of the chlorinated solvents is occurring. PCE and its degradation products TCE and cis 1,2-DCE are observed in the groundwater further indicating the degradation of chlorinated solvents is occurring. Vinyl chloride is also present at one location indicating the cis 1,2-DCE is reducing. The indicator parameters are favorable to suggest that the right oxygen sufficient and oxygen depleted conditions are available for degradation to occur. Without the placement of additional groundwater monitoring wells within the area of highest impacts and monitoring of these wells over a period of time, however, it is difficult to estimate the degree of degradation and rate of chlorinated solvents removal or the rate of contaminants migration downgradient. Groundwater monitoring upgradient, within and downgradient of the plume would determine if the degree of natural attenuation would be sufficient to naturally remediate the contaminants. The initial indications are favorable that natural attenuation could continue to reduce the contaminant concentrations.

TABLE 3
BIOLOGICAL PARAMETERS FOR NATURAL ATTENUATION
SUSIE'S RESTAURANT/USH 151
MANITOWOC, WISCONSIN

	Monitoring Well	
Parameter	MW-North	MW-South
pH	6.61	6.77
Conductivity (umhos/cm)	728	574
Iron (ppm)	1-2	1-2
Dissolved Oxygen (ppm)	1-2	1-2
ORP (mV)	-026	+57
Nitrate	ND	ND
Chloride (ppm)	150	120

Notes:

1. Existing wells MW-North and MW-South were sampled on June 5, 1997. The wells were sampled with permission from U.S. Oil, the remediation system owner.
2. Samples were tested in the field by STS using field instruments or kits.
3. ND = not detected.
4. ppm = parts per million
5. ORP = Oxydation Reduction Potential in milli volts

5.0 SUMMARY AND CONCLUSIONS

The activities and observations associated with this Phase 2 1/2 investigation are summarized in the following sections. Some of the information was collected from previous investigations conducted within this same area.

5.1 Summary

Soil

- The soil profile at the site consists primarily of 3 to 12 feet of sand or silty sand over silty clay. The clay layer appears to be continuous with no or few sand layers.
- The clay contours decrease to a low point in the northeast corner of the site. The clay layer increases in elevation over 10 feet to the east and approximately 2 feet to the south and west. The depression in the clay layer may create a pool for groundwater which influences shallow groundwater flow and causes chlorinated solvents to collect at this location.
- Soil samples were collected from 7 soil probes advanced at the subject site to evaluate soil conditions, to determine if residual soil impacts remain and assist in evaluating the concentrations of contaminants remaining in soils on-site. All soil samples that were collected were screened with a PID.
- The one soil probe advanced on-site had slightly elevated PID readings. Three samples from this probe were submitted for testing. PCE was detected in the soil above the groundwater table. PCE is a common dry cleaning solvent.
- The soil samples from the remaining probes were screened with the PID. The most elevated readings were observed at the soil probe across South 26th Street near the groundwater table. A petroleum type odor was observed at this location. No samples were submitted for laboratory testing.
- The chlorinated solvent-affected soils are present above the groundwater table in the northern 1/3 of the Susie's Restaurant property. Based upon the limited amount of testing conducted in this area, these shallow soils are the only soils remaining on the property that are affected by chlorinated solvents.

Groundwater

- There are not enough groundwater monitoring wells on-site to calculate the hydraulic flow direction. From a literature review, the assumed hydraulic flow direction is to

the east and northeast toward the Manitowoc River and Lake Michigan. The depression in the clay layer in the northeast corner of the property may locally affect the shallow groundwater flow direction. Groundwater above the clay may pool in this depression.

- Groundwater sampling results indicate that TCE and PCE are present on the subject site especially in the northeast corner of the property. The extent of affected groundwater is limited to the northern portion of the site and possibly into the intersection of South 26th Street and Custer Street. Elevated contaminant concentrations were not detected in groundwater samples collected from probe holes located east across South 26th Street or to the northeast along Custer Street. In addition, significant contamination was not observed from the same type of samples collected from the north or south. However, if additional wells are installed in the future, a more accurate assessment of groundwater quality could be made.

- Active remedial activities at the upgradient service station, Schmidt Tire and Muffler, have ceased. The site is being remediated by natural attenuation.

- The results of the biological testing conducted at the two monitoring well locations indicates that natural attenuation could be occurring for the chlorinated solvents. The installation of additional groundwater monitoring wells with groundwater monitoring for chlorinated solvents and the biological parameters will assist in evaluating if natural attenuation is occurring and the rate of degradation.

5.2 Conclusions

PCE, a common dry cleaning solvent, was observed in the shallow soil at the northeast corner of the site (GP-13). No vinyl chloride or TCE was observed in the soil. Based on previous investigations, the shallow sand soils above the groundwater table in this area are affected with chlorinated solvents including PCE and a degradation product TCE. If excavation of soils in the northern 1/3 of the site is anticipated during construction, steps should be taken to properly handle and dispose of the material. The affected sandy soil should be segregated and covered if stockpiled. Disposal arrangements should be made beforehand to handle the material during construction.

Remediation by natural attenuation of the chlorinated solvents may be a viable option to reduce groundwater impacts. Additional NR141 quality groundwater monitoring wells would be necessary to test for biological parameters within the most affected areas, and upgradient and downgradient in the unaffected area. A comparison of biological parameter concentrations from these separate locations will determine if and at what rate natural attenuation is occurring. TCE, PCE, DCE and vinyl chloride should also be monitored in the wells on a routine basis for a period of time to evaluate their concentrations and assess their rate of degradation and hydraulic migration downgradient.

The depression in the clay layer below the sand appears to have created a pool that has limited the migration of chlorinated solvents hydraulically downgradient. The extent of groundwater impacts appears limited to the northern portion of the site and possibly to the east within the street intersection. Chlorinated solvents were not observed across South 26th Street or to the south or north of the site in the groundwater. Monitoring of groundwater quality should continue after roadway construction to ensure the plume does not migrate further to the east or northeast.

If natural attenuation is selected as the remedial option. A deed notification will be needed to inform present and future property owners that remediation is occurring on-site and where residual contamination has been identified. The deed notification can be filed with the County Register of Deeds.

No additional work is recommended until after roadway construction. The two existing monitoring wells should be properly abandoned by their owner (U.S. Oil) in accordance with the NR141 code prior to roadway work.

6.0 GENERAL QUALIFICATIONS

The site investigation conducted at the Susie's Restaurant/USH 151 site was undertaken to assess soil and groundwater conditions at select areas of the property. This activity was limited to investigating subsurface conditions in the northeastern portion of the site and further off-site to the northeast.

Factual information regarding operations, conditions, regional geology and hydrogeology, and test data completed throughout the site investigation were obtained, in part from outside agents and third parties and have been assumed by STS to be correct and complete. Because some facts stated in this report are subject to professional interpretation, they could result in differing conclusions. In addition, the findings and conclusions contained in this report are based on various quantitative factors as they existed on or near the date during which the field work was completed.

STS assumes no responsibility for future discovery and elimination of hazards or their associated liabilities. The investigation conducted by STS in no way assures the elimination of all hazards or the fulfillment of a property owner's obligation under any local, state or federal laws or any modifications or changes thereto. It is the responsibility of the property owner to notify authorities of any future conditions that are in violation of the current legal standards.

STS has prepared this report at the request of the Wisconsin Department of Transportation. STS assumes responsibility for the accuracy of the report's contents, subject to what is stated elsewhere in this section, but recommends the report be used only for the purpose intended by our client and STS when the report was prepared. The report may be unsuitable for other uses, and reliance on its contents by anyone other than our client is done at the sole risk of the user. STS accepts no responsibility for application or interpretation of the results by anyone other than the Wisconsin Department of Transportation.

This report reflects conditions, as observed on the date(s) the site work was performed. Accordingly, changes or modifications to the property or surrounding facilities made after the investigation was completed are not reflected in this report.

7.0 REFERENCES

Erickson, R.M. and Cotter, R.D., Trends in Groundwater Levels in Wisconsin through 1981. U.S. Geological Survey, 1983.

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Wiedemeier, Todd H., et al, Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater. Prepared by Air Force Center for Environmental Excellence, Draft, November 1996.

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Wisconsin Department of Natural Resources, ch. NR 140, Wis. Admin. Code, Groundwater Quality. October 1996.

Wisconsin Department of Natural Resources, ch. NR141, Wis. Admin. Code, Groundwater Monitoring Well Requirements. September 1995.

FIGURES

Figure 1 - Area of Study Location

Figure 2 - Site Map 6-19-1997

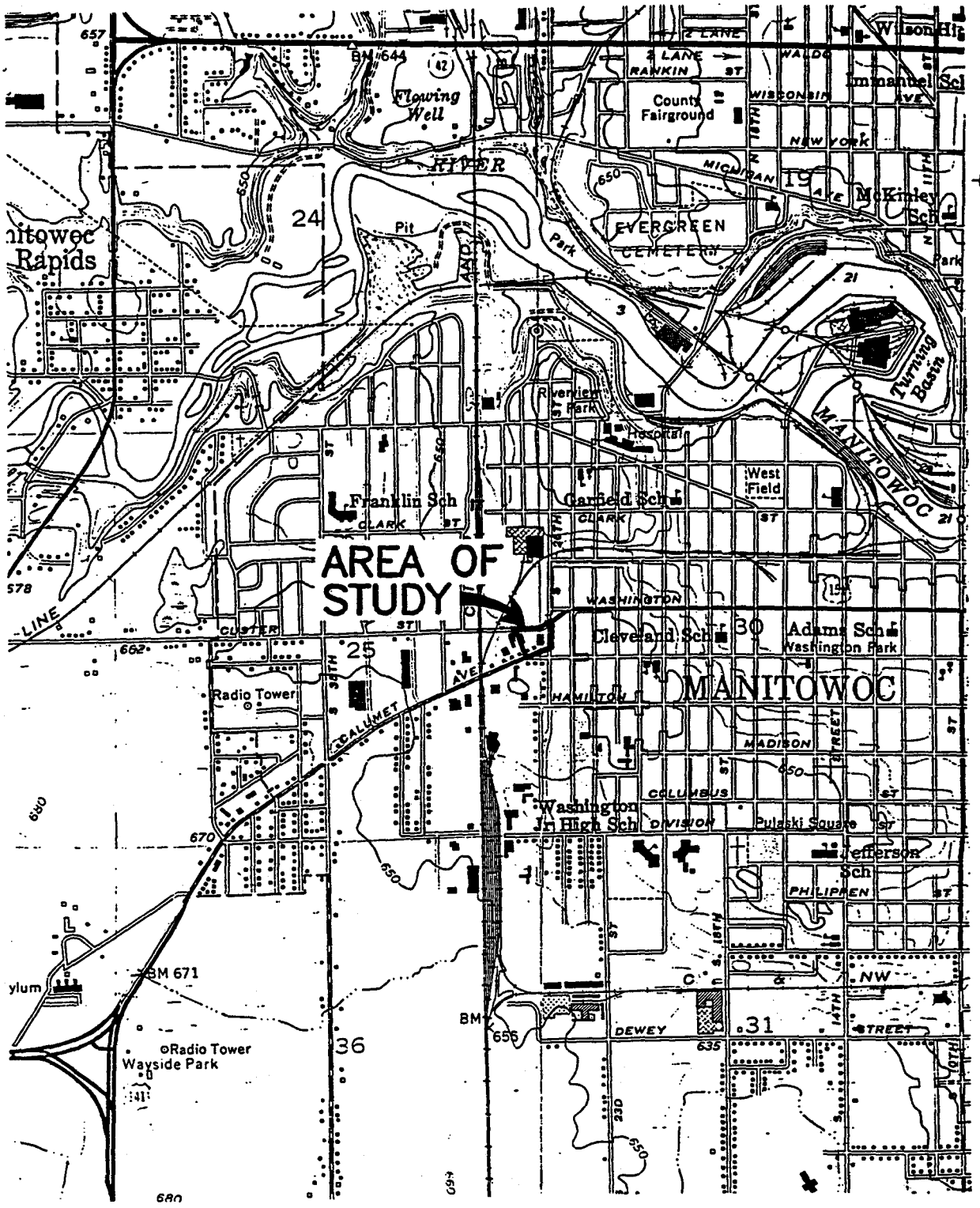
Figure 3 - Topographic Contours of Clay Layer

Figure 4 - Geologic Cross-Section

Figure 5 - TCE Concentrations in Soil (ppb)

Figure 6 - PCE Concentrations in Soil (ppb)

Figure 7 - Groundwater Concentrations from 6-5-1997



QUADRANGLE LOCATION

SOURCE: USGS TOPOGRAPHIC MAP, MANITOWOC QUADRANGLE
DATE 1954, PHOTOREVISED 1973

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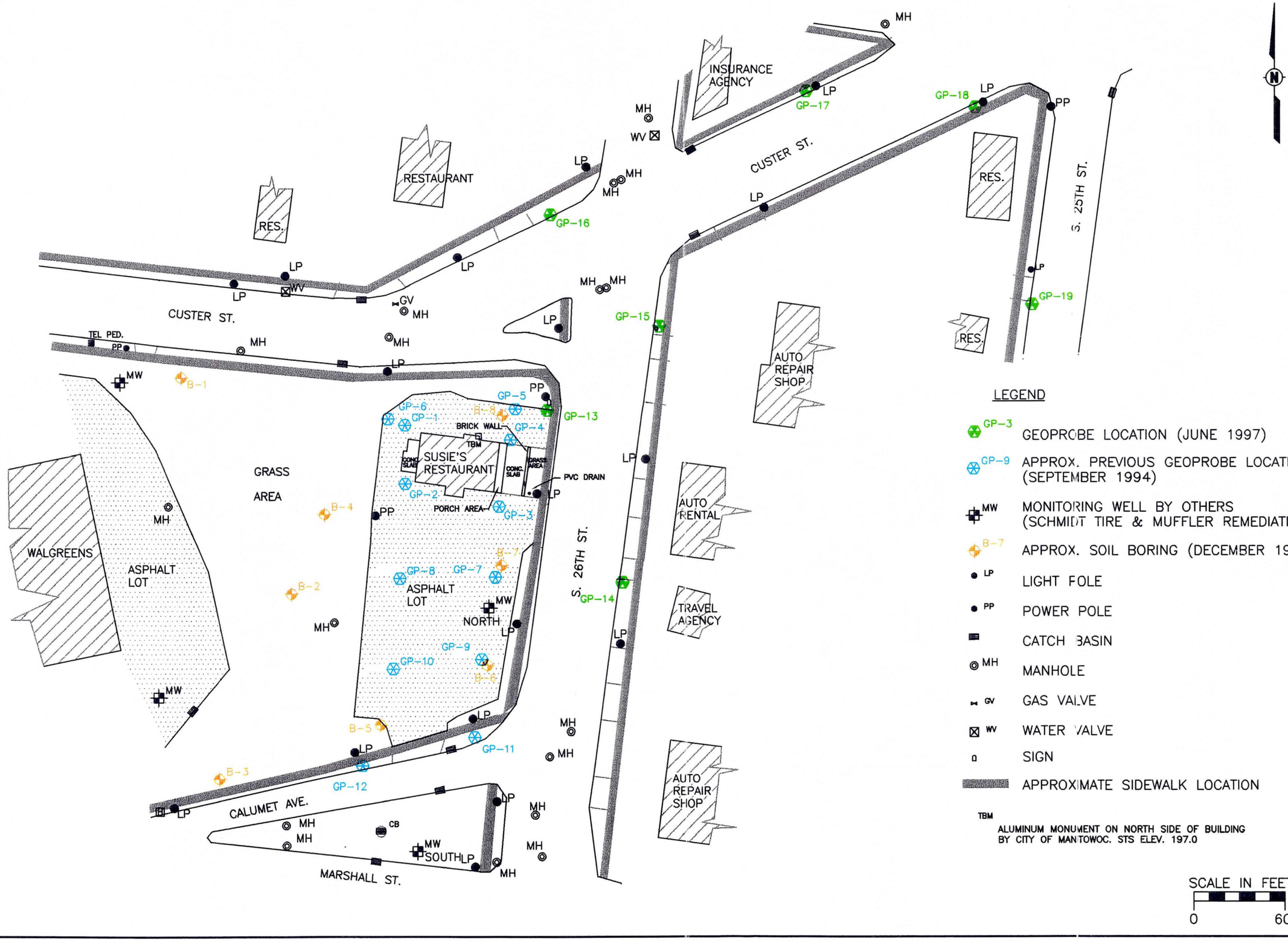
AREA OF STUDY LOCATION
U.S. HIGHWAY 151
MANITOWOC, WISCONSIN

DRAWN BY	JMI	7-2-97
CHECKED BY	SMM	7-2-97
APPROVED BY	TWK	7-2-97
CADFILE G5308007	SCALE 1"=2000'	
STS PROJECT NO. 85308XA	FIGURE NO. 1	



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CHECKED BY SMM DATE 7-1-97
APPROVED BY TWK DATE 7-1-97
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XREF=\G5308000

SITE MAP 6-19-1997
SUSIE'S RESTAURANT
U.S. HIGHWAY 151
MANITOWOC, WISCONSIN

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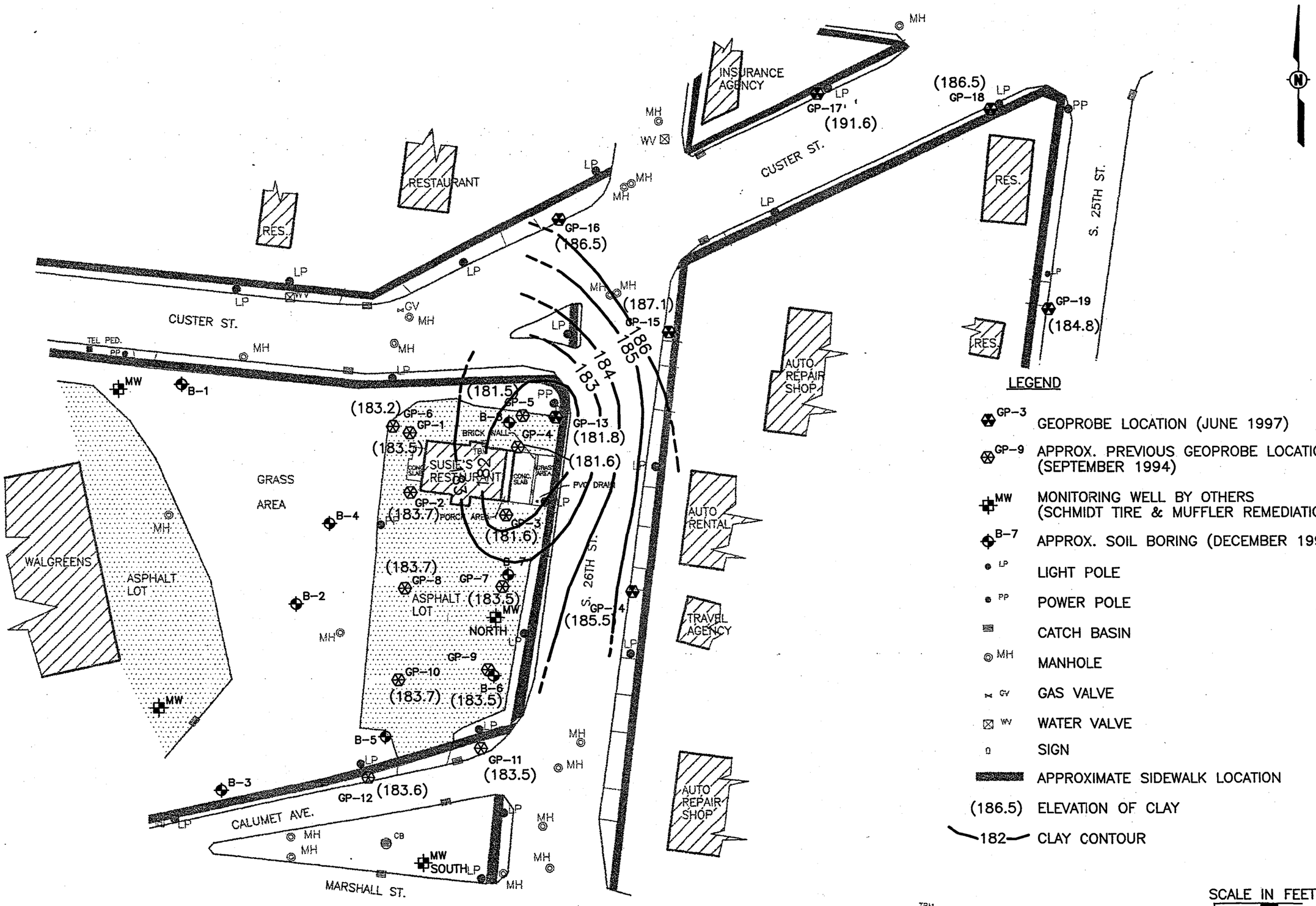
Consulting Engineers

STS PROJECT NO. 85308XA
STS PROJECT FILE
SCALE AS SHOWN
FIGURE NO. 2



LEGEND

- GP-3 GEOPROBE LOCATION (JUNE 1997)
- GP-9 APPROX. PREVIOUS GEOPROBE LOCATION (SEPTEMBER 1994)
- MW MONITORING WELL BY OTHERS (SCHMIDT TIRE & MUFFLER REMEDIATION)
- B-7 APPROX. SOIL BORING (DECEMBER 1993)
- LP LIGHT POLE
- PP POWER POLE
- CATCH BASIN
- MH MANHOLE
- GV GAS VALVE
- WV WATER VALVE
- SIGN
- APPROXIMATE SIDEWALK LOCATION
- (186.5) ELEVATION OF CLAY
- 182 CLAY CONTOUR

TBM
ALUMINUM MONUMENT ON NORTH SIDE OF BUILDING BY CITY OF MANITOWOC. STS ELEV. 197.0

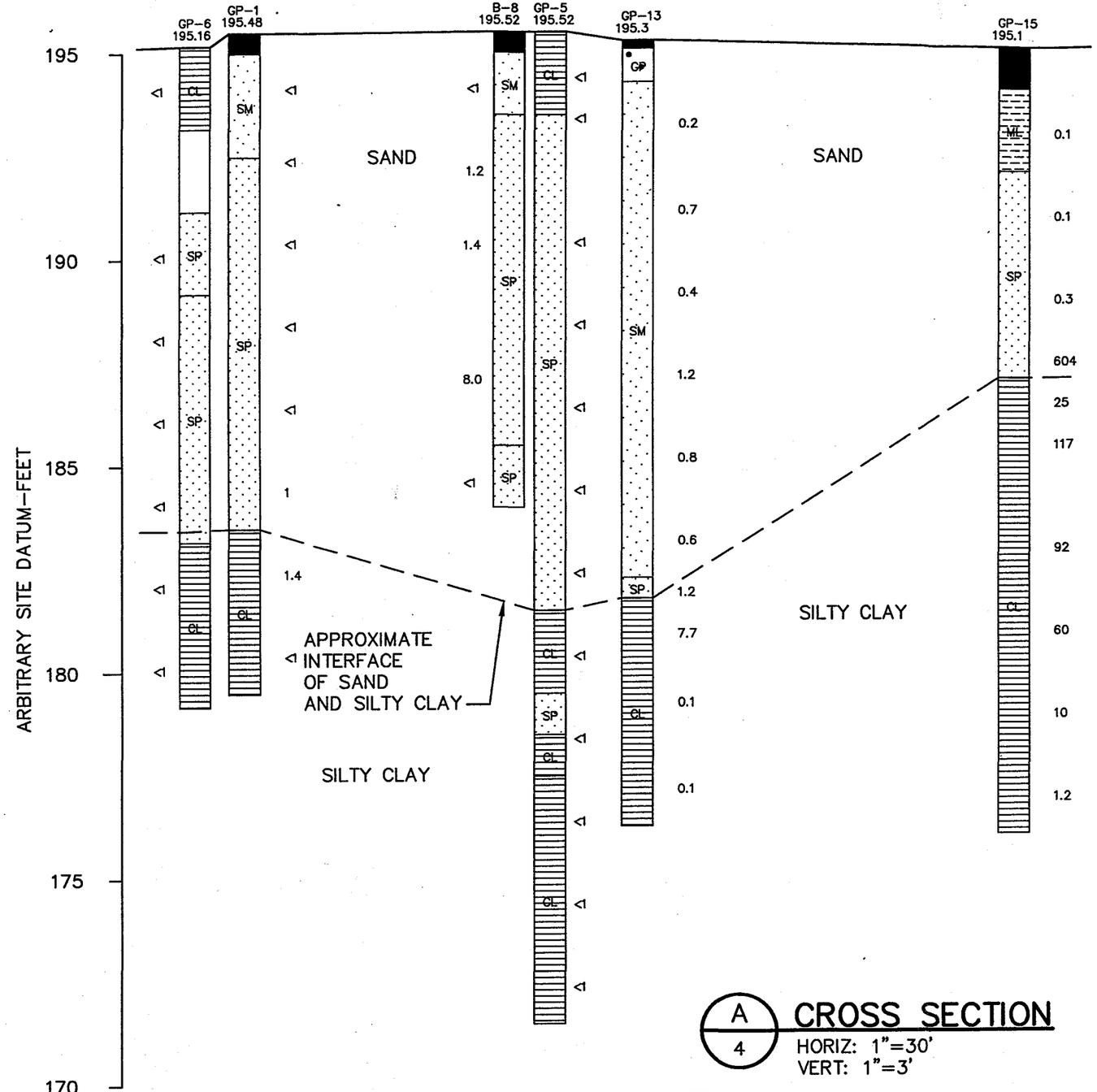
SCALE IN FEET
0 60'

TOPOGRAPHIC CONTOURS OF CLAY LAYER
SUSIE'S RESTAURANT
U.S. HIGHWAY 151
MANITOWOC, WISCONSIN

DRAWN BY	DTB\JMI	DATE 7-1-97
CHECKED BY	SMM	DATE 7-1-97
APPROVED BY	TWK	DATE 7-1-97
CADFILE	..\PROJECTS\85308\XA\G5308002.DWG XREF=\G5308000	

STS Consultants Ltd.
Consulting Engineers

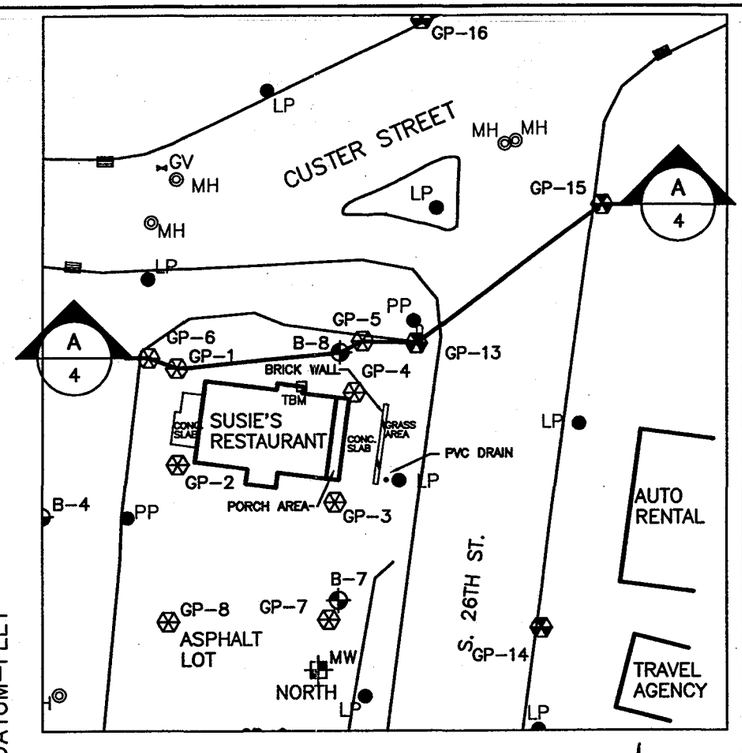
STS PROJECT NO. 85308XA
STS PROJECT FILE
SCALE AS SHOWN
FIGURE NO. 3



A/4 CROSS SECTION
HORIZ: 1"=30'
VERT: 1"=3'

NOTE:

SOIL CONDITIONS DESCRIBED HEREIN ARE VALID AT THE BORING LOCATIONS ONLY. HORIZONTAL PROJECTIONS ARE INTERPOLATED AND REPRESENT ONLY APPROXIMATIONS OF ACTUAL SOIL CONDITIONS.



