

REMEDIAL ACTION REPORT

Redi-Quik Dry Cleaners
9510 West Greenfield Avenue
West Allis, Wisconsin

JOB NO. 10712E4-91

PREPARED FOR:

Kris Buettner
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PREPARED BY:

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May 31, 1991

MILLER
ENGINEERS

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May 31, 1991

#10712E4

Ms. Kris Buettner
Route 1, Box 308
Elkhart Lake, WI 53020

Subject: Remedial Action Report
Redi-Quik Dry Cleaners
9510 West Greenfield Avenue
West Allis, Wisconsin

Dear Ms. Buettner:

Enclosed is the Remedial Action Report for the above-referenced project. Copies of this report have been forwarded to Mr. Charles Krohn with the Wisconsin Department of Natural Resources--Southeast District, and to the Wisconsin Department of Industry, Labor and Human Relations--Bureau of Petroleum Inspection and Fire Protection. The work described in this report has been completed per our contract dated January 2, 1991.

Miller Engineers has appreciated the opportunity to be of service to you on this project. If you have any questions or comments, your call or letter will receive our prompt response.

Sincerely,

MILLER ENGINEERS

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Todd W. Grunwald
Engineering Geologist/
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Enclosures:

cc: Mr. Charles Krohn, WDNR--Lake Michigan District
DILHR--Bureau of Petroleum Inspection & Fire Protection

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I. INTRODUCTION

A subsurface fuel release was documented during the abandonment of four underground tanks at 9510 West Greenfield Avenue, West Allis, Wisconsin. The site assessment was performed on December 1, 1989 by Midwest Engineering Services, Inc. of Waukesha, Wisconsin.

Presently, a dry cleaning service and auto detailing shop operate within the facility. Prior to the late 1950s, a retail gasoline station was operated on site.

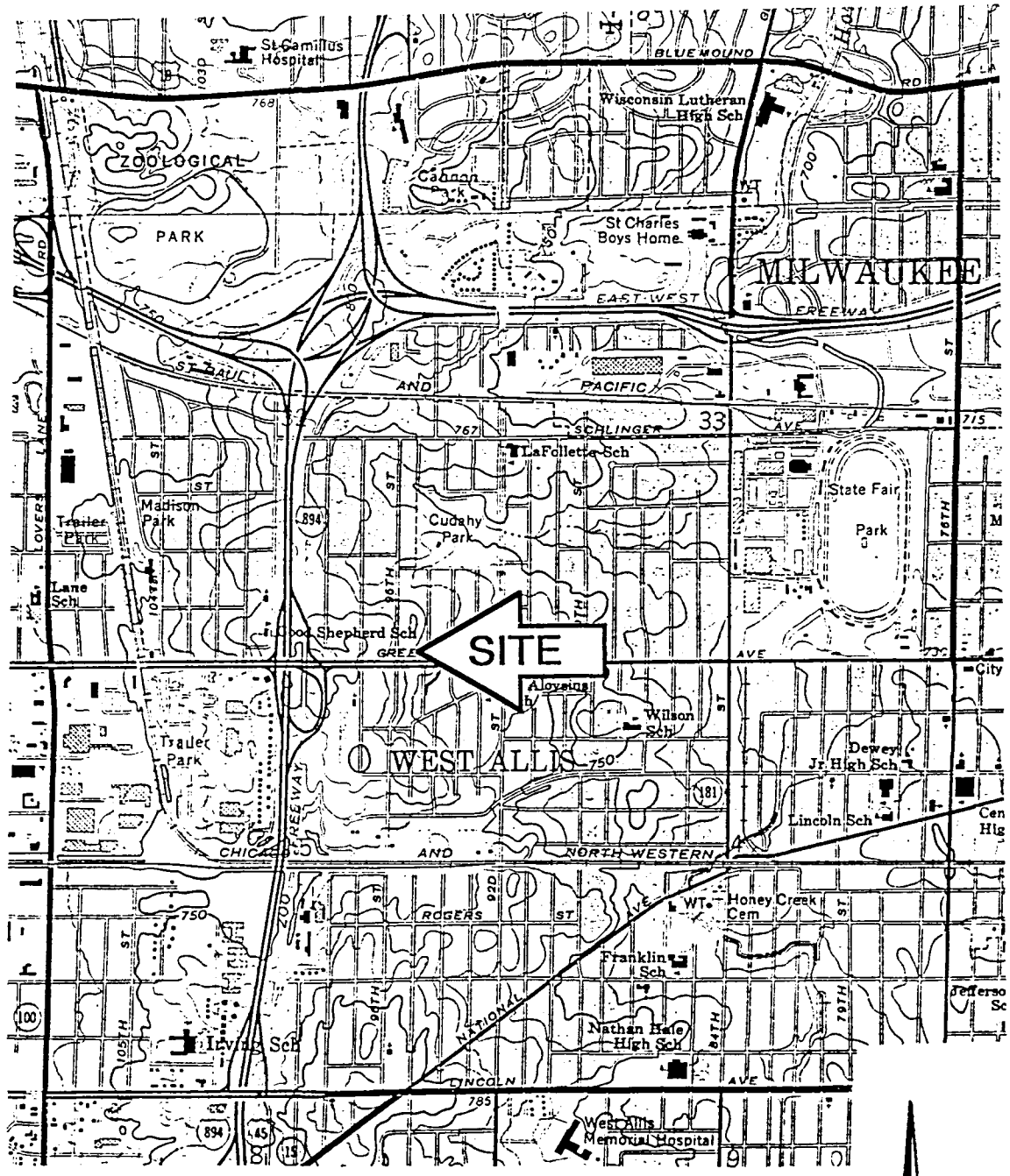
Miller Engineers was contacted by the owner's agent (Ms. Kris Buettner) to perform a remedial investigation. The investigation, performed in the spring of 1990, consisted of the advancement of eight soil borings, construction of three monitoring wells, one round of ground water analytic testing, and a final Remedial Investigation Report. The Remedial Investigation Report concluded by recommending a Remedial Action Plan which outlined a course of action to remediate the site.