LOCATION MAP
SCALE: 1"=60'

LEGEND

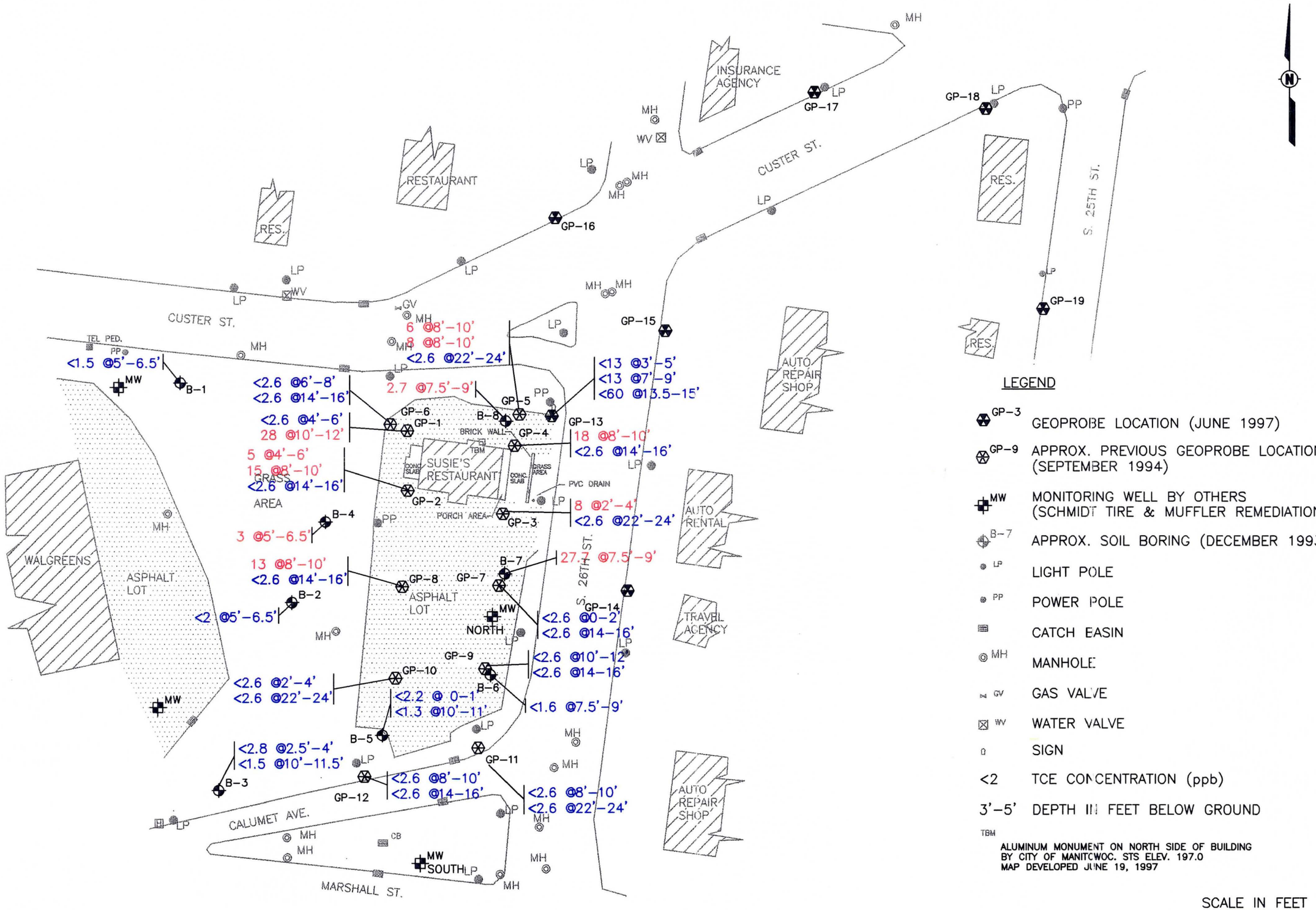
- SB-1 — WELL\BORING IDENTIFICATION
- 195.1 — GROUND ELEVATION
- CONCRETE\ASPHALT
- BLIND DRILLED (FROZEN SILTY CLAY)
- PID READING
- CL — USCS CLASSIFICATION

DRAWN BY JMI — DATE 7-2-97
CHECKED BY SMM — DATE 7-2-97
APPROVED BY TWK — DATE 7-2-97
CADFILE ::\PROJECTS\85308\XA\G5308006.DWG
XREF=

CROSS SECTION A
SUSIE'S RESTAURANT
U.S. HIGHWAY 151
MANITOWOC, WISCONSIN

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO. 85308XA
STS PROJECT FILE
SCALE AS SHOWN
FIGURE NO. 4



LEGEND

- GP-3 GEOPROBE LOCATION (JUNE 1997)
- GP-9 APPROX. PREVIOUS GEOPROBE LOCATION (SEPTEMBER 1994)
- MW MONITORING WELL BY OTHERS (SCHMIDT TIRE & MUFFLER REMEDIATION)
- B-7 APPROX. SOIL BORING (DECEMBER 1993)
- LP LIGHT POLE
- PP POWER POLE
- CATCH EASIN
- MH MANHOLE
- GV GAS VALVE
- WV WATER VALVE
- SIGN
- <2 TCE CONCENTRATION (ppb)
- 3'-5' DEPTH IN FEET BELOW GROUND

TBM
ALUMINUM MONUMENT ON NORTH SIDE OF BUILDING
BY CITY OF MANITOWOC. STS ELEV. 197.0
MAP DEVELOPED JUNE 19, 1997

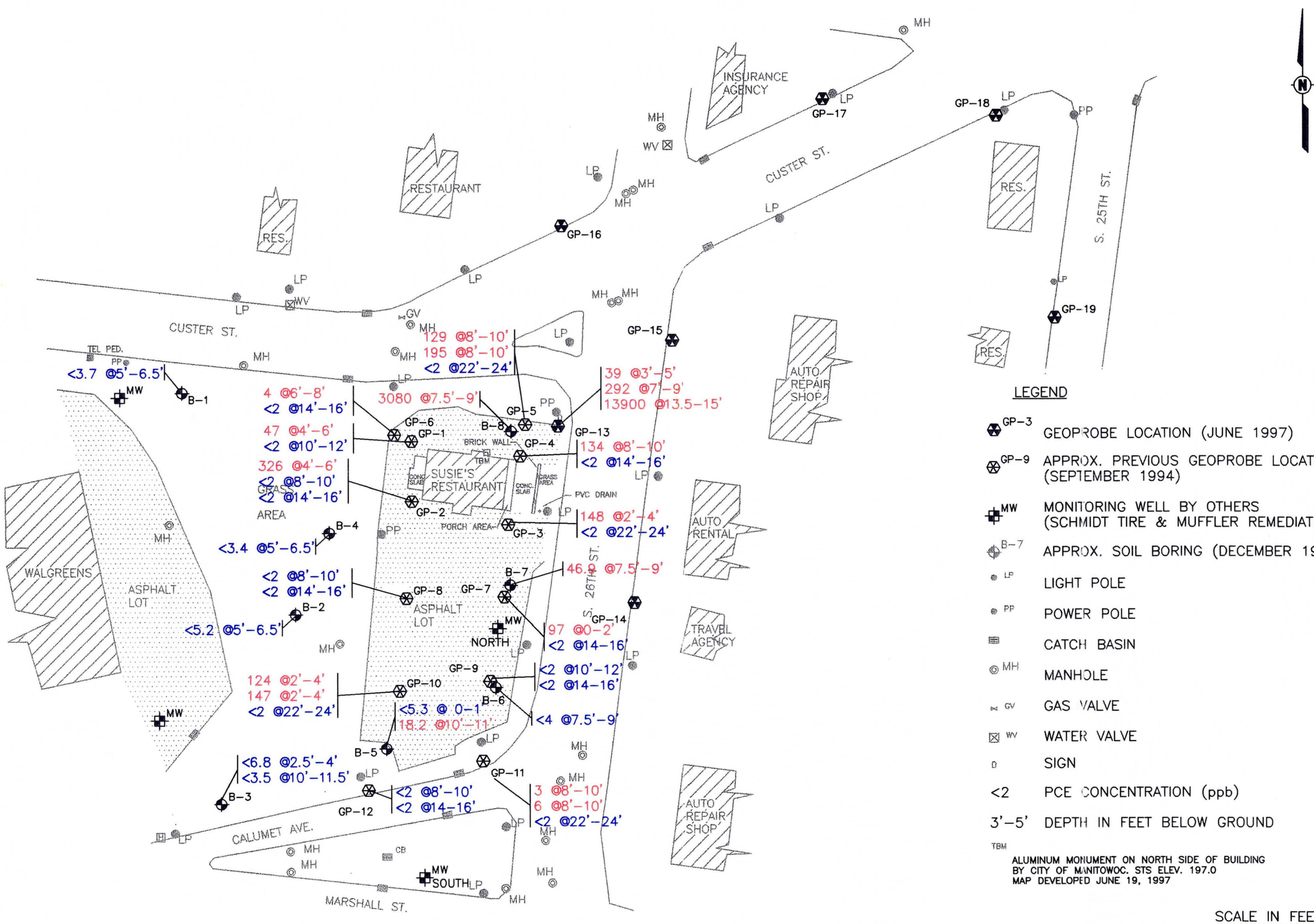
SCALE IN FEET
0 60'

DRAWN BY	DTB\JMI	DATE 7-1-97
CHECKED BY	SMM	DATE 7-1-97
APPROVED BY	TWK	DATE 7-1-97
CADFILE	::\PROJECTS\85308\XA\G5308005.DWG XREF=\G5308000	

TCE CONCENTRATIONS IN SOIL (ppb) FROM 1993, 1994 AND 1997
SUSIE'S RESTAURANT
U.S. HIGHWAY 151
MANITOWOC, WISCONSIN

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO. 85308XA
STS PROJECT FILE
SCALE AS SHOWN
FIGURE NO. 5



LEGEND

- GP-3 GEOPROBE LOCATION (JUNE 1997)
- GP-9 APPROX. PREVIOUS GEOPROBE LOCATION (SEPTEMBER 1994)
- MW MONITORING WELL BY OTHERS (SCHMIDT TIRE & MUFFLER REMEDIATION)
- B-7 APPROX. SOIL BORING (DECEMBER 1993)
- LP LIGHT POLE
- PP POWER POLE
- CATCH BASIN
- MH MANHOLE
- GV GAS VALVE
- WV WATER VALVE
- SIGN
- <2 PCE CONCENTRATION (ppb)
- 3'-5' DEPTH IN FEET BELOW GROUND
- TBM ALUMINUM MONUMENT ON NORTH SIDE OF BUILDING BY CITY OF MANITOWOC. STS ELEV. 197.0 MAP DEVELOPED JUNE 19, 1997

SCALE IN FEET
0 60'

PCE CONCENTRATIONS IN SOIL (ppb)
FROM 1993, 1994 AND 1997
SUSIE'S RESTAURANT
U.S. HIGHWAY 151
MANITOWOC, WISCONSIN

DRAWN BY	DTB\JMI	DATE 7-1-97
CHECKED BY	SMM	DATE 7-1-97
APPROVED BY	TWK	DATE 7-1-97
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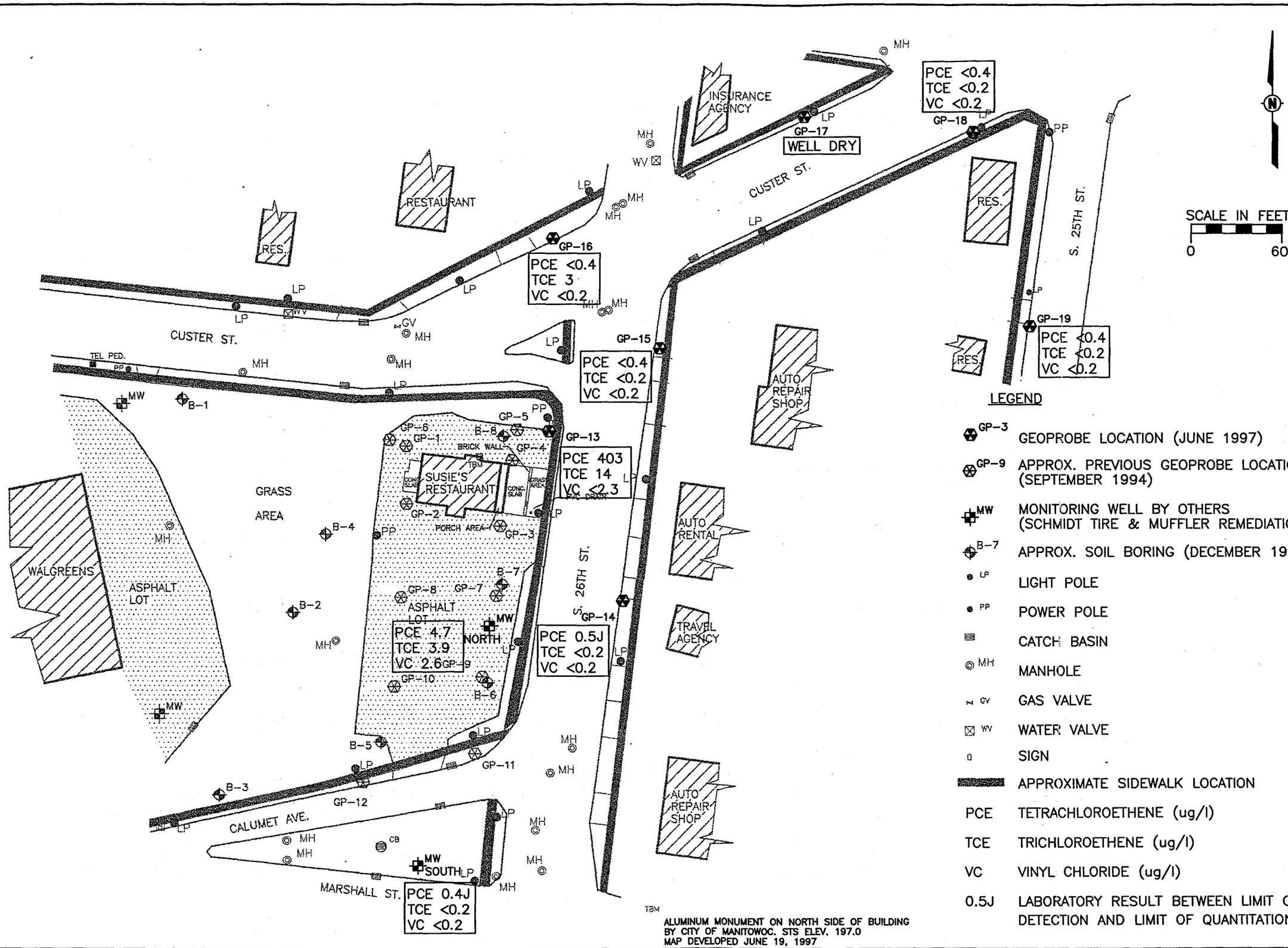
Consulting Engineers

STS PROJECT NO. 85308XA
STS PROJECT FILE
SCALE AS SHOWN
FIGURE NO. 6



GROUNDWATER TCE, PCE AND VINYL CHLORIDE CONCENTRATIONS 6-5-97
SUSIE'S RESTAURANT
U.S. HIGHWAY 151
MANITOWOC, WISCONSIN

DRAWN BY	DTB\JMI	DATE 7-2-97
CHECKED BY	SMM	DATE 7-2-97
APPROVED BY	TWK	DATE 7-2-97
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STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO. 85308XA
STS PROJECT FILE
SCALE AS SHOWN
FIGURE NO. 7

APPENDICES

Appendix A -Operating Procedures

Appendix B -Soil Probe Boring Logs and Borehole Abandonment Forms

Appendix C - Drum Inventory

Appendix D -Laboratory Analytical Reports and Associated Chain-of-Custody Forms

APPENDIX A

Operating Procedures

OPERATING PROCEDURES

APPENDIX A

1.0 SOIL SAMPLING PROCEDURES

1.1 Soil Probe

Typically, the soil probe unit is van mounted and hydraulically advances a 1-1/2 inch diameter drive rod to collect soil samples. Soil samples are collected inside of a 2-foot polyethylene sheath inserted into the end of the drive rod. When the selected sample depth is reached, a spring release allows the soil sample to be collected inside of the sheath. A new sheath is used to collect each sample at the specified depth.

To extract the soil sample, the sheath is cut open using a razor blade. Upon opening the sheath, each soil sample to be submitted for analytical testing is preserved in accordance with the procedures outlined in Section 1.5. Soil samples to be used for screening purposes are placed in 8-ounce glass jars and screened according to the procedure outlined in Section 1.3.

1.2 Auger Drilling

Typically, 4-1/4 inch hollow stem augers are utilized to advance boreholes during auger drilling. The augers are advanced using a truck or all-terrain vehicle (ATV) mounted auger drilling rig. Soil samples are collected at 2.5 foot intervals, using standard split-barrel sampling procedures. A copy of the American Society for Testing and Materials (ASTM) Procedure (ASTM D-1586) is appended at the end of this section. Borings which are not converted to groundwater monitoring wells are backfilled with bentonite chips from the bottom of the boring to the surface. If surface improvements are present (i.e., concrete or asphalt), bentonite is placed up to the bottom of the improvement and the surface is repaired with a like material. Drilling equipment is decontaminated in accordance with procedures outlined in Section 4.1. Soil cuttings generated during the drilling procedure are handled in accordance with the procedures outlined in Section 5.1.

1.3 Soil Screening

Each soil sample collected during soil probe or auger drilling methods is split to form duplicate samples, upon collection. A portion of the sample, to be utilized for screening purposes and classification is placed in an 8-ounce glass jar, covered with aluminum foil and sealed with a screw-on lid. The remainder of the sample is placed in laboratory provided jars, if the sample is to be submitted to a laboratory for analytical testing (Refer to Section 1.5).

1.3.1 PID Screening

STS utilizes an HNu Model PI-101 photoionization detector (PID) equipped with a 10.2 electron volt (eV) lamp or a MiniRae Plus (PGM-76) Professional PID equipped with a 10.6 eV lamp. Both instruments are capable of detecting certain volatile organic compounds (VOCs), including many of the volatile components characteristic of petroleum products and common solvents with ionization energies less than or equal to 10.6 eV.

PID screening is performed by first allowing the screening sample to warm to approximately room temperature (70° F). The sample is shaken vigorously for several seconds. This procedure breaks up the soil and increases the surface area of the soil particles exposed to the air inside of the jar. The tip of the PID probe is inserted about one inch into the jar through the aluminum foil. The highest value read off of the meter during the first few seconds after inserting the probe tip is recorded as the PID reading for the soil sample.

Because organic compounds have varying ionization potentials, the response of the PID depends on the compounds being ionized. In addition, because the PID responds only to compounds which are present in the vapor phase, the relative volatility is also a factor in the response. As a result, when a variety of VOCs are present in the screening sample, the meter reading does not necessarily indicate the concentrations of any specific VOC, but a response to total VOCs present relative to the concentrations and ionization potential of each compound.

Prior to screening, the meter is zeroed and calibrated to an isobutylene standard per the manufacturer's specifications. All PID readings are reported in PID Instrument Units (IU). The readings are similar to parts per million, using an isobutylene equivalent to address the variability of the response factor. This nomenclature is recommended by the equipment manufacturer and required by the Wisconsin Department of Natural Resources (WDNR) field screening procedures guidance document.

1.3.2 FID Screening

The FID screening procedures are similar to the PID procedures. The sample is warmed and shaken before the FID probe is inserted into the jar. The highest reading is the FID reading recorded for the sample.

The Sensidyne flame ionization detector (FID) is a portable instrument used to measure organic vapors and gasses in the air. The air containing organic vapors is mixed with hydrogen and burned in a hydrogen flame near two high-voltage electrodes. Organic compounds in the gas stream cause an increase in electric current proportional to the concentration. The FID is calibrated with methane, but responds to nearly all volatile compounds containing carbon.

Prior to screening, the FID is calibrated to a methane standard per the manufacturer's specifications. All FID readings are reported in FID Instrument Units. The readings are in parts per million based on the methane standard.

1.4 Soil Classification

The soil samples are preliminary classified in the field, at the time of collection. Drilling notes regarding soil types, drilling conditions, PID screening, depth to water and location of stratigraphic changes are documented on the field boring logs. The soil samples are re-classified in the STS laboratory by a geologist or engineer. Soil classification is based upon the texture and plasticity of the soil, in general accordance with the Unified Soil Classification System (USCS). An abridged version of the USCS and "STS General Notes" are appended. The "STS General Notes" sheet describes nomenclature used on the final boring logs. Additional information regarding the preparation of the final boring logs from field logs and laboratory data is described on the sheets entitled "Field and Laboratory Procedures" and "STS Standard Boring Log Procedures" which are also appended.

The soil stratification indicated on the logs was selected by the geologist/engineer based upon the field log information and sample observations. Stratification lines should be considered as approximate. The transition between soil types in-situ may be gradual in both the horizontal and vertical directions.

1.5 Sample Preservation

Soil samples to be submitted for analytical testing are collected in accordance with standard WDNR protocol. Samples to be tested for polynuclear aromatic hydrocarbons (PAHs) and metals are collected in 4-ounce laboratory provided glass jars. Soil samples to be analyzed for Gasoline Range Organics (GRO), Diesel Range Organics (DRO) and VOCs are described in the following sections.

1.5.1 GRO/VOC Samples

Soil samples to be tested for GRO or VOCs are collected in a similar manner. Each soil sample is weighed immediately after collection. Approximately 25 to 35 grams of soil is placed in a pre-weighed laboratory provided 60-milliliter (ml) vial. A pre-measured amount (25-ml) of laboratory grade methanol is added to the sample. The entire soil sample is covered with the methanol. A separate soil sample is prepared for VOC analysis and GRO analysis. Each sample is labeled with the sample designation, sample date and time, sampler's initials, project No. and preservative added. The sample is placed in a cooler on ice and submitted to the laboratory the same day, if possible. A chain-of-custody is filled out immediately after sample collection and accompanies the samples from time of collection until received at the laboratory. Any notes regarding soil sample collection are included in the field book while in the field.

1.5.2 DRO Samples

Soil samples to be tested for DRO are collected by weighing out approximately 25 to 35 grams of soil and placing the soil sample in a pre-weighed laboratory provided 60-ml vial. No preservative is added to the sample while in the field. However, the sample must be preserved at the laboratory within four days of collection. The samples are labeled and shipped to the laboratory as described in Section 1.5.1.

2.0 WELL INSTALLATION PROCEDURE

Monitoring wells are installed in general accordance with the installation procedures in chapter NR 141 of the Wisconsin Administrative Code (WAC). This section describes the typical well installation procedure, any deviations from this procedure will be discussed in the text of this report.

Groundwater monitoring wells are installed at locations in which a borehole has been advanced using 4-1/4 inch or 6-1/4 inch diameter hollow stem augers. The well materials are placed while the augers are in the ground, and the well material is inserted inside of the hollow stem augers. If the borehole was advanced beyond the depth the well is to be installed, the borehole is backfilled with bentonite chips prior to installing the well materials. The well consists of a two-inch diameter, 10-foot long section of Schedule 40 polyvinyl chloride (PVC) screen threaded onto an end cap. The slot size of the screened portion depends upon the characteristics of the soil, though typically 0.006-slot screen is used in clayey and silty soils and 0.010-slot screen is used in sandy soils. The screened portion is threaded onto 5 or 10 foot sections of two-inch diameter PVC pipe (unscreened) which extends to either the ground surface or to 2.5-feet above the ground surface at locations in which a stick-up well protector is required. A cap fitted with an expandable gasket and a lock is placed on top of the well casing.

The material filling the annular space between the borehole walls and the well casing is poured inside of the augers and the augers are pulled up during placement of the fill material. Approximately 6-inches of fine grained, washed silica sand is placed below the well screen. Silica sand is placed as a filter pack, around the screened portion of the well. The grain size is selected to retain 50% of the surrounding formation. The filter pack is placed from 6-inches below the well to approximately 2-feet above the well screen. Above the filter pack, two feet of fine-grained sand is typically placed. If the depth to groundwater prohibits the placement of two feet of this material, the thickness of this layer is reduced. Above the fine sand, a bentonite seal is placed and consists of a minimum of 2-feet of chipped bentonite or bentonite pellets (again depending upon the depth to groundwater). Bentonite is used to fill the remaining annular space from the top of the seal to the bottom of the protector pipe which is placed at the top of the well to protect the well from damage.

At the top of the bentonite, either a flush mounted or a stick-up protector pipe is installed over the well. Typically, flush mounted protector pipes are used in areas in which a concrete or asphalt surface is present. In some instances, it is necessary to install a flush mounted protector pipe in a gravel traffic area. In these instances, a concrete pad is constructed around the pipe. The flush mounted protector pipe consists of a 10- or 12-inch diameter steel casing, 12-inches in length which is cemented flush with the surrounding concrete or asphalt improvement. The stick-up protector pipe consists of either a 5-foot or a 7-foot steel pipe inserted over the well casing that extends above the ground surface. For PVC wells, the standard stick-up above the ground surface is approximately two feet. The steel protector pipe is installed over the PVC,

with the top at 2.5 feet above the surrounding ground surface (PVC is approximately 6-inches below the top of the protector pipe). The remainder of the protector pipe is installed below ground. No fill material is placed between the well and the protector pipe, to eliminate heaving due to frost. Either bentonite or cement is used around the protector pipe, to secure it in place.

During well installation, a field boring log is completed as outlined in Section 1.4 and WDNR form 4400-113A (monitoring well construction form) are completed in the field. Soil cuttings generated during the advancement of the borehole are handled in accordance with the procedure outlined in Section 5.1. All well material used in the well construction is new and care is taken to prevent contaminating the well material during installation.

Upon completion of the well installation activities, an elevation survey referenced to Mean Sea Level (MSL) or a local benchmark is completed. The elevation of the PVC casing and the ground surface are recorded. This survey information is used to determine the elevation of the groundwater surface and to determine groundwater flow direction at the site.

3.0 GROUNDWATER SAMPLING PROCEDURES

3.1 Well Development

Well development is conducted using either a bailer or a pump. Typically, when it is necessary to remove a large volume of water, or the water is very turbid, a pump is used. If the well is anticipated to bail dry, due to the permeability of the aquifer, a bailer is used.

Prior to developing the well, the water level is measured, using an electronic water level indicator (m-scope). The water level is measured to the nearest 0.01-foot. Each well is developed by surge and purge methods and by removing 10 well volumes of water, calculated using the formula provided in chapter NR 141, WAC. If 10 well volumes of water can not be removed from the well because it bails dry (due to the presence of low permeability soils), the well is slowly purged dry several times or until the turbidity of the water is reduced. WDNR form 4400-113B (monitoring well development form) is completed in the field, during the development activities.

3.2 Groundwater Sampling

3.2.1 Purging

Prior to collection of groundwater samples, the water level is again measured and each well is again purged. If possible, four well volumes of water are removed from the well. If the well bails dry, the stagnant water is removed from the well and the water in the well is allowed to recharge. Time permitting, the well is bailed dry again and allowed to recharge prior to collection of samples.

Typically, wells are purged using a Teflon© bailer or a disposable polyethylene bailer. In some instances, when it is necessary to remove a large volume of water from the well, a pump is used to purge the well. In these instances, a small submersible pump is used to purge the well. The pump and the hosing are decontaminated prior to inserting into the well.

3.2.2 Well Sampling

Typically, wells are sampled using a disposable polyethylene bailer or a Teflon© bailer. In order to minimize disturbance of the water in the well, the bailer is slowly lowered by rope, into the water table. Once the bailer is filled, it is gently brought to the surface and emptied into sample containers.

Duplicate samples and equipment blanks are collected from each site at a minimum of 10% of the total No. of samples collected. This procedure complies with WDNR quality assurance/quality control requirements. The equipment blank is collected at the site by pouring

distilled water through an unused bailer and collecting it in the specific vials required by the analytical method. Each cooler is sent to the laboratory with a trip blank and a temperature blank. The trip blank is prepared by the laboratory by filling a VOC vial with distilled water and sealing the bottle. The bottle remains sealed from time of preparation until it reaches the laboratory. The trip blank follows the samples collected from the site from the time of collections until they reach the analytical laboratory. The water sample contained in the trip blank is analyzed by the laboratory, to verify that the samples were not affected by contaminants during transportation. The temperature blank is used to verify that the samples reached the laboratory at a temperature of 4°C, or less. The blank consists of a water sample in an unspecified type of container. No other analytical tests are performed on this sample.

VOC Sampling - A VOC sampling port is inserted into the bottom of the bailer, to allow for regulation of water flow from the bailer. This allows for minimization of disturbance of the sample.

The water is slowly discharged directly into laboratory provided 40-ml VOC vials containing hydrochloric acid (HCl) preservative. The bottle is filled to a positive meniscus and covered with a cap fitted with a Teflon© septum. The bottle is inverted and gently tapped to verify that air bubbles are not present in the sample. Each bottle is labeled, typically with a label provided by the laboratory, with the well No., sampled No., date, sampler's initials, project No. and preservatives added. After labeling, the samples are placed in a cooler, on ice, for shipment to the analytical laboratory.

GRO Sampling - Water samples to be analyzed for GRO are collected in the same manner as described above. The same quality assurance/quality control labeling and shipping procedures are followed as described in that section.

DRO Sampling - Water samples to be analyzed for DRO are collected using a bailer as described in Section 3.2.2, however, each water sample is discharged directly into 1-liter amber laboratory provided jars that does not contain preservative. The same quality assurance/quality control labeling and shipping procedures are followed as described above.

Metals Sampling - Water samples to be analyzed for total metals are collected from the wells as described in Section 3.2.2, however, a VOC sampling port is not necessary for discharging the water sample into the sample container, since disturbance by air is not a factor which affects sample integrity. The water is discharged from the bailer into a laboratory provided, clean plastic container, prior to filtering.

A filtering apparatus consisting of a disposable 0.045 micron filter fitted with silicon tubing is inserted into a peristaltic pump. The pump draws the water from the plastic container, up through the tubing and the filter and discharges the water out the bottom of the filtering apparatus. The filtered water sample is discharged directly into a 250-ml or 500-ml plastic

laboratory provided bottle, containing nitric acid (NO_3) preservative. The bottle is filled to the neck of the bottle and capped. The bottle is inverted several times to mix the preservative into the sample and the bottle is placed in a cooler on ice for shipment to the laboratory.

3.2.3 In-Field Testing

Typically, several in-field tests are conducted prior to completion of sampling at each well location. These tests include testing the conductivity, pH and temperature of each sample after it is collected. The testing for pH, conductivity and temperature are usually conducted using one instrument that records all three measurements. Various brands of instruments are available and used for conducting this testing. Water color, odor and turbidity are also recorded by the technician in the field, for each sample.

The water sample to be collected for in-field testing is collected at the time of well sampling. The sample is collected after the samples to be laboratory tested are collected and placed in a cooler. The field tested sample is collected using the same bailer used to collect the samples for analytical testing. The water is discharged from the bailer into an 8-ounce clear glass container. The instrument probe is inserted into the water sample and slowly swirled in the water until the instrument equilibrates. The measurements are recorded in a field book. The visual observations noted at this time are recorded in the field book.

3.2.4 Other Samples

Water samples to be tested for parameters other than those discussed in Section 3.0 will be discussed in the detail in the text of the report.

3.3 Rising or Falling Head Slug Test

Field hydraulic conductivity tests are conducted for the newly installed monitoring wells and piezometers. These slug tests are conducted by bailing the wells until they are dry or nearly dry and then allowing the groundwater to recharge into the well (Rising Head). Alternatively, a slug is placed in the well to displace water and the elevated groundwater level is allowed to decrease over time (Falling Head). The rise or fall of the groundwater level over time is measured with an electric water level measuring device. This data is input into a commercial computer program, AQTESOLV, that computes the hydraulic conductivity using the Bouwer and Rice method (1976).

4.0 DECONTAMINATION PROCEDURES

4.1 Drilling

To avoid cross-contamination between borings, the drilling equipment (i.e., augers and rig) is decontaminated using a high pressure hot-water washer after each boring. The downhole sampling equipment is decontaminated using a wash of Alconox© soap and clean water, followed by a rinse with clean water. Equipment is scrubbed with a brush during each step of the decontamination process to remove soil particles which may adhere to the equipment.

4.2 Soil Probes/Hydraulic Probes

To avoid cross-contamination between probe locations, the soil probe rods are decontaminated between each borehole. The decontamination procedure consists of washing the rods with a solution of Alconox© soap and clean water, followed by a clean water rinse. The rods are scrubbed with a brush during each step of the decontamination process to remove any soil particles which may adhere to the equipment.

4.3 Groundwater Sampling

Typically, disposable bailers are used during well sampling. A new bailer is used to sample each well, therefore there is no need to decontaminate downhole equipment between locations. The in-field testing equipment (pH, conductivity and temperature meter and m-scope) are decontaminated between samples using a double rinse of distilled water. The water is containerized with the decontamination water generated during the advancement of the boring/well.

If disposable bailers are not used at the site, the Teflon© bailer is decontaminated using a wash of Alconox© soap and distilled water, followed by a double rinse using distilled water. The bailers are scrubbed with brushes during the washing process and the during the first rinse to remove sediment or other particles which may adhere to the bailer.

New rope and gloves are used at each well location, therefore no decontamination of this equipment is necessary. If sample filters are used (i.e., for metals analysis), a new disposable filter and new tubing are used for each sample.

During hydraulic conductivity testing, all downhole equipment is decontaminated using the double wash procedure (Alconox© wash followed by clean water rinse). In addition, the tests are typically conducted in order from the least contaminated well location to the most contaminated well location.

5.0 WASTE HANDLING PROCEDURES (SITE INVESTIGATION)

5.1 Soil Cuttings

Soil cuttings generated during the advancement of borings are containerized in 55-gallon Department of Transportation (DOT) approved barrels. Each barrel is labeled with the date it was filled, contents (soil cuttings) and telephone No. of the contact or owner. The barrel is sealed with a lid and ring assembly. Depending upon site usage, the barrels either remain adjacent to the boring locations or are placed in secured storage on the site, at a location approved by the owner or operator of the site.

The cuttings remain on-site until disposal options are reviewed and proper disposal arrangements can be made. The cuttings are the responsibility of the owner.

5.2 Decontamination Water

Water generated during the decontamination of field equipment is containerized in 55-gallon DOT approved barrels. Each barrel is labeled with the date it was filled, contents (decon water) and telephone No. of the contact or owner. The location of the barrel and disposal of the contents are handled in the same manner as described in Section 5.1.

5.3 Well Development and Purge Water

Water generated during the development of well(s) and purging of well(s) prior to sampling, was discharged to the sanitary sewer system.

STS Standard Boring Log Procedures

STS CONSULTANTS, LTD.

In the process of obtaining and testing samples and preparing this report, standard procedures are followed regarding field logs, laboratory data sheets and samples.

Field logs are prepared during performance of the drilling and sampling operations and are intended to essentially portray field occurrences, sampling locations and procedures.

Samples obtained in the field are frequently subjected to additional testing and reclassification in the laboratory by more experienced soil engineers, and differences between the field logs and the final logs may exist.

The engineer preparing the report reviews the field and laboratory logs, classifications and test data, and using judgment and experience in interpreting this data, may make further changes.

Samples taken in the field, some of which are later subjected to laboratory tests, are retained in our laboratory for sixty days and are then destroyed unless special disposition is requested by our client. Samples retained over a long period of time, even in sealed jars, are subject to moisture loss which changes the apparent strength of cohesive soil, generally increasing the strength from what was originally encountered in the field. Since they are then no longer representative of the moisture conditions initially encountered, observers of these samples should recognize this factor.

It is common practice in the geotechnical engineering profession that field logs and laboratory data sheets not included in engineering reports, because they do not represent the engineer's final opinions as to appropriate descriptions for conditions encountered in the exploration and testing work. On the other hand, we are aware that perhaps certain contractors and subcontractors submitting bids or proposals on work might have an interest in studying these documents before submitting a bid or proposal. For this reason, the field logs are retained in our office for review by all contractors submitting a bid or proposal. We would welcome the opportunity to explain any changes that have been and typically are made in the preparation of our final reports, to the contractor or subcontractors, before the firm submits its bid or proposal, and to describe how the information was obtained to the extent the contractor or subcontractor wishes. Results of laboratory tests are generally shown on the boring logs or are described in the text of the report, as appropriate.

The descriptive terms and symbols used on the logs are described on the attached sheet, entitled: "General Notes".

STS CONSULTANTS, LTD.

DRILLING & SAMPLING SYMBOLS:

SS : Split Spoon-1 3/8" I.D., 2" O.D. Unless otherwise noted
ST : Shelby Tube-2" O.D., Unless otherwise noted
PA : Power Auger
DB : Diamond Bit-NX, BX, AX
AS : Auger Sample
JS : Jar Sample
VS : Vane Shear
OS : Osterberg Sampler-3" Shelby Tube
HS : Hollow Stem Auger
WS : Wash Sample
FT : Fish Tail
RB : Rock Bit
BS : Bulk Sample
PM : Pressuremeter Test, In-Situ
GS : Giddings Sampler

Standard "N" Penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2 inch O.D. split spoon sampler, except where otherwise noted.

WATER LEVEL MEASUREMENT SYMBOLS:

WL : Water Level
WS : While Sampling
WD : While Drilling
AB : After Boring
WCI : Wet Cave In
DCI : Dry Cave In
BCR : Before Casing Removal
ACR : After Casing Removal

Water levels indicated on the boring logs are the levels measured in the boring at the times indicated. In pervious soils, the indicated elevations are considered reliable groundwater levels. In impervious soils, the accurate determination of groundwater elevations may not be possible, even after several days of observations; additional evidence of groundwater elevations must be sought.

GRADATION DESCRIPTION & TERMINOLOGY:

Coarse Grained or Granular Soils have more than 50% of their dry weight retained on a #200 sieve; they are described as: boulders, cobbles, gravel or sand. Fine Grained soils have less than 50% of their dry weight retained on a #200 sieve; they are described as: clays or clayey silts if they are cohesive and silts if they are non-cohesive. In addition to gradation, granular soils are defined on the basis of their relative in-place density and fine grained soils on the basis of their strength or consistency and their plasticity.

Major Component Of Sample	Size Range	Description Of Components Also Present in Sample	Percent Of Dry Weight
Boulders	Over 8 in. (200 mm)	Trace	1-9
Cobbles	8 inches to 3 inches (200 mm to 75 mm)	Little	10-19
Gravel	3 inches to #4 sieve (75 mm to 4.76 mm)	Some	20-34
Sand	#4 to #200 sieve (4.76 mm to 0.074 mm)	And	35-50
Silt	Passing #200 sieve (0.074 mm to 0.005 mm)		
Clay	Smaller than 0.005 mm		

CONSISTENCY OF COHESIVE SOILS:

Unconfined Compressive Strength, Qu, tsf	Consistency
0.25	Very Soft
0.25-0.49	Soft
0.50-0.99	Medium (Firm)
1.00-1.99	Stiff
2.00-3.99	Very Stiff
4.00-8.00	Hard
>8.00	Very Hard

RELATIVE DENSITY OF GRANULAR SOILS:

N-Blows per ft.	Relative Density
0-3	Very Loose
4-9	Loose
10-29	Medium Dense
30-49	Dense
50-80	Very Dense
>80	Extremely Dense

STS Soil Classification System

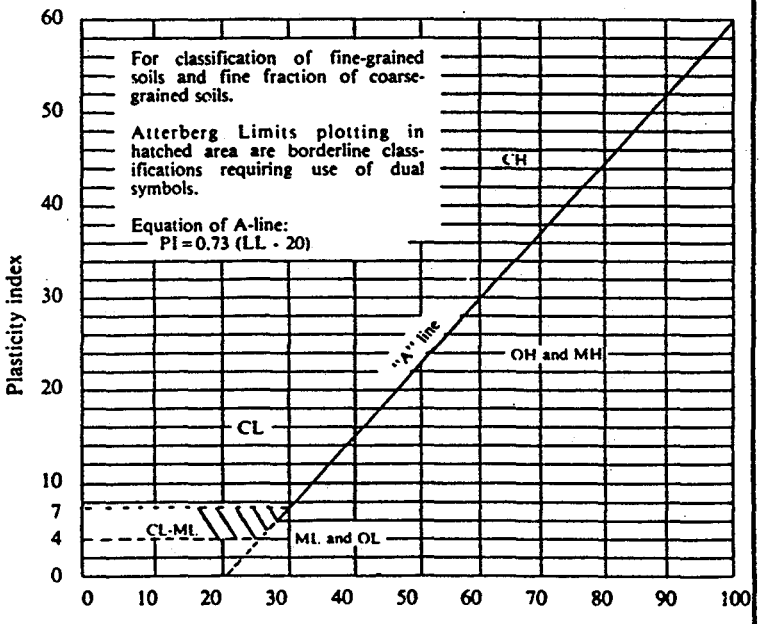
UNIFIED SOIL CLASSIFICATION

Major Divisions			Group symbols	Typical names	Laboratory classification criteria
Coarse-grained soils (More than half of material is *larger* than No. 200 sieve size)	Gravels (More than half of coarse fraction larger than No. 4 sieve size)	Clean gravels (Little of no fines)	GW	Well-grades gravels, gravel-sand mixtures, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{10})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW
		Gravels with fines (Appreciable amount of fines)	GM d / u	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4
			GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{10})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW
		Sands with fines (Appreciable amount of fines)	SM d / u	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4
			SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7
Fine-grained soils (More than half of material is *smaller* than No. 200 sieve)	Silts and clays (Liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
			OL	Organic silts and organic silty clays of low plasticity	
	Silts and clays (Liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
			CH	Inorganic clays of high plasticity, fat clays	
			OH	Organic clays of medium to high plasticity, organic silts	
	Highly organic soils		Pt	Peat and other highly organic soils	

Determine percentages of sand and gravel from grain-size curve.
Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:
Less than 5 per cent ..... GW, GP, SW, SP
More than 12 per cent ..... GM, GC, SM, SC
5 to 12 per cent ..... *Borderline* cases requiring dual symbols

Above "A" line with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols

Limits plotting in hatched zone with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols



Plasticity Chart

APPENDIX B

Soil Probe Boring Logs and Borehole Abandonment Forms

State of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste
☐ Emergency Response
☐ Wastewater
☐ Haz. Waste
☐ Underground Tanks
☐ Water Resources
☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 7-91

85149XA

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
USH 151 - Former Susie's Restaurant		*GP-13*

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
Northshore Environmental	*6/5/97*	*6/5/97*	*GeoProbe*

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Water Level	Surface Elevation	Borehole Diameter
			8.5 Feet	*195.3*	*2.0 inches*

Boring Location State Plane	Lat Long	Local Grid Location (if applicable)
NE 1/4 of SE 1/4 of Section 25, T 19 N, R 23 E		*Feet S* *Feet W*

County	DNR County Code	Civil Town/City/ or Village
Manitowoc	*36*	*City of Manitowoc*

Sample Number	Sample Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plastic Limit	Soil Properties: P 200	RQD/ Comments
				Asphalt	GP									
1	22		2.5	Fill: Base coarse				0.2						
2	24			Medium sand, some silt-brown-moist to wet at 8.5 feet				0.7						
3	24		5					0.4						
4	24		7.5		SM			1.2						
5	24		10					0.8						
6	24		12.5					0.6						
7	6			Medium sand-brown-wet	SP			1.2						
7A	18		15	Silty clay, trace fine to coarse sand-grey-moist-very stiff				7.7	0.75					
8	22				CL			0.1	2.75					
9	24		17.5					0.1	2.75					
			20	END OF BORING Boring advanced to 19.0 feet by GeoProbe. Temporary well installed to 19.0 feet on 6/5/97. Boring backfilled with bentonite. Water level taken while probing. Site specific elevation benchmark.										
			22.5											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *Suzanne Mercurio* Firm *STS Consultants*

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than $10 nor more than $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

State of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste
☐ Emergency Response
☐ Wastewater
☐ Haz. Waste
☐ Underground Tanks
☐ Water Resources
☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 7-91

85149XA

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
USH 151 – Former Susie's Restaurant		*GP-14*

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
Northshore Environmental	*6/5/97*	*6/5/97*	*GeoProbe*

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Water Level	Surface Elevation	Borehole Diameter
			9 Feet	*195.5*	*2.0 inches*

Boring Location State Plane	Lat Long	Local Grid Location (if applicable)
NE 1/4 of SE 1/4 of Section 25, T 19 N, R 23 E		*Feet S* *Feet W*

County	DNR County Code	Civil Town/City/ or Village
Manitowoc	*36*	*City of Manitowoc*

Sample Number	Sample Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
				Concrete and base coarse										
1	12		2.5	Fill: 2 inches silt over medium sand-brown-moist	SP			0.1						
2	12		5	Fine to coarse sand, some silt, trace gravel-brown-moist-possible fill	SP			0.1						
3	24			Medium sand, trace silt-brown-moist to wet at 9 feet				0.1						
4	24		7.5		SP			0						
5	10							0.1						
5A	12		10	Silty clay, trace fine to coarse sand, some gravel-grey-moist-stiff to very stiff				0	1.25					
6	24		12.5					0	2					
7					CL			0	2.75					
8	24		15					0	2.75					
9	22		17.5					0	1.75					
			20	END OF BORING Boring advanced to 19.0 feet by GeoProbe. Temporary well installed to 19.0 feet on 6/5/97. Boring backfilled with bentonite. Water level taken while probing. Site specific elevation benchmark.										
			22.5											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Suzanne Muraweski Firm: STS Consultants

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than $10 nor more than $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

State of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 7-91

85149XA

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
USH 151 - Former Susie's Restaurant		GP-15

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
Northshore Environmental	6/5/97	6/5/97	GeoProbe

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Water Level	Surface Elevation	Borehole Diameter
			7 Feet	195.1	2.0 inches

Boring Location	Lat	Local Grid Location (if applicable)
State Plane NE 1/4 of SE 1/4 of Section 25, T 19 N, R 23 E	Long	Feet S Feet W

County	DNR County Code	Civil Town/City/ or Village
Manitowoc	36	City of Manitowoc

Sample Number	Sample Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
				Concrete and base coarse										
1	24		2.5	Fill: Silt with sand and gravel-brown-moist	ML			0.1						
2	24		5	Medium sand, trace silt-brown-moist to wet at 7 feet	SP			0.1						
3	24							0.3						
4	12		7.5	Petroleum Odor				604						
4A	12			Silty clay, trace fine to coarse sand-reddish brown-moist-stiff				25	1.5					
5	12		10					117	1.75					
6	24		12.5					92	1.5					
7	24				CL			60	1.5					
8	24		15					10	1.75					
9	24		17.5					1.2	2					
			20	END OF BORING Boring advanced to 19.0 feet by GeoProbe. Temporary well installed to 19.0 feet on 6/5/97. Boring backfilled with bentonite. Water level taken while probing, Site specific elevation benchmark.										
			22.5											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
Suzanne Murawski	STS Consultants

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than $10 nor more than $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

State of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste
☐ Emergency Response
☐ Wastewater
☐ Haz. Waste
☐ Underground Tanks
☐ Water Resources
☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 7-91

85149XA

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
USH 151 - Former Susie's Restaurant		*GP-16*

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
Northshore Environmental	*6/5/97*	*6/5/97*	*GeoProbe*

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Water Level	Surface Elevation	Borehole Diameter
			7 to 7.5 Feet	*194.0*	*2.0 inches*

Boring Location State Plane	Lat Long	Local Grid Location (if applicable)
NE 1/4 of SE 1/4 of Section 25, T 19 N, R 23 E		*Feet S* *Feet W*

County	DNR County Code	Civil Town/City/ or Village
Manitowoc	*36*	*City of Manitowoc*