The remedial action plan, subsequently was accepted by the Wisconsin Department of Natural Resources (WDNR letter dated September 10, 1990). Ms. Buettner then retained Miller Engineers to implement the remedial action plan. The focus of this plan was to remove and treat the contaminated ground water from the excavations and to over-excavate and dispose of the contaminated soils.

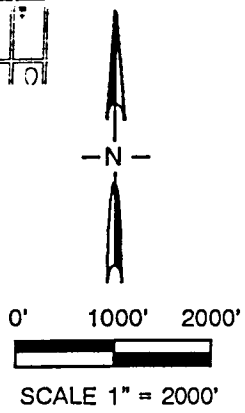
II. SITE DESCRIPTION AND BACKGROUND

The study area is a commercial lot located at the northwest corner of the intersection of West Greenfield Avenue and 95th Street in West Allis, WI. It is located in the SE 1/4 of the SE 1/4 of Section 32, T7N, R21E, Milwaukee County, Wisconsin (refer to Figure 1--Site Location Map). A diagram of the study area is shown on the Site Plan--Figure 2. The site is at an elevation of approximately 775 feet above Mean Sea Level (U.S.G.S.).

WEST ALLIS, WISCONSIN



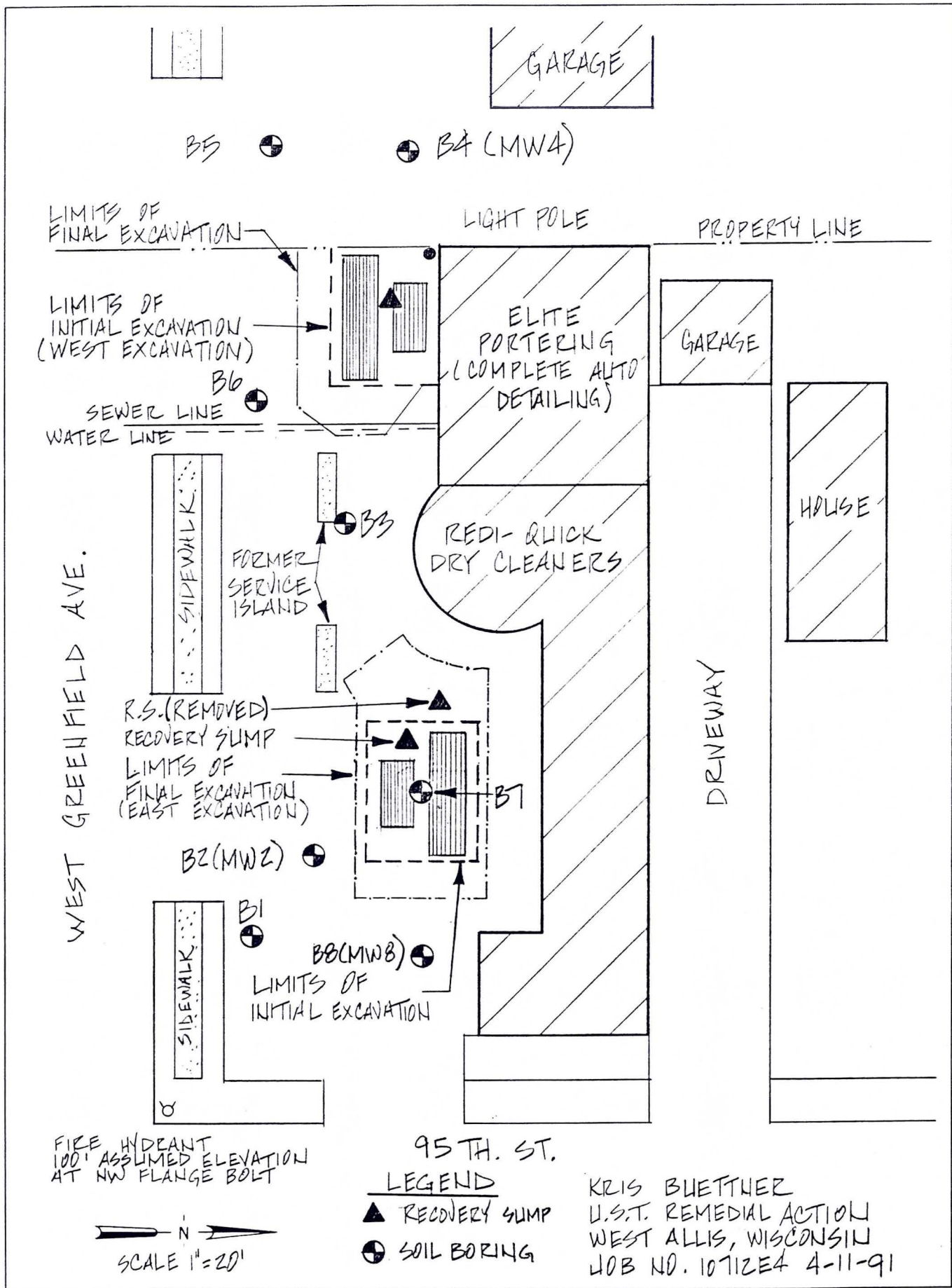
WAUWATOSA QUADRANGLE
 WISCONSIN
 7.5 MINUTE SERIES (TOPOGRAPHIC)
 SE/4 WAUKESHA 15' QUADRANGLE



Date	5-10-91	By	HVM	CLIENT:	KRIS BUETTNER
Job No.	10712E4	Ck	KG	JOB :	U.S.T. REMEDIAL ACTION
				LOCATION:	WEST ALLIS, WISCONSIN

MILLER
 ENGINEERS

FIGURE 1. SITE LOCATION MAP



The site assessment report for the tank abandonment conducted by Midwest Engineering Services, Inc., describes that four underground storage tanks were removed from two separate excavations. Both of these excavations were located along the south building face.

The excavation located near the east building wall contained two 4,000-gallon gasoline tanks (refer to **Figure 2**). Both tanks removed from this excavation had corrosion and holes. Following tank removal and assessment of the subsurface conditions, an 8-inch diameter PVC recovery sump was installed at a depth of 9 to 10 feet, and contaminated soils were backfilled around the sump.