Sample Number	Sample Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plastic Limit	Soil Properties: P 200	RQD/ Comments
				Topsoil										
1	12		2.5	Fill: Silty sand-brown-moist	SM			0.8						
2	24		5	Medium sand, some silt-brown-moist	SP			21						
3	24							7						
4	6		7.5	Fine to coarse silty sand and gravel-brown-wet	SM			0.8						
4A	18			Silty clay, trace fine to coarse sand-reddish brown-moist-stiff				0.8	1.25					
5	18		10					0.3	1.25					
6	14		12.5					0	1.75					
7	18				CL			0	2					
8	24		15					0	1.5					
9	18		17.5					0	1					
			20	END OF BORING Boring advanced to 19.0 feet by GeoProbe. Temporary well installed to 19.0 feet on 6/5/97. Boring backfilled with bentonite. Water level taken while probing. Site specific elevation benchmark.										
			22.5											

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Signature: Suzanne Muraweski Firm: STS Consultants

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State of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 7-91

85149XA

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
USH 151 - Former Susie's Restaurant		*GP-17*

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
Northshore Environmental	*6/6/97*	*6/6/97*	*GeoProbe*

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Water Level	Surface Elevation	Borehole Diameter
			17.5/dry Feet	*196.6*	*2.0 inches*

Boring Location State Plane	Lat Long	Local Grid Location (if applicable)
NE 1/4 of SE 1/4 of Section 25, T 19 N, R 23 E		*Feet S* *Feet W*

County	DNR County Code	Civil Town/City/ or Village
Manitowoc	*36*	*City of Manitowoc*

Sample Number	Sample Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
				Topsoil										
1	22		2.5	Fill: Silty medium sand-brown-moist	SP			0						
2	8		5					0.1						
3	17			Silty clay, trace fine to coarse sand-reddish brown to grey at 10 feet-moist-stiff to very stiff	CL			0	1.75					
4	18		7.5					0	2					
5	24		10					0	2					
6	24		12.5					0	3					
7	24			Silt with clay, trace fine to coarse sand-brown-moist	ML			0.1						
8	24		15					0.1						
9	6		17.5	Medium silty sand-brown-wet	SM			0.1						
10	18			Silt with clay-grey-wet-stiff	ML			0.1	1.0					
			20	END OF BORING Boring advanced to 19.0 feet by GeoProbe. Temporary well installed to 19.0 feet on 6/5/97. Boring backfilled with bentonite. Water level taken while probing. Site specific elevation benchmark.											
			22.5											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
Suzanne Musawski	STS Consultants

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State of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste
☐ Emergency Response
☐ Wastewater
☐ Haz. Waste
☐ Underground Tanks
☐ Water Resources
☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 7-91

85149XA

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
USH 151 - Former Susie's Restaurant		*GP-18*

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
Northshore Environmental	*6/6/97*	*6/6/97*	*GeoProbe*

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Water Level	Surface Elevation	Borehole Diameter
			9 Feet	*199.0*	*2.0 inches*

Boring Location State Plane	Lat Long	Local Grid Location (if applicable)
NE 1/4 of SE 1/4 of Section 25, T 19 N, R 23 E		*Feet S* *Feet W*

County	DNR County Code	Civil Town/City/ or Village
Manitowoc	*36*	*City of Manitowoc*

Sample Number	Sample Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
				Topsoil										
1	24		2.5	Fill: Medium sand-brown-moist	SP			0						
2	24		5	Fill: Silty clay, trace fine to coarse sand, concrete pieces from 5 to 7 feet-reddish brown-moist-stiff	CL			0	1					
3	24							0	1					
4	24		7.5	Possible fill: Silty clay with sandy silt in the tip of the probe-reddish brown-moist to wet at 9 feet	CL			0	.75					
5	24		10	Medium sand, trace silt-brown-wet	SP			0						
6	18							0						
6A	6		12.5	Silty clay, trace fine to coarse sand-reddish brown to grey-moist-stiff	CL			0	1					
7	24							0						
8	24		15	Silty clay, trace fine to coarse sand-grey-moist	CL			0						
9			17.5	No recovery				0						
			20	END OF BORING Boring advanced to 19.0 feet by GeoProbe. Temporary well installed to 19.0 feet on 6/5/97. Boring backfilled with bentonite. Water level taken while probing. Site specific elevation benchmark.										
			22.5											

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Signature	Firm
Suzanne Muraweski	STS Consultants

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tate of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 7-91

85149XA

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
USH 151 - Former Susie's Restaurant		GP-19

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
Northshore Environmental	6/5/97	6/5/97	GeoProbe

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Water Level	Surface Elevation	Borehole Diameter
			11 Feet	200.8	2.0 inches

Boring Location State Plane	Lat Long	Local Grid Location (if applicable)
NE 1/4 of SE 1/4 of Section 25, T 19 N, R 23 E		Feet S Feet W

County	DNR County Code	Civil Town/City/ or Village
Manitowoc	36	City of Manitowoc

Sample Number	Sample Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
				Concrete and base coarse										
1	24		2.5	Fill: Medium sand-brown-moist	SP			0						
2	22			Fine to coarse sand, trace silt-brown-moist	SP			0.1						
3			5	No recovery										
4	24		7.5	Medium sand, coarse sand from 13 to 15 feet, trace silt-brown-moist to wet at 11 feet				0.2						
5	24		10					0						
6					SP			0						
7	24		12.5					01						
8	2		15					0						
9	24		17.5	Silty clay, trace fine to coarse sand-grey-moist-very stiff	CL			0	3					
			20	END OF BORING Boring advanced to 19.0 feet by GeoProbe. Temporary well installed to 19.0 feet on 6/5/97. Boring backfilled with bentonite. Water level taken while probing. Site specific elevation benchmark.										
			22.5											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Suzanne Muraweski Firm: STS Consultants

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State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 8-89

Well abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Adm. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Manitowoc

NE 1/4 of SE 1/4 of Sec. 25 ; T. 19 N. R. 23 ☒ E ☐ W

(If applicable) _____ Gov't Lot _____ Grid Number

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name: Manitowoc

Street Address of Well: Custer St and S. 26th St.

City, Village: Manitowoc

(2) FACILITY NAME

Original Well Owner (If Known): WDOT

Present Well Owner: WDOT

Street or Route: 944 Vanderperren Way

City, State, Zip Code: Green Bay WI 54303

Facility Well No. and/or Name (If Applicable): GP-13

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment: Soil Probe

Date of Abandonment: 6-5-97

WELL/DRILLHOLE/BOREHOLE INFORMATION

Original Well/Drillhole/Borehole Construction Completed On (Date): 6-5-97

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☐ Yes ☐ No

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (Specify) Geo Probe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) _____ (From groundsurface) Casing Diameter (ins.) _____

Casing Depth (ft.) _____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) _____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☐ No	

If No, Explain _____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☐ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☐ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Bentonite	Surface	19		

Comments: Soil Sampling

Name of Person or Firm Doing Sealing Work: North Shore Environmental

Signature of Person Doing Work | Date Signed

Street or Route: Fulton Dr. | Telephone Number: ( )

City, State, Zip Code: Germantown WI

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | District/County

Reviewer/Inspector

Follow-up Necessary

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B

Rev. 8-89

Well abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Adm. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Manitowoc

NE 1/4 of SE 1/4 of Sec. 25 : T. 19 N R. 23 ☒ E ☐ W

(If applicable) _____ Gov't Lot _____ Grid Number

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name: Manitowoc

Street Address of Well: Custer St and S. 26th St.

City, Village: Manitowoc

(2) FACILITY NAME

Original Well Owner (If Known): WDOT

Present Well Owner: WDOT

Street or Route: 944 Vanderperren Way

City, State, Zip Code: Green Bay WI 54303

Facility Well No. and/or Name (If Applicable): GP-14

WI Unique Well No.: _ _ _ _ _

Reason For Abandonment: Soil Probe

Date of Abandonment: 6-5-97

WELL/DRILLHOLE/BOREHOLE INFORMATION

Original Well/Drillhole/Borehole Construction Completed On (Date) 6-5-97

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☐ Yes ☐ No

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (Specify) Geo Probe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) _____ (From groundsurface) Casing Diameter (ins.) _____

Casing Depth (ft.) _____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) _____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☐ No	

If No, Explain _____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☐ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☐ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Bentonite	Surface	19		

Comments: Soil Sampling

Name of Person or Firm Doing Sealing Work: North Shore Environmental

Signature of Person Doing Work | Date Signed

Street or Route: Fulton Dr. | Telephone Number ( )

City, State, Zip Code: Germantown WI

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | District/County

Reviewer/Inspector

Follow-up Necessary

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 8-89

I abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. [redacted]n. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Manitowoc

NE 1/4 of SE 1/4 of Sec. 25 ; T. 19 N R. 23 ☒ E ☐ W

[redacted]f applicable) _____ Gov't Lot _____ Grid Number

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

[redacted]ivil Town Name: Manitowoc

[redacted]Street Address of Well: Custer St and S. 26th St.

[redacted]City, Village: Manitowoc

(2) FACILITY NAME

Original Well Owner (If Known): WDOT

Present Well Owner: WDOT

Street or Route: 944 Vanderperren Way

City, State, Zip Code: Green Bay WI 54303

Facility Well No. and/or Name (If Applicable): GP-15

WI Unique Well No.: _ _ _ _ _

Reason For Abandonment: Soil Probe

Date of Abandonment: 6-5-97

[redacted]L/DRILLHOLE/BOREHOLE INFORMATION

[redacted]Original Well/Drillhole/Borehole Construction Completed On [redacted]Date) 6-5-97

[redacted] Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☐ Yes ☐ No

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (Specify) Geo Probe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) _____ Casing Diameter (ins.) _____
[redacted]From groundsurface)

[redacted]Casing Depth (ft.) _____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) _____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☐ No	

If No, Explain _____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☐ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☐ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Bentonite	Surface	19		

Comments: Soil Sampling

[redacted]Name of Person or Firm Doing Sealing Work: North Shore Environmental

[redacted]Signature of Person Doing Work | Date Signed

[redacted]Street or Route: Fulton Dr. | Telephone Number: ( )

[redacted]City, State, Zip Code: Germantown WI

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | District/County

Reviewer/Inspector

Follow-up Necessary

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 8-89

Abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Adm. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: NE 1/4 of SE 1/4 of Sec. 25 ; T. 19 N R. 23 ☒ E ☐ W

(If applicable) _____ Gov't Lot _____ Grid Number

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name: Manitowoc

Street Address of Well: Custer St and S. 26th St.

City, Village: Manitowoc

County: Manitowoc

(2) FACILITY NAME

Original Well Owner (If Known): WDOT

Present Well Owner: WDOT

Street or Route: 944 Vanderperren Way

City, State, Zip Code: Green Bay WI 54303

Facility Well No. and/or Name (If Applicable): GP-16

WI Unique Well No.: _ _ _ _ _

Reason For Abandonment: Soil Probe

Date of Abandonment: 6-5-97

WELL/DRILLHOLE/BOREHOLE INFORMATION

Original Well/Drillhole/Borehole Construction Completed On (Date): 6-5-97

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☐ Yes ☐ No

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (Specify) Geo Probe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) (From groundsurface) _____ Casing Diameter (ins.) _____

Casing Depth (ft.) _____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) _____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☐ No	

If No, Explain _____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☐ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☐ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Bentonite	Surface	19		

Comments: Soil Sampling

Name of Person or Firm Doing Sealing Work: North Shore Environmental

Signature of Person Doing Work | Date Signed

Street or Route: Fulton Dr. | Telephone Number ( )

City, State, Zip Code: Germantown WI

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | District/County

Reviewer/Inspector

Follow-up Necessary

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B

Rev. 8-89

abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Adm. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Manitowoc

NE 1/4 of SE 1/4 of Sec. 25 : T. 19 N. R. 23 ☒ E ☐ W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name: Manitowoc

Street Address of Well: Custer St and S. 26th St.

City, Village: Manitowoc

(2) FACILITY NAME

Original Well Owner (If Known): WDOT

Present Well Owner: WDOT

Street or Route: 944 Vanderperren Way

City, State, Zip Code: Green Bay WI 54303

Facility Well No. and/or Name (If Applicable): GP-17

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment: Soil Probe

Date of Abandonment: 6-6-97

WELL/DRILLHOLE/BOREHOLE INFORMATION

Original Well/Drillhole/Borehole Construction Completed On (Date) 6-6-97

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☐ Yes ☐ No

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (Specify) Geo Probe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) _____ (From groundsurface) Casing Diameter (ins.) _____

Casing Depth (ft.) _____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) _____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☐ No	

If No, Explain _____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☐ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☐ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Bentonite	Surface	19		

Comments: Soil Sampling

Name of Person or Firm Doing Sealing Work: North Shore Environmental

Signature of Person Doing Work | Date Signed

Street or Route: Fulton Dr. | Telephone Number: ( )

City, State, Zip Code: Germantown WI

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | District/County

Reviewer/Inspector

Follow-up Necessary

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 8-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: County: Manitowoc

NE 1/4 of SE 1/4 of Sec. 25 : T. 19 N R. 23 ☒ E ☐ W

(If applicable) _____ Gov't Lot _____ Grid Number

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name: Manitowoc

Street Address of Well: Custer St and S. 26th St.

City, Village: Manitowoc

(2) FACILITY NAME

Original Well Owner (If Known): WDOT

Present Well Owner: WDOT

Street or Route: 944 Vanderperren Way

City, State, Zip Code: Green Bay WI 54303

Facility Well No. and/or Name (If Applicable): GP-18

WI Unique Well No.: _ _ _ _ _

Reason For Abandonment: Soil Probe

Date of Abandonment: 6-6-97

WELL/DRILLHOLE/BOREHOLE INFORMATION

Original Well/Drillhole/Borehole Construction Completed On (Date): 6-6-97

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☐ Yes ☐ No

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (Specify) Geo Probe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) _____ Casing Diameter (ins.) _____
(From groundsurface)

Casing Depth (ft.) _____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) _____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☐ No	

If No, Explain _____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☐ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☐ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Bentonite	Surface	19		

Comments: Soil Sampling

Name of Person or Firm Doing Sealing Work: North Shore Environmental

Signature of Person Doing Work | Date Signed

Street or Route: Fulton Dr. | Telephone Number: ( )

City, State, Zip Code: Germantown WI

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | District/County

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Follow-up Necessary

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B

Rev. 8-89

ll abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. dmin. Code, whichever is applicable. Also, see instructions on back.

GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Manitowoc

NE 1/4 of SE 1/4 of Sec. 25 ; T. 19 N R. 23 ☒ E ☐ W

(If applicable) Gov't Lot ____ Grid Number ____

Grid Location ____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name: Manitowoc

Street Address of Well: Custer St and S. 26th St.

City, Village: Manitowoc

(2) FACILITY NAME

Original Well Owner (If Known): WDOT

Present Well Owner: WDOT

Street or Route: 944 Vanderperren Way

City, State, Zip Code: Green Bay WI 54303

Facility Well No. and/or Name (If Applicable): GP-19

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment: Soil Probe

Date of Abandonment: 6-5-97

WELL/DRILLHOLE/BOREHOLE INFORMATION

Original Well/Drillhole/Borehole Construction Completed On

(Date) 6-5-97

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☐ Yes ☐ No

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (Specify) Geo Probe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) ____ Casing Diameter (ins.) ____
(From groundsurface)

Casing Depth (ft.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☐ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☐ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Bentonite	Surface	19		

Comments: Soil Sampling

Name of Person or Firm Doing Sealing Work: North Shore Environmental

Signature of Person Doing Work | Date Signed

Street or Route: Fulton Dr. | Telephone Number ( )

City, State, Zip Code: Germantown WI

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | District/County

Reviewer/Inspector

Follow-up Necessary

APPENDIX C

Drum Inventory

NON-HAZARDOUS WASTE DRUM INVENTORY

Wisconsin Department of Transportation
Division of Highways

DT1229 94

(For use with DT1208)

District:	3
Project ID:	4100-09-00
Site Name:	Susie's Restaurant / USH 151

Consultant Company:	STS Consultants Ltd.
Consultant Contact:	Sue Murawski
Contact Phone:	(414) 359 3030
Consultant's ID for this site:	85308XA

Generation date: 6 / 5 / 97 (Mo/Day/Yr)

Drum Number 1 of 1 Drums for this site

Contents: SOIL / (WATER) (circle one)

Phase of investigation: 2 (2½) 3 4 (circle one)

Lab Results: (report units for all results)

Boring Number	Sample depth or sample number ** Report only the highest results for each boring	Compound	Results	Units	Groundwater		Soils	
					E.S.	P.A.L.	RCL	RCLg
MW North	Water	Chloroform	1.1	ppb	6	0.6		
		Cis 12 DCE	25		70	7		
		Vinyl Chloride	2.6		0.2	0.02		
		PCE	4.7		5	0.5		
		TCE	3.9		5	0.5		
MW South	Water	Bromodichloromethane	1.2		0.6	0.06		
		Chloroform	8.2		6	0.6		

Drum Location: (attach map or provide site sketch on reverse)

DEPARTMENT OF TRANSPORTATION ENVIRONMENTAL COORDINATORS

DISTRICT 1
Linda Olver
2101 Wright Street
Madison, WI 53704-2583
PH: (608) 242-8001
FAX: (608) 246-5380

DISTRICT 2
Ken Wade
141 NW Barstow Street
Waukesha, WI 53188-3789
PH: (414) 548-6733
FAX: (414) 521-5357

DISTRICT 3
Rebecca Burkel
944 Vanderperren Way
P.O. Box 28080
Green Bay, WI 53404-0080
PH: (414) 492-5655
FAX: (414) 492-5640

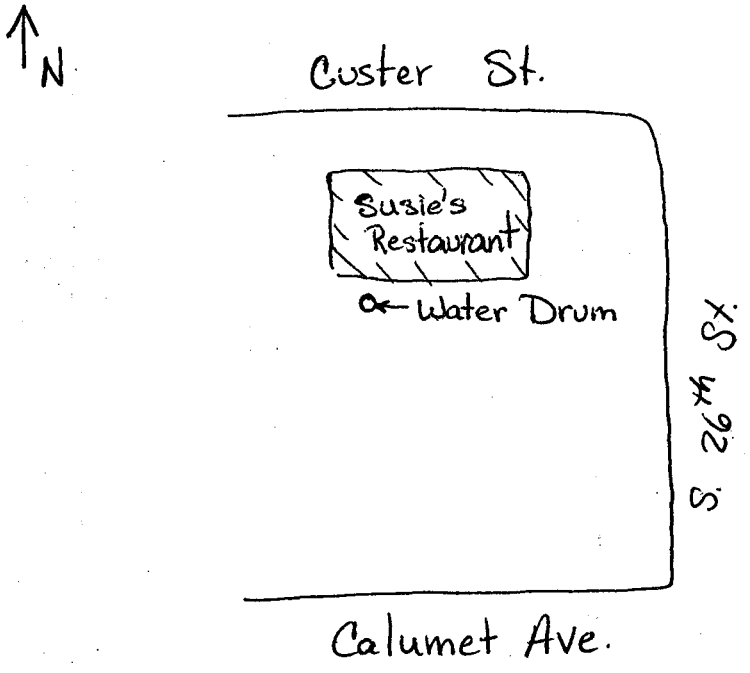
DISTRICT 4
Ted Johnson
1681 Second Ave, South
P.O. Box 8021
Wisconsin Rapids, WI 54494-8021
PH: (715) 421-8089
FAX: (715) 423-0334

DISTRICT 5
Bob Swartz
3550 Mormon Coulee Road
P.O. Box 337
La Crosse, WI 54602-0337
PH: (608) 789-4611
FAX: (608) 785-9969

DISTRICT 6
Bob Effinger
718 W. Clairemont Ave.
Eau Claire, WI 54701-5108
PH: (715) 836-3922
FAX: (715) 836-2807

DISTRICT 7
Gary Nelson
Hanson Lake Road
P.O. Box 777
Rhinelander, WI 54501-0777
PH: (715) 365-5779
FAX: (715) 365-5780

DISTRICT 8
Marc Hershfield
1701 N. 4th St.
P.O. Box 429
Superior, WI 54880-0429
PH: (715) 392-7834
FAX: (715) 392-7863



Copies of this form are available on 3.5" disk in Word Perfect 5.1 format from the Office of Environmental Analysis
Submit one copy of this form to: DOT- OEA attn: Shar Te Beest, P.O. Box 7916, Madison, WI 53707-7916
Submit one copy of this form to the District Environmental Coordinator (See list above)
Submit one copy of this form as the final appendix in the report for this site.

NOVA Environmental Laboratory
8222 W. Calumet Rd., Milwaukee, WI 53223
Phone: (414) 355-5800 Fax: (414) 355-3099

ORGANIC REPORT

WDNR# 241340550

BATCH NUMBER: 970439
DATE REPORTED: 13-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Compound	Result	Units	LOD	LOQ	PAL	Dil	RQ	Method	Analyst	Date Anal
Sample Number: 6008				QC Prep Batch Number:	971059		*Sample analyzed within*	*6 Day(s)*	*from collection.*	
Client ID: North Well	Sample Description:						*Collection:*	*6/5/97*	*Time:*	*04:00*
1,1,1,2-Tetrachloroethane	<0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
1,1,1-Trichloroethane	<0.8	ug/l	0.8	2.6	40	1		8260	srh	6/11/97
1,1,2,2-Tetrachloroethane	<0.2	ug/l	0.2	0.6	0.02	1		8260	srh	6/11/97
1,1,2-Trichloroethane	<0.2	ug/l	0.2	0.6	0.5	1		8260	srh	6/11/97
1,1-Dichloroethane	<0.8	ug/l	0.8	2.4	85	1		8260	srh	6/11/97
1,1-Dichloroethene	<0.3	ug/l	0.3	1.1	0.7	1		8260	srh	6/11/97
1,1-Dichloropropene	<0.8	ug/l	0.8	2.4	ns	1		8260	srh	6/11/97
1,2,3-Trichlorobenzene	<0.3	ug/l	0.3	1	ns	1		8260	srh	6/11/97
1,2,3-Trichloropropane	<0.6	ug/l	0.6	1.7	ns	1		8260	srh	6/11/97
1,2,4-Trichlorobenzene	<0.5	ug/l	0.5	1.6	14	1		8260	srh	6/11/97
1,2,4-Trimethylbenzene	<0.5	ug/l	0.5	1.5	ns	1		8260	srh	6/11/97
1,2-Dibromoethane	<0.2	ug/l	0.2	0.5	0.005	1		8260	srh	6/11/97
1,2-Dichlorobenzene	<0.4	ug/l	0.4	1.3	60	1		8260	srh	6/11/97
1,2-Dichloroethane	<0.3	ug/l	0.3	0.9	0.5	1		8260	srh	6/11/97
1,2-Dichloropropane	<0.2	ug/l	0.2	0.5	0.5	1		8260	srh	6/11/97
1,3,5-Trimethylbenzene	<0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
1,3-Dichlorobenzene	<0.4	ug/l	0.4	1.1	125	1		8260	srh	6/11/97
1,3-Dichloropropane	<0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
1,4-Dichlorobenzene	<0.4	ug/l	0.4	1.2	15	1		8260	srh	6/11/97
12Dibromo-3-chloropropan	<0.8	ug/l	0.8	2.5	0.02	1		8260	srh	6/11/97
2,2-Dichloropropane	<0.6	ug/l	0.6	1.9	ns	1		8260	srh	6/11/97
2-Butanone (MEK)	<2.8	ug/l	2.8	8.8	90	1		8260	srh	6/11/97
2-Chloroethyl Vinyl Ether	<0.8	ug/l	0.8	2.4	ns	1		8260	srh	6/11/97
2-Chlorotoluene	<0.4	ug/l	0.4	1.3	ns	1		8260	srh	6/11/97
4-Chlorotoluene	<0.3	ug/l	0.3	1.1	ns	1		8260	srh	6/11/97
4-Methyl-2-Pentanone	<0.8	ug/l	0.8	2.4	50	1		8260	srh	6/11/97
Acetone	<3.9	ug/l	3.9	12	200	1		8260	srh	6/11/97
Benzene	<0.3	ug/l	0.3	0.8	0.5	1		8260	srh	6/11/97
Bromobenzene	<0.2	ug/l	0.2	0.8	ns	1		8260	srh	6/11/97
Bromochloromethane	<0.5	ug/l	0.5	1.5	ns	1		8260	srh	6/11/97
Bromodichloromethane	<0.06	ug/l	0.06	0.2	0.06	1		8260	srh	6/11/97
Bromoform	<0.4	ug/l	0.4	1.2	0.44	1		8260	srh	6/11/97
Bromomethane	<0.4	ug/l	0.4	1.3	1	1		8260	srh	6/11/97
Carbon tetrachloride	<0.2	ug/l	0.2	0.7	0.5	1		8260	srh	6/11/97
Chlorobenzene	<0.4	ug/l	0.4	1.4	20	1		8260	srh	6/11/97
Chloroethane	<1.4	ug/l	1.4	4.5	80	1		8260	srh	6/11/97
Chloroform	1.1	ug/l	0.2	0.6	0.6	1		8260	srh	6/11/97
Chloromethane	<0.6	ug/l	0.6	1.7	0.3	1		8260	srh	6/11/97
cis-1,2-Dichloroethene	25	ug/l	0.6	2	7	1		8260	srh	6/11/97

NOVA Environmental Laboratory
8222 W. Calumet Rd., Milwaukee, WI 53223
Phone: (414) 355-5800 Fax: (414) 355-3099

ORGANIC REPORT

WDNR# 241340550

BATCH NUMBER: 970439
DATE REPORTED: 13-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Compound	Result	Units	LOD	LOQ	PAL	Dil	RQ	Method	Analyst	Date Anal
cis-1,3-Dichloropropene	<0.2	ug/l	0.2	0.6	0.02	1		8260	srh	6/11/97
Dibromochloromethane	<0.6	ug/l	0.6	1.7	6	1		8260	srh	6/11/97
Dibromomethane	<0.6	ug/l	0.6	1.9	ns	1		8260	srh	6/11/97
Dichlorodifluoromethane	<0.4	ug/l	0.4	1.3	200	1		8260	srh	6/11/97
Ethylbenzene	<0.4	ug/l	0.4	1.2	140	1		8260	srh	6/11/97
Hexachlorobutadiene	<0.6	ug/l	0.6	1.7	ns	1		8260	srh	6/11/97
Isopropyl Ether	<0.6	ug/l	0.6	2	ns	1		8260	srh	6/11/97
Isopropylbenzene	<0.4	ug/l	0.4	1.4	ns	1		8260	srh	6/11/97
m&p-xylene	<0.9	ug/l	0.9	3	124	1		8260	srh	6/11/97
Methyl-t-butyl ether	<0.2	ug/l	0.2	0.6	12	1		8260	srh	6/11/97
Methylene chloride	<1.8	ug/l	1.8	5.7	0.5	1		8260	srh	6/11/97
n-Butylbenzene	<0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
n-Propylbenzene	0.4	ug/l	0.3	1	ns	1	J	8260	srh	6/11/97
Naphthalene	<0.4	ug/l	0.4	1.4	8	1		8260	srh	6/11/97
o-xylene	<0.5	ug/l	0.5	1.5	124	1		8260	srh	6/11/97
p-Isopropyltoluene	<0.3	ug/l	0.3	1	ns	1		8260	srh	6/11/97
sec-Butylbenzene	0.5	ug/l	0.4	1.2	ns	1	J	8260	srh	6/11/97
Styrene	<0.3	ug/l	0.3	0.8	10	1		8260	srh	6/11/97
tert-Butylbenzene	0.9	ug/l	0.3	1.1	ns	1	J	8260	srh	6/11/97
Tetrachloroethene	4.7	ug/l	0.4	1.4	0.5	1		8260	srh	6/11/97
Toluene	<0.5	ug/l	0.5	1.4	68.6	1		8260	srh	6/11/97
trans-1,2-Dichloroethene	1.4	ug/l	0.3	1	20	1		8260	srh	6/11/97
trans-1,3-Dichloropropene	<0.1	ug/l	0.1	0.4	0.02	1		8260	srh	6/11/97
Trichloroethene	3.9	ug/l	0.2	0.6	0.5	1		8260	srh	6/11/97
Trichlorofluoromethane	<0.7	ug/l	0.7	2.4	ns	1		8260	srh	6/11/97
Vinyl chloride	2.6	ug/l	0.2	0.7	0.02	1		8260	srh	6/11/97

Sample Number: **6009** QC Prep Batch Number: 971067 *Sample analyzed within: 7 Day(s) from collection.*
Client ID: **South Well** Sample Description: *Collection: 6/5/97 Time: 05:00*

1,1,1,2-Tetrachloroethane	<0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/12/97
1,1,1-Trichloroethane	<0.8	ug/l	0.8	2.6	40	1		8260	srh	6/12/97
1,1,2,2-Tetrachloroethane	<0.2	ug/l	0.2	0.6	0.02	1		8260	srh	6/12/97
1,1,2-Trichloroethane	<0.2	ug/l	0.2	0.6	0.5	1		8260	srh	6/12/97
1,1-Dichloroethane	<0.8	ug/l	0.8	2.4	85	1		8260	srh	6/12/97
1,1-Dichloroethene	<0.3	ug/l	0.3	1.1	0.7	1		8260	srh	6/12/97
1,1-Dichloropropene	<0.8	ug/l	0.8	2.4	ns	1		8260	srh	6/12/97
1,2,3-Trichlorobenzene	<0.3	ug/l	0.3	1	ns	1		8260	srh	6/12/97
1,2,3-Trichloropropane	<0.6	ug/l	0.6	1.7	ns	1		8260	srh	6/12/97
1,2,4-Trichlorobenzene	<0.5	ug/l	0.5	1.6	14	1		8260	srh	6/12/97
1,2,4-Trimethylbenzene	<0.5	ug/l	0.5	1.5	ns	1		8260	srh	6/12/97
1,2-Dibromoethane	<0.2	ug/l	0.2	0.5	0.005	1		8260	srh	6/12/97
1,2-Dichlorobenzene	<0.4	ug/l	0.4	1.3	60	1		8260	srh	6/12/97

NOVA Environmental Laboratory
8222 W. Calumet Rd., Milwaukee, WI 53223
Phone: (414) 355-5800 Fax: (414) 355-3099

ORGANIC REPORT

WDNR# 241340550

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

BATCH NUMBER: 970439
DATE REPORTED: 13-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149
PROJECT NAME:

Compound	Result	Units	LOD	LOQ	PAL	Dil	RQ	Method	Analyst	Date Anal
1,2-Dichloroethane	<0.3	ug/l	0.3	0.9	0.5	1		8260	srh	6/12/97
1,2-Dichloropropane	<0.2	ug/l	0.2	0.5	0.5	1		8260	srh	6/12/97
1,3,5-Trimethylbenzene	<0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/12/97
1,3-Dichlorobenzene	<0.4	ug/l	0.4	1.1	125	1		8260	srh	6/12/97
1,3-Dichloropropane	<0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/12/97
1,4-Dichlorobenzene	<0.4	ug/l	0.4	1.2	15	1		8260	srh	6/12/97
12Dibromo-3-chloropropan	<0.8	ug/l	0.8	2.5	0.02	1		8260	srh	6/12/97
2,2-Dichloropropane	<0.6	ug/l	0.6	1.9	ns	1		8260	srh	6/12/97
2-Butanone (MEK)	<2.8	ug/l	2.8	8.8	90	1		8260	srh	6/12/97
2-Chloroethyl Vinyl Ether	<0.8	ug/l	0.8	2.4	ns	1		8260	srh	6/12/97
2-Chlorotoluene	<0.4	ug/l	0.4	1.3	ns	1		8260	srh	6/12/97
4-Chlorotoluene	<0.3	ug/l	0.3	1.1	ns	1		8260	srh	6/12/97
4-Methyl-2-Pentanone	<0.8	ug/l	0.8	2.4	50	1		8260	srh	6/12/97
Acetone	<3.9	ug/l	3.9	12	200	1		8260	srh	6/12/97
Benzene	<0.3	ug/l	0.3	0.8	0.5	1		8260	srh	6/12/97
Bromobenzene	<0.2	ug/l	0.2	0.8	ns	1		8260	srh	6/12/97
Bromochloromethane	<0.5	ug/l	0.5	1.5	ns	1		8260	srh	6/12/97
Bromodichloromethane	1.2	ug/l	0.06	0.2	0.06	1		8260	srh	6/12/97
Bromoform	<0.4	ug/l	0.4	1.2	0.44	1		8260	srh	6/12/97
Bromomethane	<0.4	ug/l	0.4	1.3	1	1		8260	srh	6/12/97
Carbon tetrachloride	<0.2	ug/l	0.2	0.7	0.5	1		8260	srh	6/12/97
Chlorobenzene	<0.4	ug/l	0.4	1.4	20	1		8260	srh	6/12/97
Chloroethane	<1.4	ug/l	1.4	4.5	80	1		8260	srh	6/12/97
Chloroform	8.2	ug/l	0.2	0.6	0.6	1		8260	srh	6/12/97
Chloromethane	<0.6	ug/l	0.6	1.7	0.3	1		8260	srh	6/12/97
cis-1,2-Dichloroethene	<0.6	ug/l	0.6	2	7	1		8260	srh	6/12/97
cis-1,3-Dichloropropene	<0.2	ug/l	0.2	0.6	0.02	1		8260	srh	6/12/97
Dibromochloromethane	<0.6	ug/l	0.6	1.7	6	1		8260	srh	6/12/97
Dibromomethane	<0.6	ug/l	0.6	1.9	ns	1		8260	srh	6/12/97
Dichlorodifluoromethane	<0.4	ug/l	0.4	1.3	200	1		8260	srh	6/12/97
Ethylbenzene	<0.4	ug/l	0.4	1.2	140	1		8260	srh	6/12/97
Hexachlorobutadiene	<0.6	ug/l	0.6	1.7	ns	1		8260	srh	6/12/97
Isopropyl Ether	<0.6	ug/l	0.6	2	ns	1		8260	srh	6/12/97
Isopropylbenzene	<0.4	ug/l	0.4	1.4	ns	1		8260	srh	6/12/97
m&p-xylene	<0.9	ug/l	0.9	3	124	1		8260	srh	6/12/97
Methyl-t-butyl ether	<0.2	ug/l	0.2	0.6	12	1		8260	srh	6/12/97
Methylene chloride	<1.8	ug/l	1.8	5.7	0.5	1		8260	srh	6/12/97
n-Butylbenzene	<0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/12/97
n-Propylbenzene	<0.3	ug/l	0.3	1	ns	1		8260	srh	6/12/97
Naphthalene	<0.4	ug/l	0.4	1.4	8	1		8260	srh	6/12/97
o-xylene	<0.5	ug/l	0.5	1.5	124	1		8260	srh	6/12/97
p-Isopropyltoluene	<0.3	ug/l	0.3	1	ns	1		8260	srh	6/12/97
sec-Butylbenzene	<0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/12/97

NOVA Environmental Laboratory
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Phone: (414) 355-5800 Fax: (414) 355-3099

ORGANIC REPORT

WDNR# 241340550

BATCH NUMBER: 970439
DATE REPORTED: 13-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Compound	Result	Units	LOD	LOQ	PAL	Dil	RQ	Method	Analyst	Date Anal
Styrene	<0.3	ug/l	0.3	0.8	10	1		8260	srh	6/12/97
tert-Butylbenzene	<0.3	ug/l	0.3	1.1	ns	1		8260	srh	6/12/97
Tetrachloroethene	0.4	ug/l	0.4	1.4	0.5	1	J	8260	srh	6/12/97
Toluene	<0.5	ug/l	0.5	1.4	68.6	1		8260	srh	6/12/97
trans-1,2-Dichloroethene	<0.3	ug/l	0.3	1	20	1		8260	srh	6/12/97
trans-1,3-Dichloropropene	<0.1	ug/l	0.1	0.4	0.02	1		8260	srh	6/12/97
Trichloroethene	<0.2	ug/l	0.2	0.6	0.5	1		8260	srh	6/12/97
Trichlorofluoromethane	<0.7	ug/l	0.7	2.4	ns	1		8260	srh	6/12/97
Vinyl chloride	<0.2	ug/l	0.2	0.7	0.02	1		8260	srh	6/12/97

Sample Number: 6010 QC Prep Batch Number: 971067 *Sample analyzed within 7 Day(s) from collection.*
Client ID: Gp-18 Sample Description: *Collection: 6/5/97 Time: 09:25*

1,1,1,2-Tetrachloroethane	<0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/12/97
1,1,1-Trichloroethane	<0.8	ug/l	0.8	2.6	40	1		8260	srh	6/12/97
1,1,2,2-Tetrachloroethane	<0.2	ug/l	0.2	0.6	0.02	1		8260	srh	6/12/97
1,1,2-Trichloroethane	<0.2	ug/l	0.2	0.6	0.5	1		8260	srh	6/12/97
1,1-Dichloroethane	<0.8	ug/l	0.8	2.4	85	1		8260	srh	6/12/97
1,1-Dichloroethene	<0.3	ug/l	0.3	1.1	0.7	1		8260	srh	6/12/97
1,1-Dichloropropene	<0.8	ug/l	0.8	2.4	ns	1		8260	srh	6/12/97
1,2,3-Trichlorobenzene	<0.3	ug/l	0.3	1	ns	1		8260	srh	6/12/97
1,2,3-Trichloropropane	<0.6	ug/l	0.6	1.7	ns	1		8260	srh	6/12/97
1,2,4-Trichlorobenzene	<0.5	ug/l	0.5	1.6	14	1		8260	srh	6/12/97
1,2,4-Trimethylbenzene	<0.5	ug/l	0.5	1.5	ns	1		8260	srh	6/12/97
1,2-Dibromoethane	<0.2	ug/l	0.2	0.5	0.005	1		8260	srh	6/12/97
1,2-Dichlorobenzene	<0.4	ug/l	0.4	1.3	60	1		8260	srh	6/12/97
1,2-Dichloroethane	<0.3	ug/l	0.3	0.9	0.5	1		8260	srh	6/12/97
1,2-Dichloropropane	<0.2	ug/l	0.2	0.5	0.5	1		8260	srh	6/12/97
1,3,5-Trimethylbenzene	<0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/12/97
1,3-Dichlorobenzene	<0.4	ug/l	0.4	1.1	125	1		8260	srh	6/12/97
1,3-Dichloropropane	<0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/12/97
1,4-Dichlorobenzene	<0.4	ug/l	0.4	1.2	15	1		8260	srh	6/12/97
12Dibromo-3-chloropropan	<0.8	ug/l	0.8	2.5	0.02	1		8260	srh	6/12/97
2,2-Dichloropropane	<0.6	ug/l	0.6	1.9	ns	1		8260	srh	6/12/97
2-Butanone (MEK)	<2.8	ug/l	2.8	8.8	90	1		8260	srh	6/12/97
2-Chloroethyl Vinyl Ether	<0.8	ug/l	0.8	2.4	ns	1		8260	srh	6/12/97
2-Chlorotoluene	<0.4	ug/l	0.4	1.3	ns	1		8260	srh	6/12/97
4-Chlorotoluene	<0.3	ug/l	0.3	1.1	ns	1		8260	srh	6/12/97
4-Methyl-2-Pentanone	<0.8	ug/l	0.8	2.4	50	1		8260	srh	6/12/97
Acetone	15	ug/l	3.9	12	200	1		8260	srh	6/12/97
Benzene	0.3	ug/l	0.3	0.8	0.5	1	J	8260	srh	6/12/97
Bromobenzene	<0.2	ug/l	0.2	0.8	ns	1		8260	srh	6/12/97
Bromochloromethane	<0.5	ug/l	0.5	1.5	ns	1		8260	srh	6/12/97

APPENDIX D

Laboratory Analytical Reports and
Associated Chain-of-Custody Forms

NOVA
Environmental Laboratory
WDNR# 241340550

ORGANIC REPORT

INVOICE NUMBER: 970439
DATE REPORTED: 11-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149XA
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Test	Result	Units	LOD	LOQ	Dil	RQ	Method	Analyst	Date Ext.	Date Anal.
Nova Sample Number: 6000	QC Batch Number: 971045					Collection: 6/5/97			Time: 08:40	
Client ID: GP 13/S2	%Solid: *94.8*					Sample Description:				
1,1,1-Trichloroethane	< 13	ug/kg	13	41	1		8260	srh		6/10/97
1,1,2,2-Tetrachloroethane	< 15	ug/kg	15	48	1		8260	srh		6/10/97
1,1,2-Trichloroethane	< 10	ug/kg	10	32	1		8260	srh		6/10/97
1,1-Dichloroethane	< 11	ug/kg	11	35	1		8260	srh		6/10/97
1,1-Dichloroethene	< 22	ug/kg	22	70	1		8260	srh		6/10/97
1,2,3-Trichlorobenzene	< 8.8	ug/kg	8.8	28	1		8260	srh		6/10/97
1,2,4-Trichlorobenzene	< 6.4	ug/kg	6.4	20	1		8260	srh		6/10/97
1,2,4-Trimethylbenzene	< 4.9	ug/kg	4.9	16	1		8260	srh		6/10/97
1,2-Dibromo-3-chloropropan	< 25	ug/kg	25	80	1		8260	srh		6/10/97
1,2-Dibromoethane	< 12	ug/kg	12	38	1		8260	srh		6/10/97
1,2-Dichlorobenzene	< 9.8	ug/kg	9.8	31	1		8260	srh		6/10/97
1,2-Dichloroethane	< 11	ug/kg	11	35	1		8260	srh		6/10/97
1,2-Dichloropropane	< 10	ug/kg	10	32	1		8260	srh		6/10/97
1,3,5-Trimethylbenzene	< 7.6	ug/kg	7.6	24	1		8260	srh		6/10/97
1,3-Dichlorobenzene	< 5.3	ug/kg	5.3	17	1		8260	srh		6/10/97
1,3-Dichloropropane	< 8.6	ug/kg	8.6	27	1		8260	srh		6/10/97
1,4-Dichlorobenzene	< 7.6	ug/kg	7.6	24	1		8260	srh		6/10/97
2,2-Dichloropropane	< 21	ug/kg	21	67	1		8260	srh		6/10/97
2-Chlorotoluene	< 5.9	ug/kg	5.9	19	1		8260	srh		6/10/97
4-Chlorotoluene	< 4.3	ug/kg	4.3	14	1		8260	srh		6/10/97
Benzene	< 15	ug/kg	15	48	1		8260	srh		6/10/97
Bromobenzene	< 6.9	ug/kg	6.9	22	1		8260	srh		6/10/97
Bromodichloromethane	< 5.0	ug/kg	5.0	16	1		8260	srh		6/10/97
Carbon tetrachloride	< 19	ug/kg	19	60	1		8260	srh		6/10/97
Chlorobenzene	< 6.8	ug/kg	6.8	22	1		8260	srh		6/10/97
Chloroethane	< 21	ug/kg	21	67	1		8260	srh		6/10/97
Chloroform	< 10	ug/kg	10	32	1		8260	srh		6/10/97
Chloromethane	< 20	ug/kg	20	64	1		8260	srh		6/10/97
cis-1,2-Dichloroethene	< 12	ug/kg	12	38	1		8260	srh		6/10/97
Dibromochloromethane	< 8.3	ug/kg	8.3	26	1		8260	srh		6/10/97
Dichlorodifluoromethane	< 11	ug/kg	11	35	1		8260	srh		6/10/97
Ethylbenzene	< 3.5	ug/kg	3.5	11	1		8260	srh		6/10/97
Hexachlorobutadiene	< 12	ug/kg	12	38	1		8260	srh		6/10/97
Isopropyl Ether	< 6.9	ug/kg	6.9	22	1		8260	srh		6/10/97
Isopropylbenzene	< 6.4	ug/kg	6.4	20	1		8260	srh		6/10/97
m&p-xylene	< 11	ug/kg	11	35	1		8260	srh		6/10/97
Methylene chloride	< 61	ug/kg	61	194	1		8260	srh		6/10/97
MTBE	< 10	ug/kg	10	32	1		8260	srh		6/10/97

NOVA
Environmental Laboratory
WDNR# 241340550

ORGANIC REPORT

INVOICE NUMBER: 970439
DATE REPORTED: 11-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149XA
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Test	Result	Units	LOD	LOQ	Dil	RQ	Method	Analyst	Date Ext.	Date Anal.
n-Butylbenzene	< 10	ug/kg	10	32	1		8260	srh		6/10/97
n-Propylbenzene	< 4.6	ug/kg	4.6	15	1		8260	srh		6/10/97
Naphthalene	< 11	ug/kg	11	35	1		8260	srh		6/10/97
o-xylene	< 6.4	ug/kg	6.4	20	1		8260	srh		6/10/97
p-Isopropyltoluene	< 6.8	ug/kg	6.8	22	1		8260	srh		6/10/97
sec-Butylbenzene	< 7.5	ug/kg	7.5	24	1		8260	srh		6/10/97
tert-Butylbenzene	< 4.9	ug/kg	4.9	16	1		8260	srh		6/10/97
Tetrachloroethene	39	ug/kg	11	35	1		8260	srh		6/10/97
Toluene	< 8.5	ug/kg	8.5	27	1		8260	srh		6/10/97
trans-1,2-Dichloroethene	< 8.4	ug/kg	8.4	27	1		8260	srh		6/10/97
Trichloroethene	< 13	ug/kg	13	41	1		8260	srh		6/10/97
Trichlorofluoromethane	< 17	ug/kg	17	54	1		8260	srh		6/10/97
Vinyl chloride	< 5.4	ug/kg	5.4	17	1		8260	srh		6/10/97

Nova Sample Number: 6001 QC Batch Number: 971045 Collection: 6/5/97 Time: 08:48
Client ID: GP 13/S4 %Solid: *94.4* Sample Description:

1,1,1-Trichloroethane	< 13	ug/kg	13	41	1		8260	srh		6/10/97
1,1,2,2-Tetrachloroethane	< 15	ug/kg	15	48	1		8260	srh		6/10/97
1,1,2-Trichloroethane	< 10	ug/kg	10	32	1		8260	srh		6/10/97
1,1-Dichloroethane	< 11	ug/kg	11	35	1		8260	srh		6/10/97
1,1-Dichloroethene	< 22	ug/kg	22	70	1		8260	srh		6/10/97
1,2,3-Trichlorobenzene	< 8.8	ug/kg	8.8	28	1		8260	srh		6/10/97
1,2,4-Trichlorobenzene	< 6.5	ug/kg	6.5	21	1		8260	srh		6/10/97
1,2,4-Trimethylbenzene	< 4.9	ug/kg	4.9	16	1		8260	srh		6/10/97
1,2-Dibromo-3-chloropropan	< 25	ug/kg	25	80	1		8260	srh		6/10/97
1,2-Dibromoethane	< 12	ug/kg	12	38	1		8260	srh		6/10/97
1,2-Dichlorobenzene	< 9.9	ug/kg	9.9	31	1		8260	srh		6/10/97
1,2-Dichloroethane	< 11	ug/kg	11	35	1		8260	srh		6/10/97
1,2-Dichloropropane	< 10	ug/kg	10	32	1		8260	srh		6/10/97
1,3,5-Trimethylbenzene	< 7.6	ug/kg	7.6	24	1		8260	srh		6/10/97
1,3-Dichlorobenzene	< 5.3	ug/kg	5.3	17	1		8260	srh		6/10/97
1,3-Dichloropropane	< 8.7	ug/kg	8.7	28	1		8260	srh		6/10/97
1,4-Dichlorobenzene	< 7.6	ug/kg	7.6	24	1		8260	srh		6/10/97
2,2-Dichloropropane	< 21	ug/kg	21	67	1		8260	srh		6/10/97
2-Chlorotoluene	< 5.9	ug/kg	5.9	19	1		8260	srh		6/10/97
4-Chlorotoluene	< 4.3	ug/kg	4.3	14	1		8260	srh		6/10/97
Benzene	< 15	ug/kg	15	48	1		8260	srh		6/10/97
Bromobenzene	< 6.9	ug/kg	6.9	22	1		8260	srh		6/10/97
Bromodichloromethane	< 5.0	ug/kg	5.0	16	1		8260	srh		6/10/97

NOVA
Environmental Laboratory
WDNR# 241340550

ORGANIC REPORT

INVOICE NUMBER: 970439
DATE REPORTED: 11-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149XA
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Test	Result	Units	LOD	LOQ	Dil	RQ	Method	Analyst	Date Ext.	Date Anal.
Carbon tetrachloride	< 19	ug/kg	19	60	1		8260	srh		6/10/97
Chlorobenzene	< 6.8	ug/kg	6.8	22	1		8260	srh		6/10/97
Chloroethane	< 22	ug/kg	22	70	1		8260	srh		6/10/97
Chloroform	< 10	ug/kg	10	32	1		8260	srh		6/10/97
Chloromethane	< 20	ug/kg	20	64	1		8260	srh		6/10/97
cis-1,2-Dichloroethene	< 12	ug/kg	12	38	1		8260	srh		6/10/97
Dibromochloromethane	< 8.4	ug/kg	8.4	27	1		8260	srh		6/10/97
Dichlorodifluoromethane	< 11	ug/kg	11	35	1		8260	srh		6/10/97
Ethylbenzene	< 3.5	ug/kg	3.5	11	1		8260	srh		6/10/97
Hexachlorobutadiene	< 12	ug/kg	12	38	1		8260	srh		6/10/97
Isopropyl Ether	< 6.9	ug/kg	6.9	22	1		8260	srh		6/10/97
Isopropylbenzene	< 6.5	ug/kg	6.5	21	1		8260	srh		6/10/97
m&p-xylene	< 12	ug/kg	12	38	1		8260	srh		6/10/97
Methylene chloride	< 61	ug/kg	61	194	1		8260	srh		6/10/97
MTBE	< 10	ug/kg	10	32	1		8260	srh		6/10/97
n-Butylbenzene	< 10	ug/kg	10	32	1		8260	srh		6/10/97
n-Propylbenzene	< 4.7	ug/kg	4.7	15	1		8260	srh		6/10/97
Naphthalene	< 11	ug/kg	11	35	1		8260	srh		6/10/97
o-xylene	< 6.5	ug/kg	6.5	21	1		8260	srh		6/10/97
p-Isopropyltoluene	< 6.8	ug/kg	6.8	22	1		8260	srh		6/10/97
sec-Butylbenzene	< 7.5	ug/kg	7.5	24	1		8260	srh		6/10/97
tert-Butylbenzene	< 4.9	ug/kg	4.9	16	1		8260	srh		6/10/97
Tetrachloroethene	292	ug/kg	11	35	1		8260	srh		6/10/97
Toluene	< 8.6	ug/kg	8.6	27	1		8260	srh		6/10/97
trans-1,2-Dichloroethene	< 8.5	ug/kg	8.5	27	1		8260	srh		6/10/97
Trichloroethene	< 13	ug/kg	13	41	1		8260	srh		6/10/97
Trichlorofluoromethane	< 17	ug/kg	17	54	1		8260	srh		6/10/97
Vinyl chloride	< 5.4	ug/kg	5.4	17	1		8260	srh		6/10/97

Nova Sample Number: 6002 QC Batch Number: 971045 Collection: 6/5/97 Time: 09:00
Client ID: GP 13 S-7A %Solid: *83.6* Sample Description:

1,1,1-Trichloroethane	< 59	ug/kg	59	188	4		8260	srh	6/10/97
1,1,2,2-Tetrachloroethane	< 67	ug/kg	67	213	4		8260	srh	6/10/97
1,1,2-Trichloroethane	< 46	ug/kg	46	146	4		8260	srh	6/10/97
1,1-Dichloroethane	< 49	ug/kg	49	156	4		8260	srh	6/10/97
1,1-Dichloroethene	< 100	ug/kg	100	318	4		8260	srh	6/10/97
1,2,3-Trichlorobenzene	< 40	ug/kg	40	127	4		8260	srh	6/10/97
1,2,4-Trichlorobenzene	< 29	ug/kg	29	92	4		8260	srh	6/10/97
1,2,4-Trimethylbenzene	< 22	ug/kg	22	70	4		8260	srh	6/10/97

NOVA
Environmental Laboratory
WDNR# 241340550

ORGANIC REPORT

INVOICE NUMBER: 970439
DATE REPORTED: 11-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149XA
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Test	Result	Units	LOD	LOQ	Dil	RQ	Method	Analyst	Date Ext.	Date Anal.
1,2-Dibromo-3-chloropropan	< 112	ug/kg	112	356	4		8260	srh		6/10/97
1,2-Dibromoethane	< 56	ug/kg	56	178	4		8260	srh		6/10/97
1,2-Dichlorobenzene	< 44	ug/kg	44	140	4		8260	srh		6/10/97
1,2-Dichloroethane	< 49	ug/kg	49	156	4		8260	srh		6/10/97
1,2-Dichloropropane	< 47	ug/kg	47	150	4		8260	srh		6/10/97
1,3,5-Trimethylbenzene	< 34	ug/kg	34	108	4		8260	srh		6/10/97
1,3-Dichlorobenzene	< 24	ug/kg	24	76	4		8260	srh		6/10/97
1,3-Dichloropropane	< 39	ug/kg	39	124	4		8260	srh		6/10/97
1,4-Dichlorobenzene	< 34	ug/kg	34	108	4		8260	srh		6/10/97
2,2-Dichloropropane	< 96	ug/kg	96	305	4		8260	srh		6/10/97
2-Chlorotoluene	< 27	ug/kg	27	86	4		8260	srh		6/10/97
4-Chlorotoluene	< 20	ug/kg	20	64	4		8260	srh		6/10/97
Benzene	< 70	ug/kg	70	223	4		8260	srh		6/10/97
Bromobenzene	< 31	ug/kg	31	99	4		8260	srh		6/10/97
Bromodichloromethane	< 22	ug/kg	22	70	4		8260	srh		6/10/97
Carbon tetrachloride	< 88	ug/kg	88	280	4		8260	srh		6/10/97
Chlorobenzene	< 31	ug/kg	31	99	4		8260	srh		6/10/97
Chloroethane	< 97	ug/kg	97	309	4		8260	srh		6/10/97
Chloroform	< 47	ug/kg	47	150	4		8260	srh		6/10/97
Chloromethane	< 90	ug/kg	90	286	4		8260	srh		6/10/97
cis-1,2-Dichloroethene	653	ug/kg	54	172	4		8260	srh		6/10/97
Dibromochloromethane	< 38	ug/kg	38	121	4		8260	srh		6/10/97
Dichlorodifluoromethane	< 49	ug/kg	49	156	4		8260	srh		6/10/97
Ethylbenzene	< 16	ug/kg	16	51	4		8260	srh		6/10/97
Hexachlorobutadiene	< 55	ug/kg	55	175	4		8260	srh		6/10/97
Isopropyl Ether	< 31	ug/kg	31	99	4		8260	srh		6/10/97
Isopropylbenzene	< 29	ug/kg	29	92	4		8260	srh		6/10/97
m&p-xylene	< 52	ug/kg	52	165	4		8260	srh		6/10/97
Methylene chloride	< 277	ug/kg	277	881	4		8260	srh		6/10/97
MTBE	< 47	ug/kg	47	150	4		8260	srh		6/10/97
n-Butylbenzene	< 45	ug/kg	45	143	4		8260	srh		6/10/97
n-Propylbenzene	< 21	ug/kg	21	67	4		8260	srh		6/10/97
Naphthalene	< 51	ug/kg	51	162	4		8260	srh		6/10/97
o-xylene	< 29	ug/kg	29	92	4		8260	srh		6/10/97
p-Isopropyltoluene	< 31	ug/kg	31	99	4		8260	srh		6/10/97
sec-Butylbenzene	< 34	ug/kg	34	108	4		8260	srh		6/10/97
tert-Butylbenzene	< 22	ug/kg	22	70	4		8260	srh		6/10/97
Tetrachloroethene	13900	ug/kg	51	162	4		8260	srh		6/10/97
Toluene	< 39	ug/kg	39	124	4		8260	srh		6/10/97
trans-1,2-Dichloroethene	< 38	ug/kg	38	121	4		8260	srh		6/10/97

NOVA Environmental Laboratory
WDNR# 241340550

ORGANIC REPORT

INVOICE NUMBER: 970439
DATE REPORTED: 11-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149XA
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee, WI 53224

Test	Result	Units	LOD	LOQ	Dil	RQ	Method	Analyst	Date Ext.	Date Anal.
Trichloroethene	< 60	**ug/kg**	60	191	4		8260	srh		6/10/97
Trichlorofluoromethane	< 76	**ug/kg**	76	242	4		8260	srh		6/10/97
Vinyl chloride	< 24	**ug/kg**	24	76	4		8260	srh		6/10/97

Approved By: James Chang **Date:** 6/11/97
James Chang, Ph.D., Lab Director

NOVA Lab LOD = where the LOD has been determined in accordance with 40 CFR, Part 136, Appendix B.
LUST LOD = LUST program PVOC/VOC LOD of 25 ug/kg (wet weight basis)
LUST LOQ = LUST program PVOC/VOC LOQ of 60 ug/kg (wet weight basis)
RQ : Run Qualifier; "J" = Results between LOD and LOQ "RR" = Re-extract Rerun sample, "B" = Showed in Blank sample.

Rounding Rules: Three significant figures were used for concentrations above 99 ug/L, two significant figures for concentrations between 1-99 ug/L, and one significant figure for lower concentrations.
DNR Analytical Detection Limit Guidance, April 1995.

NOVA Environmental Laboratory
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ORGANIC REPORT

WDNR# 241340550

BATCH NUMBER: **970439**
DATE REPORTED: 13-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149XA
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Compound	Result	Units	LOD	LOQ	PAL	Dil	RQ	Method	Analyst	Date Anal
Sample Number: **6003**		QC Prep Batch Number: 971059				*Sample analyzed within*		*7 Day(s) from collection.*		
Client ID: **GP 13**	Sample Description:					*Collection: 6/5/97*		*Time: 09:15*		
1,1,1,2-Tetrachloroethane	< 3.9	**ug/l**	3.9	12	ns	10		8260	srh	6/12/97
1,1,1-Trichloroethane	< 8.2	**ug/l**	8.2	26	40	10		8260	srh	6/12/97
1,1,2,2-Tetrachloroethane	< 1.9	**ug/l**	1.9	6	0.02	10		8260	srh	6/12/97
1,1,2-Trichloroethane	< 1.9	**ug/l**	1.9	6	0.5	10		8260	srh	6/12/97
1,1-Dichloroethane	< 7.5	**ug/l**	7.5	24	85	10		8260	srh	6/12/97
1,1-Dichloroethene	< 3.4	**ug/l**	3.4	11	0.7	10		8260	srh	6/12/97
1,1-Dichloropropene	< 7.5	**ug/l**	7.5	24	ns	10		8260	srh	6/12/97
1,2,3-Trichlorobenzene	< 3.1	**ug/l**	3.1	9.9	ns	10		8260	srh	6/12/97
1,2,3-Trichloropropane	< 5.5	**ug/l**	5.5	17	ns	10		8260	srh	6/12/97
1,2,4-Trichlorobenzene	< 4.9	**ug/l**	4.9	16	14	10		8260	srh	6/12/97
1,2,4-Trimethylbenzene	< 4.7	**ug/l**	4.7	15	ns	10		8260	srh	6/12/97
1,2-Dibromoethane	< 1.6	**ug/l**	1.6	5.1	0.005	10		8260	srh	6/12/97
1,2-Dichlorobenzene	< 4.1	**ug/l**	4.1	13	60	10		8260	srh	6/12/97
1,2-Dichloroethane	< 2.9	**ug/l**	2.9	9.2	0.5	10		8260	srh	6/12/97
1,2-Dichloropropane	< 1.6	**ug/l**	1.6	5.1	0.5	10		8260	srh	6/12/97
1,3,5-Trimethylbenzene	< 3.8	**ug/l**	3.8	12	ns	10		8260	srh	6/12/97
1,3-Dichlorobenzene	< 3.6	**ug/l**	3.6	11	125	10		8260	srh	6/12/97
1,3-Dichloropropane	< 3.8	**ug/l**	3.8	12	ns	10		8260	srh	6/12/97
1,4-Dichlorobenzene	< 3.9	**ug/l**	3.9	12	15	10		8260	srh	6/12/97
12Dibromo-3-chloropropan	< 7.8	**ug/l**	7.8	25	0.02	10		8260	srh	6/12/97
2,2-Dichloropropane	< 6	**ug/l**	6	19	ns	10		8260	srh	6/12/97
2-Butanone (MEK)	< 28	**ug/l**	28	88	90	10		8260	srh	6/12/97
2-Chloroethyl Vinyl Ether	< 7.5	**ug/l**	7.5	24	ns	10		8260	srh	6/12/97
2-Chlorotoluene	< 4.2	**ug/l**	4.2	13	ns	10		8260	srh	6/12/97
4-Chlorotoluene	< 3.4	**ug/l**	3.4	11	ns	10		8260	srh	6/12/97
4-Methyl-2-Pentanone	< 7.6	**ug/l**	7.6	24	50	10		8260	srh	6/12/97
Acetone	47	**ug/l**	39	125	200	10	*J*	8260	srh	6/12/97
Benzene	< 2.5	**ug/l**	2.5	8	0.5	10		8260	srh	6/12/97
Bromobenzene	< 2.4	**ug/l**	2.4	7.6	ns	10		8260	srh	6/12/97
Bromochloromethane	< 4.7	**ug/l**	4.7	15	ns	10		8260	srh	6/12/97
Bromodichloromethane	< 0.6	**ug/l**	0.6	1.9	0.06	10		8260	srh	6/12/97
Bromoform	< 3.8	**ug/l**	3.8	12	0.44	10		8260	srh	6/12/97
Bromomethane	< 4.2	**ug/l**	4.2	13	1	10		8260	srh	6/12/97
Carbon tetrachloride	< 2.2	**ug/l**	2.2	7	0.5	10		8260	srh	6/12/97
Chlorobenzene	< 4.4	**ug/l**	4.4	14	20	10		8260	srh	6/12/97
Chloroethane	< 14	**ug/l**	14	45	80	10		8260	srh	6/12/97
Chloroform	< 1.8	**ug/l**	1.8	5.7	0.6	10		8260	srh	6/12/97
Chloromethane	< 5.5	**ug/l**	5.5	17	0.3	10		8260	srh	6/12/97
cis-1,2-Dichloroethene	< 6.4	**ug/l**	6.4	20	7	10		8260	srh	6/12/97
cis-1,3-Dichloropropene	< 1.8	**ug/l**	1.8	5.7	0.02	10		8260	srh	6/12/97

NOVA ☆
Environmental Laboratory
8222 W. Calumet Rd., Milwaukee, WI 53223
Phone: (414) 355-5800 Fax: (414) 355-3099

ORGANIC REPORT

WDNR# 241340550

BATCH NUMBER: **970439**
DATE REPORTED: 13-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149XA
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Compound	Result	Units	LOD	LOQ	PAL	Dil	RQ	Method	Analyst	Date Anal
Dibromochloromethane	< 5.5	ug/l	5.5	17	6	10		8260	srh	6/12/97
Dibromomethane	< 6.1	ug/l	6.1	19	ns	10		8260	srh	6/12/97
Dichlorodifluoromethane	< 4	ug/l	4	13	200	10		8260	srh	6/12/97
Ethylbenzene	< 3.9	ug/l	3.9	12	140	10		8260	srh	6/12/97
Hexachlorobutadiene	< 5.5	ug/l	5.5	17	ns	10		8260	srh	6/12/97
Isopropyl Ether	< 6.4	ug/l	6.4	20	ns	10		8260	srh	6/12/97
Isopropylbenzene	< 4.3	ug/l	4.3	14	ns	10		8260	srh	6/12/97
m&p-xylene	< 9.4	ug/l	9.4	30	124	10		8260	srh	6/12/97
Methyl-t-butyl ether	< 1.8	ug/l	1.8	5.7	12	10		8260	srh	6/12/97
Methylene chloride	< 18	ug/l	18	57	0.5	10		8260	srh	6/12/97
n-Butylbenzene	< 3.8	ug/l	3.8	12	ns	10		8260	srh	6/12/97
n-Propylbenzene	< 3	ug/l	3	9.5	ns	10		8260	srh	6/12/97
Naphthalene	< 4.4	ug/l	4.4	14	8	10		8260	srh	6/12/97
o-xylene	< 4.6	ug/l	4.6	15	124	10		8260	srh	6/12/97
p-Isopropyltoluene	< 3.3	ug/l	3.3	10	ns	10		8260	srh	6/12/97
sec-Butylbenzene	< 3.9	ug/l	3.9	12	ns	10		8260	srh	6/12/97
Styrene	< 2.6	ug/l	2.6	8.3	10	10		8260	srh	6/12/97
tert-Butylbenzene	< 3.4	ug/l	3.4	11	ns	10		8260	srh	6/12/97
Tetrachloroethene	403	ug/l	4.3	14	0.5	10		8260	srh	6/12/97
Toluene	< 4.5	ug/l	4.5	14	68.6	10		8260	srh	6/12/97
trans-1,2-Dichloroethene	< 3.2	ug/l	3.2	10	20	10		8260	srh	6/12/97
trans-1,3-Dichloropropene	< 1.2	ug/l	1.2	3.8	0.02	10		8260	srh	6/12/97
Trichloroethene	14	ug/l	1.8	5.7	0.5	10		8260	srh	6/12/97
Trichlorofluoromethane	< 7.4	ug/l	7.4	24	ns	10		8260	srh	6/12/97
Vinyl chloride	< 2.3	ug/l	2.3	7.3	0.02	10		8260	srh	6/12/97

Sample Number: **6004** QC Prep Batch Number: 971059 *Sample analyzed within 6 Day(s) from collection.*
Client ID: **GP 14** Sample Description: *Collection: 6/5/97 Time: 10:45*

1,1,1,2-Tetrachloroethane	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
1,1,1-Trichloroethane	< 0.8	ug/l	0.8	2.6	40	1		8260	srh	6/11/97
1,1,2,2-Tetrachloroethane	< 0.2	ug/l	0.2	0.6	0.02	1		8260	srh	6/11/97
1,1,2-Trichloroethane	< 0.2	ug/l	0.2	0.6	0.5	1		8260	srh	6/11/97
1,1-Dichloroethane	< 0.8	ug/l	0.8	2.4	85	1		8260	srh	6/11/97
1,1-Dichloroethene	< 0.3	ug/l	0.3	1.1	0.7	1		8260	srh	6/11/97
1,1-Dichloropropene	< 0.8	ug/l	0.8	2.4	ns	1		8260	srh	6/11/97
1,2,3-Trichlorobenzene	< 0.3	ug/l	0.3	1	ns	1		8260	srh	6/11/97
1,2,3-Trichloropropane	< 0.6	ug/l	0.6	1.7	ns	1		8260	srh	6/11/97
1,2,4-Trichlorobenzene	< 0.5	ug/l	0.5	1.6	14	1		8260	srh	6/11/97
1,2,4-Trimethylbenzene	< 0.5	ug/l	0.5	1.5	ns	1		8260	srh	6/11/97
1,2-Dibromoethane	< 0.2	ug/l	0.2	0.5	0.005	1		8260	srh	6/11/97
1,2-Dichlorobenzene	< 0.4	ug/l	0.4	1.3	60	1		8260	srh	6/11/97
1,2-Dichloroethane	< 0.3	ug/l	0.3	0.9	0.5	1		8260	srh	6/11/97

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ORGANIC REPORT

WDNR# 241340550

BATCH NUMBER: **970439**
DATE REPORTED: 13-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149XA
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Compound	Result	Units	LOD	LOQ	PAL	Dil	RQ	Method	Analyst	Date Anal
1,2-Dichloropropane	< 0.2	ug/l	0.2	0.5	0.5	1		8260	srh	6/11/97
1,3,5-Trimethylbenzene	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
1,3-Dichlorobenzene	< 0.4	ug/l	0.4	1.1	125	1		8260	srh	6/11/97
1,3-Dichloropropane	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
1,4-Dichlorobenzene	< 0.4	ug/l	0.4	1.2	15	1		8260	srh	6/11/97
12Dibromo-3-chloropropan	< 0.8	ug/l	0.8	2.5	0.02	1		8260	srh	6/11/97
2,2-Dichloropropane	< 0.6	ug/l	0.6	1.9	ns	1		8260	srh	6/11/97
2-Butanone (MEK)	< 2.8	ug/l	2.8	8.8	90	1		8260	srh	6/11/97
2-Chloroethyl Vinyl Ether	< 0.8	ug/l	0.8	2.4	ns	1		8260	srh	6/11/97
2-Chlorotoluene	< 0.4	ug/l	0.4	1.3	ns	1		8260	srh	6/11/97
4-Chlorotoluene	< 0.3	ug/l	0.3	1.1	ns	1		8260	srh	6/11/97
4-Methyl-2-Pentanone	< 0.8	ug/l	0.8	2.4	50	1		8260	srh	6/11/97
Acetone	< 3.9	ug/l	3.9	12	200	1		8260	srh	6/11/97
Benzene	< 0.3	ug/l	0.3	0.8	0.5	1		8260	srh	6/11/97
Bromobenzene	< 0.2	ug/l	0.2	0.8	ns	1		8260	srh	6/11/97
Bromochloromethane	< 0.5	ug/l	0.5	1.5	ns	1		8260	srh	6/11/97
Bromodichloromethane	< 0.06	ug/l	0.06	0.2	0.06	1		8260	srh	6/11/97
Bromoform	< 0.4	ug/l	0.4	1.2	0.44	1		8260	srh	6/11/97
Bromomethane	< 0.4	ug/l	0.4	1.3	1	1		8260	srh	6/11/97
Carbon tetrachloride	< 0.2	ug/l	0.2	0.7	0.5	1		8260	srh	6/11/97
Chlorobenzene	< 0.4	ug/l	0.4	1.4	20	1		8260	srh	6/11/97
Chloroethane	< 1.4	ug/l	1.4	4.5	80	1		8260	srh	6/11/97
Chloroform	< 0.2	ug/l	0.2	0.6	0.6	1		8260	srh	6/11/97
Chloromethane	< 0.6	ug/l	0.6	1.7	0.3	1		8260	srh	6/11/97
cis-1,2-Dichloroethene	< 0.6	ug/l	0.6	2	7	1		8260	srh	6/11/97
cis-1,3-Dichloropropene	< 0.2	ug/l	0.2	0.6	0.02	1		8260	srh	6/11/97
Dibromochloromethane	< 0.6	ug/l	0.6	1.7	6	1		8260	srh	6/11/97
Dibromomethane	< 0.6	ug/l	0.6	1.9	ns	1		8260	srh	6/11/97
Dichlorodifluoromethane	< 0.4	ug/l	0.4	1.3	200	1		8260	srh	6/11/97
Ethylbenzene	< 0.4	ug/l	0.4	1.2	140	1		8260	srh	6/11/97
Hexachlorobutadiene	< 0.6	ug/l	0.6	1.7	ns	1		8260	srh	6/11/97
Isopropyl Ether	< 0.6	ug/l	0.6	2	ns	1		8260	srh	6/11/97
Isopropylbenzene	< 0.4	ug/l	0.4	1.4	ns	1		8260	srh	6/11/97
m&p-xylene	< 0.9	ug/l	0.9	3	124	1		8260	srh	6/11/97
Methyl-t-butyl ether	< 0.2	ug/l	0.2	0.6	12	1		8260	srh	6/11/97
Methylene chloride	< 1.8	ug/l	1.8	5.7	0.5	1		8260	srh	6/11/97
n-Butylbenzene	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
n-Propylbenzene	< 0.3	ug/l	0.3	1	ns	1		8260	srh	6/11/97
Naphthalene	< 0.4	ug/l	0.4	1.4	8	1		8260	srh	6/11/97
o-xylene	< 0.5	ug/l	0.5	1.5	124	1		8260	srh	6/11/97
p-Isopropyltoluene	< 0.3	ug/l	0.3	1	ns	1		8260	srh	6/11/97
sec-Butylbenzene	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
Styrene	< 0.3	ug/l	0.3	0.8	10	1		8260	srh	6/11/97

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ORGANIC REPORT

WDNR# 241340550

BATCH NUMBER: **970439**
DATE REPORTED: 13-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149XA
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Compound	Result	Units	LOD	LOQ	PAL	Dil	RQ	Method	Analyst	Date Anal
tert-Butylbenzene	< 0.3	**ug/l**	0.3	1.1	ns	1		8260	srh	6/11/97
Tetrachloroethene	0.5	**ug/l**	0.4	1.4	0.5	1	*J*	8260	srh	6/11/97
Toluene	< 0.5	**ug/l**	0.5	1.4	68.6	1		8260	srh	6/11/97
trans-1,2-Dichloroethene	< 0.3	**ug/l**	0.3	1	20	1		8260	srh	6/11/97
trans-1,3-Dichloropropene	< 0.1	**ug/l**	0.1	0.4	0.02	1		8260	srh	6/11/97
Trichloroethene	< 0.2	**ug/l**	0.2	0.6	0.5	1		8260	srh	6/11/97
Trichlorofluoromethane	< 0.7	**ug/l**	0.7	2.4	ns	1		8260	srh	6/11/97
Vinyl chloride	< 0.2	**ug/l**	0.2	0.7	0.02	1		8260	srh	6/11/97

Sample Number: **6005** QC Prep Batch Number: 971059 *Sample analyzed within 7 Day(s) from collection.*
Client ID: **GP 15** Sample Description: *Collection: 6/5/97 Time: 12:20*

1,1,1,2-Tetrachloroethane	< 0.4	**ug/l**	0.4	1.2	ns	1		8260	srh	6/12/97
1,1,1-Trichloroethane	< 0.8	**ug/l**	0.8	2.6	40	1		8260	srh	6/12/97
1,1,2,2-Tetrachloroethane	< 0.2	**ug/l**	0.2	0.6	0.02	1		8260	srh	6/12/97
1,1,2-Trichloroethane	< 0.2	**ug/l**	0.2	0.6	0.5	1		8260	srh	6/12/97
1,1-Dichloroethane	< 0.8	**ug/l**	0.8	2.4	85	1		8260	srh	6/12/97
1,1-Dichloroethene	< 0.3	**ug/l**	0.3	1.1	0.7	1		8260	srh	6/12/97
1,1-Dichloropropene	< 0.8	**ug/l**	0.8	2.4	ns	1		8260	srh	6/12/97
1,2,3-Trichlorobenzene	< 0.3	**ug/l**	0.3	1	ns	1		8260	srh	6/12/97
1,2,3-Trichloropropane	< 0.6	**ug/l**	0.6	1.7	ns	1		8260	srh	6/12/97
1,2,4-Trichlorobenzene	< 0.5	**ug/l**	0.5	1.6	14	1		8260	srh	6/12/97
1,2,4-Trimethylbenzene	< 0.5	**ug/l**	0.5	1.5	ns	1		8260	srh	6/12/97
1,2-Dibromoethane	< 0.2	**ug/l**	0.2	0.5	0.005	1		8260	srh	6/12/97
1,2-Dichlorobenzene	< 0.4	**ug/l**	0.4	1.3	60	1		8260	srh	6/12/97
1,2-Dichloroethane	< 0.3	**ug/l**	0.3	0.9	0.5	1		8260	srh	6/12/97
1,2-Dichloropropane	< 0.2	**ug/l**	0.2	0.5	0.5	1		8260	srh	6/12/97
1,3,5-Trimethylbenzene	< 0.4	**ug/l**	0.4	1.2	ns	1		8260	srh	6/12/97
1,3-Dichlorobenzene	< 0.4	**ug/l**	0.4	1.1	125	1		8260	srh	6/12/97
1,3-Dichloropropane	< 0.4	**ug/l**	0.4	1.2	ns	1		8260	srh	6/12/97
1,4-Dichlorobenzene	< 0.4	**ug/l**	0.4	1.2	15	1		8260	srh	6/12/97
12Dibromo-3-chloropropan	< 0.8	**ug/l**	0.8	2.5	0.02	1		8260	srh	6/12/97
2,2-Dichloropropane	< 0.6	**ug/l**	0.6	1.9	ns	1		8260	srh	6/12/97
2-Butanone (MEK)	< 2.8	**ug/l**	2.8	8.8	90	1		8260	srh	6/12/97
2-Chloroethyl Vinyl Ether	< 0.8	**ug/l**	0.8	2.4	ns	1		8260	srh	6/12/97
2-Chlorotoluene	< 0.4	**ug/l**	0.4	1.3	ns	1		8260	srh	6/12/97
4-Chlorotoluene	< 0.3	**ug/l**	0.3	1.1	ns	1		8260	srh	6/12/97
4-Methyl-2-Pentanone	< 0.8	**ug/l**	0.8	2.4	50	1		8260	srh	6/12/97
Acetone	131	**ug/l**	3.9	12	200	1		8260	srh	6/12/97
Benzene	0.3	**ug/l**	0.3	0.8	0.5	1	*J*	8260	srh	6/12/97
Bromobenzene	< 0.2	**ug/l**	0.2	0.8	ns	1		8260	srh	6/12/97
Bromochloromethane	< 0.5	**ug/l**	0.5	1.5	ns	1		8260	srh	6/12/97
Bromodichloromethane	< 0.06	**ug/l**	0.06	0.2	0.06	1		8260	srh	6/12/97

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ORGANIC REPORT

WDNR# 241340550

BATCH NUMBER: **970439**
DATE REPORTED: 13-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149XA
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Compound	Result	Units	LOD	LOQ	PAL	Dil	RQ	Method	Analyst	Date Anal
Bromoform	< 0.4	ug/l	0.4	1.2	0.44	1		8260	srh	6/12/97
Bromomethane	< 0.4	ug/l	0.4	1.3	1	1		8260	srh	6/12/97
Carbon tetrachloride	< 0.2	ug/l	0.2	0.7	0.5	1		8260	srh	6/12/97
Chlorobenzene	< 0.4	ug/l	0.4	1.4	20	1		8260	srh	6/12/97
Chloroethane	< 1.4	ug/l	1.4	4.5	80	1		8260	srh	6/12/97
Chloroform	< 0.2	ug/l	0.2	0.6	0.6	1		8260	srh	6/12/97
Chloromethane	< 0.6	ug/l	0.6	1.7	0.3	1		8260	srh	6/12/97
cis-1,2-Dichloroethene	< 0.6	ug/l	0.6	2	7	1		8260	srh	6/12/97
cis-1,3-Dichloropropene	< 0.2	ug/l	0.2	0.6	0.02	1		8260	srh	6/12/97
Dibromochloromethane	0.7	ug/l	0.6	1.7	6	1	*J*	8260	srh	6/12/97
Dibromomethane	< 0.6	ug/l	0.6	1.9	ns	1		8260	srh	6/12/97
Dichlorodifluoromethane	< 0.4	ug/l	0.4	1.3	200	1		8260	srh	6/12/97
Ethylbenzene	< 0.4	ug/l	0.4	1.2	140	1		8260	srh	6/12/97
Hexachlorobutadiene	< 0.6	ug/l	0.6	1.7	ns	1		8260	srh	6/12/97
Isopropyl Ether	< 0.6	ug/l	0.6	2	ns	1		8260	srh	6/12/97
Isopropylbenzene	< 0.4	ug/l	0.4	1.4	ns	1		8260	srh	6/12/97
m&p-xylene	< 0.9	ug/l	0.9	3	124	1		8260	srh	6/12/97
Methyl-t-butyl ether	< 0.2	ug/l	0.2	0.6	12	1		8260	srh	6/12/97
Methylene chloride	< 1.8	ug/l	1.8	5.7	0.5	1		8260	srh	6/12/97
n-Butylbenzene	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/12/97
n-Propylbenzene	< 0.3	ug/l	0.3	1	ns	1		8260	srh	6/12/97
Naphthalene	0.7	ug/l	0.4	1.4	8	1	*J*	8260	srh	6/12/97
o-xylene	< 0.5	ug/l	0.5	1.5	124	1		8260	srh	6/12/97
p-Isopropyltoluene	1.7	ug/l	0.3	1	ns	1		8260	srh	6/12/97
sec-Butylbenzene	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/12/97
Styrene	< 0.3	ug/l	0.3	0.8	10	1		8260	srh	6/12/97
tert-Butylbenzene	< 0.3	ug/l	0.3	1.1	ns	1		8260	srh	6/12/97
Tetrachloroethene	< 0.4	ug/l	0.4	1.4	0.5	1		8260	srh	6/12/97
Toluene	< 0.5	ug/l	0.5	1.4	68.6	1		8260	srh	6/12/97
trans-1,2-Dichloroethene	< 0.3	ug/l	0.3	1	20	1		8260	srh	6/12/97
trans-1,3-Dichloropropene	< 0.1	ug/l	0.1	0.4	0.02	1		8260	srh	6/12/97
Trichloroethene	< 0.2	ug/l	0.2	0.6	0.5	1		8260	srh	6/12/97
Trichlorofluoromethane	< 0.7	ug/l	0.7	2.4	ns	1		8260	srh	6/12/97
Vinyl chloride	< 0.2	ug/l	0.2	0.7	0.02	1		8260	srh	6/12/97

Sample Number: **6006** QC Prep Batch Number: 971059 *Sample analyzed within 6 Day(s) from collection.*
Client ID: **GP 16** Sample Description: *Collection: 6/5/97 Time: 14:10*

1,1,1,2-Tetrachloroethane	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
1,1,1-Trichloroethane	< 0.8	ug/l	0.8	2.6	40	1		8260	srh	6/11/97
1,1,2,2-Tetrachloroethane	< 0.2	ug/l	0.2	0.6	0.02	1		8260	srh	6/11/97
1,1,2-Trichloroethane	< 0.2	ug/l	0.2	0.6	0.5	1		8260	srh	6/11/97
1,1-Dichloroethane	< 0.8	ug/l	0.8	2.4	85	1		8260	srh	6/11/97

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ORGANIC REPORT

WDNR# 241340550

BATCH NUMBER: **970439**
DATE REPORTED: 13-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149XA
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Compound	Result	Units	LOD	LOQ	PAL	Dil	RQ	Method	Analyst	Date Anal
1,1-Dichloroethene	<0.3	ug/l	0.3	1.1	0.7	1		8260	srh	6/11/97
1,1-Dichloropropene	<0.8	ug/l	0.8	2.4	ns	1		8260	srh	6/11/97
1,2,3-Trichlorobenzene	<0.3	ug/l	0.3	1	ns	1		8260	srh	6/11/97
1,2,3-Trichloropropane	<0.6	ug/l	0.6	1.7	ns	1		8260	srh	6/11/97
1,2,4-Trichlorobenzene	<0.5	ug/l	0.5	1.6	14	1		8260	srh	6/11/97
1,2,4-Trimethylbenzene	<0.5	ug/l	0.5	1.5	ns	1		8260	srh	6/11/97
1,2-Dibromoethane	<0.2	ug/l	0.2	0.5	0.005	1		8260	srh	6/11/97
1,2-Dichlorobenzene	<0.4	ug/l	0.4	1.3	60	1		8260	srh	6/11/97
1,2-Dichloroethane	<0.3	ug/l	0.3	0.9	0.5	1		8260	srh	6/11/97
1,2-Dichloropropane	<0.2	ug/l	0.2	0.5	0.5	1		8260	srh	6/11/97
1,3,5-Trimethylbenzene	<0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
1,3-Dichlorobenzene	<0.4	ug/l	0.4	1.1	125	1		8260	srh	6/11/97
1,3-Dichloropropane	<0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
1,4-Dichlorobenzene	<0.4	ug/l	0.4	1.2	15	1		8260	srh	6/11/97
12Dibromo-3-chloropropan	<0.8	ug/l	0.8	2.5	0.02	1		8260	srh	6/11/97
2,2-Dichloropropane	<0.6	ug/l	0.6	1.9	ns	1		8260	srh	6/11/97
2-Butanone (MEK)	<2.8	ug/l	2.8	8.8	90	1		8260	srh	6/11/97
2-Chloroethyl Vinyl Ether	<0.8	ug/l	0.8	2.4	ns	1		8260	srh	6/11/97
2-Chlorotoluene	<0.4	ug/l	0.4	1.3	ns	1		8260	srh	6/11/97
4-Chlorotoluene	<0.3	ug/l	0.3	1.1	ns	1		8260	srh	6/11/97
4-Methyl-2-Pentanone	<0.8	ug/l	0.8	2.4	50	1		8260	srh	6/11/97
Acetone	9	ug/l	3.9	12	200	1	J	8260	srh	6/11/97
Benzene	<0.3	ug/l	0.3	0.8	0.5	1		8260	srh	6/11/97
Bromobenzene	<0.2	ug/l	0.2	0.8	ns	1		8260	srh	6/11/97
Bromochloromethane	<0.5	ug/l	0.5	1.5	ns	1		8260	srh	6/11/97
Bromodichloromethane	<0.06	ug/l	0.06	0.2	0.06	1		8260	srh	6/11/97
Bromoform	<0.4	ug/l	0.4	1.2	0.44	1		8260	srh	6/11/97
Bromomethane	<0.4	ug/l	0.4	1.3	1	1		8260	srh	6/11/97
Carbon tetrachloride	<0.2	ug/l	0.2	0.7	0.5	1		8260	srh	6/11/97
Chlorobenzene	<0.4	ug/l	0.4	1.4	20	1		8260	srh	6/11/97
Chloroethane	<1.4	ug/l	1.4	4.5	80	1		8260	srh	6/11/97
Chloroform	<0.2	ug/l	0.2	0.6	0.6	1		8260	srh	6/11/97
Chloromethane	<0.6	ug/l	0.6	1.7	0.3	1		8260	srh	6/11/97
cis-1,2-Dichloroethene	<0.6	ug/l	0.6	2	7	1		8260	srh	6/11/97
cis-1,3-Dichloropropene	<0.2	ug/l	0.2	0.6	0.02	1		8260	srh	6/11/97
Dibromochloromethane	<0.6	ug/l	0.6	1.7	6	1		8260	srh	6/11/97
Dibromomethane	<0.6	ug/l	0.6	1.9	ns	1		8260	srh	6/11/97
Dichlorodifluoromethane	<0.4	ug/l	0.4	1.3	200	1		8260	srh	6/11/97
Ethylbenzene	<0.4	ug/l	0.4	1.2	140	1		8260	srh	6/11/97
Hexachlorobutadiene	<0.6	ug/l	0.6	1.7	ns	1		8260	srh	6/11/97
Isopropyl Ether	<0.6	ug/l	0.6	2	ns	1		8260	srh	6/11/97
Isopropylbenzene	<0.4	ug/l	0.4	1.4	ns	1		8260	srh	6/11/97
m&p-xylene	<0.9	ug/l	0.9	3	124	1		8260	srh	6/11/97

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ORGANIC REPORT

WDNR# 241340550

BATCH NUMBER: **970439**
DATE REPORTED: 13-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149XA
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Compound	Result	Units	LOD	LOQ	PAL	Dil	RQ	Method	Analyst	Date Anal
Methyl-t-butyl ether	< 0.2	ug/l	0.2	0.6	12	1		8260	srh	6/11/97
Methylene chloride	< 1.8	ug/l	1.8	5.7	0.5	1		8260	srh	6/11/97
n-Butylbenzene	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
n-Propylbenzene	< 0.3	ug/l	0.3	1	ns	1		8260	srh	6/11/97
Naphthalene	< 0.4	ug/l	0.4	1.4	8	1		8260	srh	6/11/97
o-xylene	< 0.5	ug/l	0.5	1.5	124	1		8260	srh	6/11/97
p-Isopropyltoluene	< 0.3	ug/l	0.3	1	ns	1		8260	srh	6/11/97
sec-Butylbenzene	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
Styrene	< 0.3	ug/l	0.3	0.8	10	1		8260	srh	6/11/97
tert-Butylbenzene	< 0.3	ug/l	0.3	1.1	ns	1		8260	srh	6/11/97
Tetrachloroethene	< 0.4	ug/l	0.4	1.4	0.5	1		8260	srh	6/11/97
Toluene	0.5	ug/l	0.5	1.4	68.6	1	J	8260	srh	6/11/97
trans-1,2-Dichloroethene	< 0.3	ug/l	0.3	1	20	1		8260	srh	6/11/97
trans-1,3-Dichloropropene	< 0.1	ug/l	0.1	0.4	0.02	1		8260	srh	6/11/97
Trichloroethene	3	ug/l	0.2	0.6	0.5	1		8260	srh	6/11/97
Trichlorofluoromethane	< 0.7	ug/l	0.7	2.4	ns	1		8260	srh	6/11/97
Vinyl chloride	< 0.2	ug/l	0.2	0.7	0.02	1		8260	srh	6/11/97

Sample Number: **6007** QC Prep Batch Number: 971059 *Sample analyzed within 6 Day(s) from collection.*
Client ID: **Gp-19** Sample Description: *Collection: 6/5/97 Time: 03:10*

1,1,1,2-Tetrachloroethane	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
1,1,1-Trichloroethane	< 0.8	ug/l	0.8	2.6	40	1		8260	srh	6/11/97
1,1,2,2-Tetrachloroethane	< 0.2	ug/l	0.2	0.6	0.02	1		8260	srh	6/11/97
1,1,2-Trichloroethane	< 0.2	ug/l	0.2	0.6	0.5	1		8260	srh	6/11/97
1,1-Dichloroethane	< 0.8	ug/l	0.8	2.4	85	1		8260	srh	6/11/97
1,1-Dichloroethene	< 0.3	ug/l	0.3	1.1	0.7	1		8260	srh	6/11/97
1,1-Dichloropropene	< 0.8	ug/l	0.8	2.4	ns	1		8260	srh	6/11/97
1,2,3-Trichlorobenzene	< 0.3	ug/l	0.3	1	ns	1		8260	srh	6/11/97
1,2,3-Trichloropropane	< 0.6	ug/l	0.6	1.7	ns	1		8260	srh	6/11/97
1,2,4-Trichlorobenzene	< 0.5	ug/l	0.5	1.6	14	1		8260	srh	6/11/97
1,2,4-Trimethylbenzene	< 0.5	ug/l	0.5	1.5	ns	1		8260	srh	6/11/97
1,2-Dibromoethane	< 0.2	ug/l	0.2	0.5	0.005	1		8260	srh	6/11/97
1,2-Dichlorobenzene	< 0.4	ug/l	0.4	1.3	60	1		8260	srh	6/11/97
1,2-Dichloroethane	< 0.3	ug/l	0.3	0.9	0.5	1		8260	srh	6/11/97
1,2-Dichloropropane	< 0.2	ug/l	0.2	0.5	0.5	1		8260	srh	6/11/97
1,3,5-Trimethylbenzene	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
1,3-Dichlorobenzene	< 0.4	ug/l	0.4	1.1	125	1		8260	srh	6/11/97
1,3-Dichloropropane	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
1,4-Dichlorobenzene	< 0.4	ug/l	0.4	1.2	15	1		8260	srh	6/11/97
12Dibromo-3-chloropropan	< 0.8	ug/l	0.8	2.5	0.02	1		8260	srh	6/11/97
2,2-Dichloropropane	< 0.6	ug/l	0.6	1.9	ns	1		8260	srh	6/11/97
2-Butanone (MEK)	< 2.8	ug/l	2.8	8.8	90	1		8260	srh	6/11/97

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ORGANIC REPORT

WDNR# 241340550

BATCH NUMBER: **970439**
DATE REPORTED: 13-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Compound	Result	Units	LOD	LOQ	PAL	Dil	RQ	Method	Analyst	Date Anal
2-Chloroethyl Vinyl Ether	< 0.8	ug/l	0.8	2.4	ns	1		8260	srh	6/11/97
2-Chlorotoluene	< 0.4	ug/l	0.4	1.3	ns	1		8260	srh	6/11/97
4-Chlorotoluene	< 0.3	ug/l	0.3	1.1	ns	1		8260	srh	6/11/97
4-Methyl-2-Pentanone	< 0.8	ug/l	0.8	2.4	50	1		8260	srh	6/11/97
Acetone	8.1	ug/l	3.9	12	200	1	J	8260	srh	6/11/97
Benzene	0.3	ug/l	0.3	0.8	0.5	1	J	8260	srh	6/11/97
Bromobenzene	< 0.2	ug/l	0.2	0.8	ns	1		8260	srh	6/11/97
Bromochloromethane	< 0.5	ug/l	0.5	1.5	ns	1		8260	srh	6/11/97
Bromodichloromethane	< 0.06	ug/l	0.06	0.2	0.06	1		8260	srh	6/11/97
Bromoform	< 0.4	ug/l	0.4	1.2	0.44	1		8260	srh	6/11/97
Bromomethane	< 0.4	ug/l	0.4	1.3	1	1		8260	srh	6/11/97
Carbon tetrachloride	< 0.2	ug/l	0.2	0.7	0.5	1		8260	srh	6/11/97
Chlorobenzene	< 0.4	ug/l	0.4	1.4	20	1		8260	srh	6/11/97
Chloroethane	< 1.4	ug/l	1.4	4.5	80	1		8260	srh	6/11/97
Chloroform	0.4	ug/l	0.2	0.6	0.6	1	J	8260	srh	6/11/97
Chloromethane	< 0.6	ug/l	0.6	1.7	0.3	1		8260	srh	6/11/97
cis-1,2-Dichloroethene	< 0.6	ug/l	0.6	2	7	1		8260	srh	6/11/97
cis-1,3-Dichloropropene	< 0.2	ug/l	0.2	0.6	0.02	1		8260	srh	6/11/97
Dibromochloromethane	< 0.6	ug/l	0.6	1.7	6	1		8260	srh	6/11/97
Dibromomethane	< 0.6	ug/l	0.6	1.9	ns	1		8260	srh	6/11/97
Dichlorodifluoromethane	< 0.4	ug/l	0.4	1.3	200	1		8260	srh	6/11/97
Ethylbenzene	< 0.4	ug/l	0.4	1.2	140	1		8260	srh	6/11/97
Hexachlorobutadiene	< 0.6	ug/l	0.6	1.7	ns	1		8260	srh	6/11/97
Isopropyl Ether	< 0.6	ug/l	0.6	2	ns	1		8260	srh	6/11/97
Isopropylbenzene	< 0.4	ug/l	0.4	1.4	ns	1		8260	srh	6/11/97
m&p-xylene	< 0.9	ug/l	0.9	3	124	1		8260	srh	6/11/97
Methyl-t-butyl ether	< 0.2	ug/l	0.2	0.6	12	1		8260	srh	6/11/97
Methylene chloride	< 1.8	ug/l	1.8	5.7	0.5	1		8260	srh	6/11/97
n-Butylbenzene	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
n-Propylbenzene	< 0.3	ug/l	0.3	1	ns	1		8260	srh	6/11/97
Naphthalene	< 0.4	ug/l	0.4	1.4	8	1		8260	srh	6/11/97
o-xylene	< 0.5	ug/l	0.5	1.5	124	1		8260	srh	6/11/97
p-Isopropyltoluene	< 0.3	ug/l	0.3	1	ns	1		8260	srh	6/11/97
sec-Butylbenzene	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
Styrene	< 0.3	ug/l	0.3	0.8	10	1		8260	srh	6/11/97
tert-Butylbenzene	< 0.3	ug/l	0.3	1.1	ns	1		8260	srh	6/11/97
Tetrachloroethene	< 0.4	ug/l	0.4	1.4	0.5	1		8260	srh	6/11/97
Toluene	< 0.5	ug/l	0.5	1.4	68.6	1		8260	srh	6/11/97
trans-1,2-Dichloroethene	< 0.3	ug/l	0.3	1	20	1		8260	srh	6/11/97
trans-1,3-Dichloropropene	< 0.1	ug/l	0.1	0.4	0.02	1		8260	srh	6/11/97
Trichloroethene	< 0.2	ug/l	0.2	0.6	0.5	1		8260	srh	6/11/97
Trichlorofluoromethane	< 0.7	ug/l	0.7	2.4	ns	1		8260	srh	6/11/97
Vinyl chloride	< 0.2	ug/l	0.2	0.7	0.02	1		8260	srh	6/11/97

NOVA Environmental Laboratory
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ORGANIC REPORT

WDNR# 241340550

BATCH NUMBER: **970439**
DATE REPORTED: 13-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Compound	Result	Units	LOD	LOQ	PAL	Dil	RQ	Method	Analyst	Date Anal
Sample Number: **6008**		QC Prep Batch Number:		971059		*Sample analyzed within*		*6 Day(s) from collection.*		
Client ID: **North Well**	Sample Description:					*Collection:*	*6/5/97*	*Time:*	*04:00*	
1,1,1,2-Tetrachloroethane	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
1,1,1-Trichloroethane	< 0.8	ug/l	0.8	2.6	40	1		8260	srh	6/11/97
1,1,2,2-Tetrachloroethane	< 0.2	ug/l	0.2	0.6	0.02	1		8260	srh	6/11/97
1,1,2-Trichloroethane	< 0.2	ug/l	0.2	0.6	0.5	1		8260	srh	6/11/97
1,1-Dichloroethane	< 0.8	ug/l	0.8	2.4	85	1		8260	srh	6/11/97
1,1-Dichloroethene	< 0.3	ug/l	0.3	1.1	0.7	1		8260	srh	6/11/97
1,1-Dichloropropene	< 0.8	ug/l	0.8	2.4	ns	1		8260	srh	6/11/97
1,2,3-Trichlorobenzene	< 0.3	ug/l	0.3	1	ns	1		8260	srh	6/11/97
1,2,3-Trichloropropane	< 0.6	ug/l	0.6	1.7	ns	1		8260	srh	6/11/97
1,2,4-Trichlorobenzene	< 0.5	ug/l	0.5	1.6	14	1		8260	srh	6/11/97
1,2,4-Trimethylbenzene	< 0.5	ug/l	0.5	1.5	ns	1		8260	srh	6/11/97
1,2-Dibromoethane	< 0.2	ug/l	0.2	0.5	0.005	1		8260	srh	6/11/97
1,2-Dichlorobenzene	< 0.4	ug/l	0.4	1.3	60	1		8260	srh	6/11/97
1,2-Dichloroethane	< 0.3	ug/l	0.3	0.9	0.5	1		8260	srh	6/11/97
1,2-Dichloropropane	< 0.2	ug/l	0.2	0.5	0.5	1		8260	srh	6/11/97
1.3,5-Trimethylbenzene	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
1,3-Dichlorobenzene	< 0.4	ug/l	0.4	1.1	125	1		8260	srh	6/11/97
1,3-Dichloropropane	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
1,4-Dichlorobenzene	< 0.4	ug/l	0.4	1.2	15	1		8260	srh	6/11/97
12Dibromo-3-chloropropan	< 0.8	ug/l	0.8	2.5	0.02	1		8260	srh	6/11/97
2,2-Dichloropropane	< 0.6	ug/l	0.6	1.9	ns	1		8260	srh	6/11/97
2-Butanone (MEK)	< 2.8	ug/l	2.8	8.8	90	1		8260	srh	6/11/97
2-Chloroethyl Vinyl Ether	< 0.8	ug/l	0.8	2.4	ns	1		8260	srh	6/11/97
2-Chlorotoluene	< 0.4	ug/l	0.4	1.3	ns	1		8260	srh	6/11/97
4-Chlorotoluene	< 0.3	ug/l	0.3	1.1	ns	1		8260	srh	6/11/97
4-Methyl-2-Pentanone	< 0.8	ug/l	0.8	2.4	50	1		8260	srh	6/11/97
Acetone	< 3.9	ug/l	3.9	12	200	1		8260	srh	6/11/97
Benzene	< 0.3	ug/l	0.3	0.8	0.5	1		8260	srh	6/11/97
Bromobenzene	< 0.2	ug/l	0.2	0.8	ns	1		8260	srh	6/11/97
Bromochloromethane	< 0.5	ug/l	0.5	1.5	ns	1		8260	srh	6/11/97
Bromodichloromethane	< 0.06	ug/l	0.06	0.2	0.06	1		8260	srh	6/11/97
Bromoform	< 0.4	ug/l	0.4	1.2	0.44	1		8260	srh	6/11/97
Bromomethane	< 0.4	ug/l	0.4	1.3	1	1		8260	srh	6/11/97
Carbon tetrachloride	< 0.2	ug/l	0.2	0.7	0.5	1		8260	srh	6/11/97
Chlorobenzene	< 0.4	ug/l	0.4	1.4	20	1		8260	srh	6/11/97
Chloroethane	< 1.4	ug/l	1.4	4.5	80	1		8260	srh	6/11/97
Chloroform	1.1	ug/l	0.2	0.6	0.6	1		8260	srh	6/11/97
Chloromethane	< 0.6	ug/l	0.6	1.7	0.3	1		8260	srh	6/11/97
cis-1,2-Dichloroethene	25	ug/l	0.6	2	7	1		8260	srh	6/11/97

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ORGANIC REPORT

WDNR# 241340550

BATCH NUMBER: **970439**
DATE REPORTED: 13-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Compound	Result	Units	LOD	LOQ	PAL	Dil	RQ	Method	Analyst	Date Anal
cis-1,3-Dichloropropene	< 0.2	ug/l	0.2	0.6	0.02	1		8260	srh	6/11/97
Dibromochloromethane	< 0.6	ug/l	0.6	1.7	6	1		8260	srh	6/11/97
Dibromomethane	< 0.6	ug/l	0.6	1.9	ns	1		8260	srh	6/11/97
Dichlorodifluoromethane	< 0.4	ug/l	0.4	1.3	200	1		8260	srh	6/11/97
Ethylbenzene	< 0.4	ug/l	0.4	1.2	140	1		8260	srh	6/11/97
Hexachlorobutadiene	< 0.6	ug/l	0.6	1.7	ns	1		8260	srh	6/11/97
Isopropyl Ether	< 0.6	ug/l	0.6	2	ns	1		8260	srh	6/11/97
Isopropylbenzene	< 0.4	ug/l	0.4	1.4	ns	1		8260	srh	6/11/97
m&p-xylene	< 0.9	ug/l	0.9	3	124	1		8260	srh	6/11/97
Methyl-t-butyl ether	< 0.2	ug/l	0.2	0.6	12	1		8260	srh	6/11/97
Methylene chloride	< 1.8	ug/l	1.8	5.7	0.5	1		8260	srh	6/11/97
n-Butylbenzene	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/11/97
n-Propylbenzene	0.4	ug/l	0.3	1	ns	1	J	8260	srh	6/11/97
Naphthalene	< 0.4	ug/l	0.4	1.4	8	1		8260	srh	6/11/97
o-xylene	< 0.5	ug/l	0.5	1.5	124	1		8260	srh	6/11/97
p-Isopropyltoluene	< 0.3	ug/l	0.3	1	ns	1		8260	srh	6/11/97
sec-Butylbenzene	0.5	ug/l	0.4	1.2	ns	1	J	8260	srh	6/11/97
Styrene	< 0.3	ug/l	0.3	0.8	10	1		8260	srh	6/11/97
tert-Butylbenzene	0.9	ug/l	0.3	1.1	ns	1	J	8260	srh	6/11/97
Tetrachloroethene	4.7	ug/l	0.4	1.4	0.5	1		8260	srh	6/11/97
Toluene	< 0.5	ug/l	0.5	1.4	68.6	1		8260	srh	6/11/97
trans-1,2-Dichloroethene	1.4	ug/l	0.3	1	20	1		8260	srh	6/11/97
trans-1,3-Dichloropropene	< 0.1	ug/l	0.1	0.4	0.02	1		8260	srh	6/11/97
Trichloroethene	3.9	ug/l	0.2	0.6	0.5	1		8260	srh	6/11/97
Trichlorofluoromethane	< 0.7	ug/l	0.7	2.4	ns	1		8260	srh	6/11/97
Vinyl chloride	2.6	ug/l	0.2	0.7	0.02	1		8260	srh	6/11/97

Sample Number: **6009** QC Prep Batch Number: 971067 *Sample analyzed within: 7 Day(s) from collection.*
Client ID: **South Well** Sample Description: *Collection: 6/5/97 Time: 05:00*

1,1,1,2-Tetrachloroethane	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/12/97
1,1,1-Trichloroethane	< 0.8	ug/l	0.8	2.6	40	1		8260	srh	6/12/97
1,1,2,2-Tetrachloroethane	< 0.2	ug/l	0.2	0.6	0.02	1		8260	srh	6/12/97
1,1,2-Trichloroethane	< 0.2	ug/l	0.2	0.6	0.5	1		8260	srh	6/12/97
1,1-Dichloroethane	< 0.8	ug/l	0.8	2.4	85	1		8260	srh	6/12/97
1,1-Dichloroethene	< 0.3	ug/l	0.3	1.1	0.7	1		8260	srh	6/12/97
1,1-Dichloropropene	< 0.8	ug/l	0.8	2.4	ns	1		8260	srh	6/12/97
1,2,3-Trichlorobenzene	< 0.3	ug/l	0.3	1	ns	1		8260	srh	6/12/97
1,2,3-Trichloropropane	< 0.6	ug/l	0.6	1.7	ns	1		8260	srh	6/12/97
1,2,4-Trichlorobenzene	< 0.5	ug/l	0.5	1.6	14	1		8260	srh	6/12/97
1,2,4-Trimethylbenzene	< 0.5	ug/l	0.5	1.5	ns	1		8260	srh	6/12/97
1,2-Dibromoethane	< 0.2	ug/l	0.2	0.5	0.005	1		8260	srh	6/12/97
1,2-Dichlorobenzene	< 0.4	ug/l	0.4	1.3	60	1		8260	srh	6/12/97

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ORGANIC REPORT

WDNR# 241340550

BATCH NUMBER: **970439**
DATE REPORTED: 13-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Compound	Result	Units	LOD	LOQ	PAL	Dil	RQ	Method	Analyst	Date Anal
1,2-Dichloroethane	<0.3	ug/l	0.3	0.9	0.5	1		8260	srh	6/12/97
1,2-Dichloropropane	<0.2	ug/l	0.2	0.5	0.5	1		8260	srh	6/12/97
1,3,5-Trimethylbenzene	<0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/12/97
1,3-Dichlorobenzene	<0.4	ug/l	0.4	1.1	125	1		8260	srh	6/12/97
1,3-Dichloropropane	<0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/12/97
1,4-Dichlorobenzene	<0.4	ug/l	0.4	1.2	15	1		8260	srh	6/12/97
12Dibromo-3-chloropropan	<0.8	ug/l	0.8	2.5	0.02	1		8260	srh	6/12/97
2,2-Dichloropropane	<0.6	ug/l	0.6	1.9	ns	1		8260	srh	6/12/97
2-Butanone (MEK)	<2.8	ug/l	2.8	8.8	90	1		8260	srh	6/12/97
2-Chloroethyl Vinyl Ether	<0.8	ug/l	0.8	2.4	ns	1		8260	srh	6/12/97
2-Chlorotoluene	<0.4	ug/l	0.4	1.3	ns	1		8260	srh	6/12/97
4-Chlorotoluene	<0.3	ug/l	0.3	1.1	ns	1		8260	srh	6/12/97
4-Methyl-2-Pentanone	<0.8	ug/l	0.8	2.4	50	1		8260	srh	6/12/97
Acetone	<3.9	ug/l	3.9	12	200	1		8260	srh	6/12/97
Benzene	<0.3	ug/l	0.3	0.8	0.5	1		8260	srh	6/12/97
Bromobenzene	<0.2	ug/l	0.2	0.8	ns	1		8260	srh	6/12/97
Bromochloromethane	<0.5	ug/l	0.5	1.5	ns	1		8260	srh	6/12/97
Bromodichloromethane	1.2	ug/l	0.06	0.2	0.06	1		8260	srh	6/12/97
Bromoform	<0.4	ug/l	0.4	1.2	0.44	1		8260	srh	6/12/97
Bromomethane	<0.4	ug/l	0.4	1.3	1	1		8260	srh	6/12/97
Carbon tetrachloride	<0.2	ug/l	0.2	0.7	0.5	1		8260	srh	6/12/97
Chlorobenzene	<0.4	ug/l	0.4	1.4	20	1		8260	srh	6/12/97
Chloroethane	<1.4	ug/l	1.4	4.5	80	1		8260	srh	6/12/97
Chloroform	8.2	ug/l	0.2	0.6	0.6	1		8260	srh	6/12/97
Chloromethane	<0.6	ug/l	0.6	1.7	0.3	1		8260	srh	6/12/97
cis-1,2-Dichloroethene	<0.6	ug/l	0.6	2	7	1		8260	srh	6/12/97
cis-1,3-Dichloropropene	<0.2	ug/l	0.2	0.6	0.02	1		8260	srh	6/12/97
Dibromochloromethane	<0.6	ug/l	0.6	1.7	6	1		8260	srh	6/12/97
Dibromomethane	<0.6	ug/l	0.6	1.9	ns	1		8260	srh	6/12/97
Dichlorodifluoromethane	<0.4	ug/l	0.4	1.3	200	1		8260	srh	6/12/97
Ethylbenzene	<0.4	ug/l	0.4	1.2	140	1		8260	srh	6/12/97
Hexachlorobutadiene	<0.6	ug/l	0.6	1.7	ns	1		8260	srh	6/12/97
Isopropyl Ether	<0.6	ug/l	0.6	2	ns	1		8260	srh	6/12/97
Isopropylbenzene	<0.4	ug/l	0.4	1.4	ns	1		8260	srh	6/12/97
m&p-xylene	<0.9	ug/l	0.9	3	124	1		8260	srh	6/12/97
Methyl-t-butyl ether	<0.2	ug/l	0.2	0.6	12	1		8260	srh	6/12/97
Methylene chloride	<1.8	ug/l	1.8	5.7	0.5	1		8260	srh	6/12/97
n-Butylbenzene	<0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/12/97
n-Propylbenzene	<0.3	ug/l	0.3	1	ns	1		8260	srh	6/12/97
Naphthalene	<0.4	ug/l	0.4	1.4	8	1		8260	srh	6/12/97
o-xylene	<0.5	ug/l	0.5	1.5	124	1		8260	srh	6/12/97
p-Isopropyltoluene	<0.3	ug/l	0.3	1	ns	1		8260	srh	6/12/97
sec-Butylbenzene	<0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/12/97

NOVA Environmental Laboratory
8222 W. Calumet Rd., Milwaukee, WI 53223
Phone: (414) 355-5800 Fax: (414) 355-3099

ORGANIC REPORT

WDNR# 241340550

BATCH NUMBER: **970439**
DATE REPORTED: 13-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Compound	Result	Units	LOD	LOQ	PAL	Dil	RQ	Method	Analyst	Date Anal
Styrene	< 0.3	ug/l	0.3	0.8	10	1		8260	srh	6/12/97
tert-Butylbenzene	< 0.3	ug/l	0.3	1.1	ns	1		8260	srh	6/12/97
Tetrachloroethene	0.4	ug/l	0.4	1.4	0.5	1	J	8260	srh	6/12/97
Toluene	< 0.5	ug/l	0.5	1.4	68.6	1		8260	srh	6/12/97
trans-1,2-Dichloroethene	< 0.3	ug/l	0.3	1	20	1		8260	srh	6/12/97
trans-1,3-Dichloropropene	< 0.1	ug/l	0.1	0.4	0.02	1		8260	srh	6/12/97
Trichloroethene	< 0.2	ug/l	0.2	0.6	0.5	1		8260	srh	6/12/97
Trichlorofluoromethane	< 0.7	ug/l	0.7	2.4	ns	1		8260	srh	6/12/97
Vinyl chloride	< 0.2	ug/l	0.2	0.7	0.02	1		8260	srh	6/12/97

Sample Number: **6010** QC Prep Batch Number: 971067 *Sample analyzed within 7 Day(s) from collection.*
Client ID: **Gp-18** Sample Description: *Collection: 6/5/97 Time: 09:25*

1,1,1,2-Tetrachloroethane	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/12/97
1,1,1-Trichloroethane	< 0.8	ug/l	0.8	2.6	40	1		8260	srh	6/12/97
1,1,2,2-Tetrachloroethane	< 0.2	ug/l	0.2	0.6	0.02	1		8260	srh	6/12/97
1,1,2-Trichloroethane	< 0.2	ug/l	0.2	0.6	0.5	1		8260	srh	6/12/97
1,1-Dichloroethane	< 0.8	ug/l	0.8	2.4	85	1		8260	srh	6/12/97
1,1-Dichloroethene	< 0.3	ug/l	0.3	1.1	0.7	1		8260	srh	6/12/97
1,1-Dichloropropene	< 0.8	ug/l	0.8	2.4	ns	1		8260	srh	6/12/97
1,2,3-Trichlorobenzene	< 0.3	ug/l	0.3	1	ns	1		8260	srh	6/12/97
1,2,3-Trichloropropane	< 0.6	ug/l	0.6	1.7	ns	1		8260	srh	6/12/97
1,2,4-Trichlorobenzene	< 0.5	ug/l	0.5	1.6	14	1		8260	srh	6/12/97
1,2,4-Trimethylbenzene	< 0.5	ug/l	0.5	1.5	ns	1		8260	srh	6/12/97
1,2-Dibromoethane	< 0.2	ug/l	0.2	0.5	0.005	1		8260	srh	6/12/97
1,2-Dichlorobenzene	< 0.4	ug/l	0.4	1.3	60	1		8260	srh	6/12/97
1,2-Dichloroethane	< 0.3	ug/l	0.3	0.9	0.5	1		8260	srh	6/12/97
1,2-Dichloropropane	< 0.2	ug/l	0.2	0.5	0.5	1		8260	srh	6/12/97
1,3,5-Trimethylbenzene	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/12/97
1,3-Dichlorobenzene	< 0.4	ug/l	0.4	1.1	125	1		8260	srh	6/12/97
1,3-Dichloropropane	< 0.4	ug/l	0.4	1.2	ns	1		8260	srh	6/12/97
1,4-Dichlorobenzene	< 0.4	ug/l	0.4	1.2	15	1		8260	srh	6/12/97
12Dibromo-3-chloropropan	< 0.8	ug/l	0.8	2.5	0.02	1		8260	srh	6/12/97
2,2-Dichloropropane	< 0.6	ug/l	0.6	1.9	ns	1		8260	srh	6/12/97
2-Butanone (MEK)	< 2.8	ug/l	2.8	8.8	90	1		8260	srh	6/12/97
2-Chloroethyl Vinyl Ether	< 0.8	ug/l	0.8	2.4	ns	1		8260	srh	6/12/97
2-Chlorotoluene	< 0.4	ug/l	0.4	1.3	ns	1		8260	srh	6/12/97
4-Chlorotoluene	< 0.3	ug/l	0.3	1.1	ns	1		8260	srh	6/12/97
4-Methyl-2-Pentanone	< 0.8	ug/l	0.8	2.4	50	1		8260	srh	6/12/97
Acetone	15	ug/l	3.9	12	200	1		8260	srh	6/12/97
Benzene	0.3	ug/l	0.3	0.8	0.5	1	J	8260	srh	6/12/97
Bromobenzene	< 0.2	ug/l	0.2	0.8	ns	1		8260	srh	6/12/97
Bromochloromethane	< 0.5	ug/l	0.5	1.5	ns	1		8260	srh	6/12/97

NOVA
Environmental Laboratory
8222 W. Calumet Rd., Milwaukee, WI 53223
Phone: (414) 355-5800 Fax: (414) 355-3099

ORGANIC REPORT

WDNR# 241340550

BATCH NUMBER: **970439**
DATE REPORTED: 13-Jun-97
DATE RECEIVED: 06-Jun-97
SAMPLE TEMP (C): Rec On Ice
PROJECT ID: 85149
PROJECT NAME:

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Compound	Result	Units	LOD	LOQ	PAL	Dil	RQ	Method	Analyst	Date Anal
Bromodichloromethane	< 0.06	**ug/l**	0.06	0.2	0.06	1		8260	srh	6/12/97
Bromoform	< 0.4	**ug/l**	0.4	1.2	0.44	1		8260	srh	6/12/97
Bromomethane	< 0.4	**ug/l**	0.4	1.3	1	1		8260	srh	6/12/97
Carbon tetrachloride	< 0.2	**ug/l**	0.2	0.7	0.5	1		8260	srh	6/12/97
Chlorobenzene	< 0.4	**ug/l**	0.4	1.4	20	1		8260	srh	6/12/97
Chloroethane	< 1.4	**ug/l**	1.4	4.5	80	1		8260	srh	6/12/97
Chloroform	< 0.2	**ug/l**	0.2	0.6	0.6	1		8260	srh	6/12/97
Chloromethane	< 0.6	**ug/l**	0.6	1.7	0.3	1		8260	srh	6/12/97
cis-1,2-Dichloroethene	< 0.6	**ug/l**	0.6	2	7	1		8260	srh	6/12/97
cis-1,3-Dichloropropene	< 0.2	**ug/l**	0.2	0.6	0.02	1		8260	srh	6/12/97
Dibromochloromethane	< 0.6	**ug/l**	0.6	1.7	6	1		8260	srh	6/12/97
Dibromomethane	< 0.6	**ug/l**	0.6	1.9	ns	1		8260	srh	6/12/97
Dichlorodifluoromethane	< 0.4	**ug/l**	0.4	1.3	200	1		8260	srh	6/12/97
Ethylbenzene	< 0.4	**ug/l**	0.4	1.2	140	1		8260	srh	6/12/97
Hexachlorobutadiene	< 0.6	**ug/l**	0.6	1.7	ns	1		8260	srh	6/12/97
Isopropyl Ether	< 0.6	**ug/l**	0.6	2	ns	1		8260	srh	6/12/97
Isopropylbenzene	< 0.4	**ug/l**	0.4	1.4	ns	1		8260	srh	6/12/97
m&p-xylene	< 0.9	**ug/l**	0.9	3	124	1		8260	srh	6/12/97
Methyl-t-butyl ether	< 0.2	**ug/l**	0.2	0.6	12	1		8260	srh	6/12/97
Methylene chloride	< 1.8	**ug/l**	1.8	5.7	0.5	1		8260	srh	6/12/97
n-Butylbenzene	< 0.4	**ug/l**	0.4	1.2	ns	1		8260	srh	6/12/97
n-Propylbenzene	< 0.3	**ug/l**	0.3	1	ns	1		8260	srh	6/12/97
Naphthalene	< 0.4	**ug/l**	0.4	1.4	8	1		8260	srh	6/12/97
o-xylene	< 0.5	**ug/l**	0.5	1.5	124	1		8260	srh	6/12/97
p-Isopropyltoluene	< 0.3	**ug/l**	0.3	1	ns	1		8260	srh	6/12/97
sec-Butylbenzene	< 0.4	**ug/l**	0.4	1.2	ns	1		8260	srh	6/12/97
Styrene	< 0.3	**ug/l**	0.3	0.8	10	1		8260	srh	6/12/97
tert-Butylbenzene	< 0.3	**ug/l**	0.3	1.1	ns	1		8260	srh	6/12/97
Tetrachloroethene	< 0.4	**ug/l**	0.4	1.4	0.5	1		8260	srh	6/12/97
Toluene	< 0.5	**ug/l**	0.5	1.4	68.6	1		8260	srh	6/12/97
trans-1,2-Dichloroethene	< 0.3	**ug/l**	0.3	1	20	1		8260	srh	6/12/97
trans-1,3-Dichloropropene	< 0.1	**ug/l**	0.1	0.4	0.02	1		8260	srh	6/12/97
Trichloroethene	< 0.2	**ug/l**	0.2	0.6	0.5	1		8260	srh	6/12/97
Trichlorofluoromethane	< 0.7	**ug/l**	0.7	2.4	ns	1		8260	srh	6/12/97
Vinyl chloride	< 0.2	**ug/l**	0.2	0.7	0.02	1		8260	srh	6/12/97

NOVA ☆
Environmental Laboratory
8222 W. Calumet Rd., Milwaukee, WI 53223
Phone: (414) 355-5800 Fax: (414) 355-3099

ORGANIC REPORT

WDNR# 241340550

BATCH NUMBER:	**970439**
DATE REPORTED:	13-Jun-97
DATE RECEIVED:	06-Jun-97
SAMPLE TEMP (C):	Rec On Ice
PROJECT ID:	85149
PROJECT NAME:	

Sue Murawski
STS Consultants Ltd.
11425 W. Lake Park Drive
Milwaukee , WI 53224

Compound	Result	Units	LOD	LOQ	PAL	Dil	RQ	Method	Analyst	Date Anal

Approved By: James Chang **Date:** 6/13/97
James Chang, Ph.D. , Lab Director

MDL: Method Detection Limit determined by 40CFR Part 136 Appendix B
LOQ = 10 (S) x Dilution Facor, where "S" is the Standard Deviation from the MDL Study
LOD = 3.143 (S) x Dilution Facor, where "S" is the Standard Deviation from the MDL Study
PAL: Preventive Action Limit, NR 140.10 Public health related groundwater standards. "ns" = not specified
RQ : Run Qualifier; "J" = Results between LOD and LOQ. "RR" = Re-extract Rerun sample, "B" = Showed in Blank sample.

Rounding Rules: Three significant figures were used for concentrations above 99 ug/L, two significant figures for concentrations between 1-99 ug/L, and one significant figure for lower concentrations.
DNR Analytical Detection Limit Guidance, April 1995.

[redacted] [redacted] 9710439 [redacted]

NOVA Environmental Laboratory

8222 W. Calumet Road • Milwaukee, WI 53223
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CHAIN OF CUSTODY

1 Page 1 of 2

CLIENT INFORMATION	
Project Manager:	Sue Murawski
Company:	STS - milwaukee
Mailing Address:	11425 w lake Park Dr
City, State, Zip:	milwaukee WI 53224
Phone (414) 359-3030 FAX:	359-0822

REPORTING / INVOICING INFORMATION		
Project I.D.:	85149 xA	
Pricing/Quote Reference:		
Person to be Invoiced:	☒ Client	☐ Property Owner
Mail Invoice to:	☒ Client	☐ Property Owner
Mail Lab Reports to:	☒ Client	☐ Property Owner

PROPERTY OWNER INFORMATION	
Property Owner:	
Owner's Company:	
Street Address:	
City, State, Zip:	
Phone:	FAX:

TURNAROUND

☒ NORMAL (about 2 weeks for non-TCLP samples)
☐ ***RUSH*** *Date report needed:* _____
NOTE: Call to confirm** that we can provide the desired Rush processing **before shipping samples!

SPECIAL NEEDS / INSTRUCTIONS

SAMPLE CHARACTERISTICS

☒ NON-HAZARDOUS
☐ Possibly Hazardous; *use special handling*
NOTE: Left-over, hazardous samples will be returned to you for proper disposal.

SAMPLE RECEIVING RECORDS

Samples received "on ice" ☒
Temperature (if not "on ice") ____ °C
Samples intact / not leaking ☐

Enter "Preservation/Filtration Codes":

A. HCl
B. HNO_3
C. NaOH
D. H_2SO_4
E. Methanol
F. Field Filtered

LAB I.D.	SAMPLE (Field) I.D.	Additional SAMPLE or SAMPLING INFORMATION (optional)	DATE	TIME	Matrix *			ANALYSIS NEEDED: VOCs 8010 SVOCs 8270								CONTAINERS / SAMPLE: Total	40mL	250mL	500mL	1 L	Other
6000	GP13/S2		6/5/97	8:40A	Soil	X	X	soil													
6001	GP 13/S4		6/5/97	8:48A	Soil	X	X	soil													
6003	GP 13		6/5/97	9:15A	Water	X															
6004	GP 14		6/5/97	10:45A	water	X															
6002	GP13 S-7A		6/5/97	9:00A	Soil	X	X	soil													
6005	GP 15		6/5/97	12:20P	Water	X															
6006	GP 16		6/5/97	2:10P	Water	X															
6007	GP 19		6/5/97	3:10P	Water	X															
6008	North well		6/5/97	4:00P	Water	X															
6009	South well		6/5/97	5:00P	water	X															

* Soil **(S)** Surface Water **(SW)** Groundwater **(GW)** *WASTES: Waste, Solid **(WS)** Waste, Liquid **(WL)** Waste, TCLP **(TCLP)*** If applicable: Composite **(C)** or Grab **(G)**

Relinquished by (signature):	Date / Time:	Received by (signature):
David L Makuiz	6/6/97 1:00pm	
Relinquished by (signature):	Date / Time:	Received by (signature):

Relinquished by (signature):	Date / Time:	Received by (signature):
Relinquished by (signature):	Date / Time:	Received by (signature):

CLIENT COPY: Pink **COPY FOR REPORT: Yellow** LAB FILE COPY: White

[redacted] [redacted] [redacted] [redacted] [redacted] [redacted]

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800-236-3909 (414) 355-5800 FAX: (414) 355-3099

CHAIN OF CUSTODY

1 Page 2 of 2

CLIENT INFORMATION	
Project Manager:	Sue Murawski
Company:	STS Consultants
Mailing Address:	11425 W Lake Park Dr
City, State, Zip:	Milwaukee WI 53224
Phone: (414) 359-3030	FAX: 359-0822

REPORTING / INVOICING INFORMATION		
Project I.D.:	85149xA	
Pricing/Quote Reference:		
Person to be Invoiced:	☑ Client	☐ Property Owner
Mail Invoice to:	☑ Client	☐ Property Owner
Mail Lab Reports to:	☑ Client	☐ Property Owner

PROPERTY OWNER INFORMATION	
Property Owner:	
Owner's Company:	
Street Address:	
City, State, Zip:	
Phone:	FAX:

TURNAROUND

☒ NORMAL (about 2 weeks for non-TCLP samples)

☐ ***RUSH*** *Date report needed:* _____

NOTE: Call to confirm** that we can provide the desired Rush processing **before shipping samples!

SPECIAL NEEDS / INSTRUCTIONS

SAMPLE CHARACTERISTICS

☒ NON-HAZARDOUS

☐ Possibly Hazardous; *use special handling*

NOTE: Left-over, hazardous samples will be returned to you for proper disposal.

SAMPLE RECEIVING RECORDS

Samples received "on ice" ☒

Temperature (if not "on ice") ____ °C

Samples intact / not leaking ☐

Enter "Preservation/Filtration Codes":

A. HCl
B. HNO_3
C. NaOH
D. H_2SO_4
E. Methanol
F. Field Filtered

LAB I.D.	SAMPLE (Field) I.D.	Additional SAMPLE or SAMPLING INFORMATION (optional)	DATE	TIME	Matrix *	ANALYSIS NEEDED: VOC	CONTAINERS / SAMPLE: Total	40mL	250mL	500mL	1 L	Other
6010	GP 18		6/6/97	9:25	water	X						
			6/6/97		water							

* Soil **(S)** Surface Water **(SW)** Groundwater **(GW)** *WASTES: Waste, Solid **(WS)** Waste, Liquid **(WL)** Waste, TCLP **(TCLP)*** If applicable: Composite **(C)** or Grab **(G)**

Relinquished by (signature):	Date / Time:	Received by (signature):
Dwight Matar	6/6/97 1:00p	
Relinquished by (signature):	Date / Time:	Received by (signature):

Relinquished by (signature):	Date / Time:	Received by (signature):
Relinquished by (signature):	Date / Time:	Received by (signature):

CLIENT COPY: Pink **COPY FOR REPORT: Yellow** LAB FILE COPY: White