The excavation located near the west end of the site also contained two tanks. One tank, estimated to be approximately 1,000 gallons in capacity, was reportedly used to store fuel oil. The second tank (approximately 260 gallons) was reportedly used to store drain oil. Holes were also observed in the bottom and sides of these tanks. It is possible that these tanks may also have contained gasoline at one time since a strong gasoline odor was noted during excavation. A ground water sump was also installed in this excavation before back-filling with contaminated soils.

Analytic testing of soil samples taken during the tank removal confirmed the presence of soil contamination above 10 ppm Total Petroleum Hydrocarbons. Therefore, the WDNR required the remedial investigation.

In the spring of 1990, Miller Engineers performed a remedial investigation to further define the limits of both soil and ground water contamination. The investigation concluded that contaminated soils were isolated within 10 to 20 feet of the former tank locations, and that the ground water on site was slightly contaminated (10 ppb 1, 2-Dichloroethene, 2.2 ppb Tetrachloroethene and 2.0 ppb Trichloroethene). As a result of data collected during the remedial investigation, Miller Engineers recommended the following:

- 1) Re-excavation of the backfill within the former tank excavation and over-excavation of contaminated soil to the extent possible,
- 2) Recovery and treatment of contaminated ground water at the former underground tank locations, and
- 3) Continued monitoring of the on-site recovery sump and monitoring wells.

III. SUBSURFACE CONDITIONS

Soils in the project area are predominantly of glacial ground moraine origin consisting of unstratified clay till. Undifferentiated dolomite bedrock typically underlies approximately 50 to 200 feet of soil overburden in this area.

Soil encountered during the remedial investigation conducted by Miller Engineers was predominantly lean clay with varying amounts of sand, and occasional sand lenses. Atterberg Limit tests performed on soil samples obtained during the over-excavation confirmed the classification as lean clay (refer to Plasticity Chart in the Appendix).

The measured water table varied between 14 and 15 feet below site surface grade. Based on the results of water level data, as well as regional ground water data, it appears that shallow ground water moves east across the site with a gradient of approximately 2%. This corresponds with a 10% slope in surface grades from west to east.

Underground utilities in the area may significantly effect ground water movement because of the area's naturally impervious soils and depth to ground water. Natural ground water velocity is expected to be slow due to the low permeability of the on-site soils.

A more detailed analysis of regional and site geology, soils, and hydrogeology can be found in **Miller Engineers Report #10712E1-90** dated July 25, 1990.

IV. REMEDIAL ACTION

4.1 Removal of Ground Water from Excavation

Ground water and surface runoff which accumulated in the excavations had to be removed prior to re-excavation of the contaminated soils. A permit for disposal of the ground water at the Milwaukee Metropolitan Sanitary District Wastewater Treatment Facility was obtained on February 4, 1991. On February 14, the water was pumped from the two ground water sumps located within the excavations into a tank truck operated by National Tank Service of Wisconsin, Inc. The water was then hauled to a dumping point, tributary to the Milwaukee Metropolitan Sanitary District Wastewater Treatment Facility.

4.2 Contaminated Soil Removal

Excavation and disposal of petroleum-contaminated soils were carried out from February 14 through February 18, 1991. Permits for contaminated soil disposal were obtained from Parkview Landfill, Menomonee Falls, Wisconsin. The excavation and transport of the contaminated soil was performed by Buteyn Excavating & Grading Inc., Sheboygan, Wisconsin.

4.2.1 Sample Screening

Soil samples were collected by Miller Engineers during excavation activities (refer to **Qualifications of Sampling Personnel** in the **Appendix**). These samples were monitored to determine levels of petroleum contamination. Soil monitoring was done by "headspace" analysis in combination with documenting odor and discoloration. The

headspace analysis consisted of placing individual soil samples in sealed glass jars and subsequently testing the air space above the sample for hydrocarbon vapors. **Field Sampling Techniques and Vapor Monitoring of Soil** details of this procedure are described in the **Appendix**.

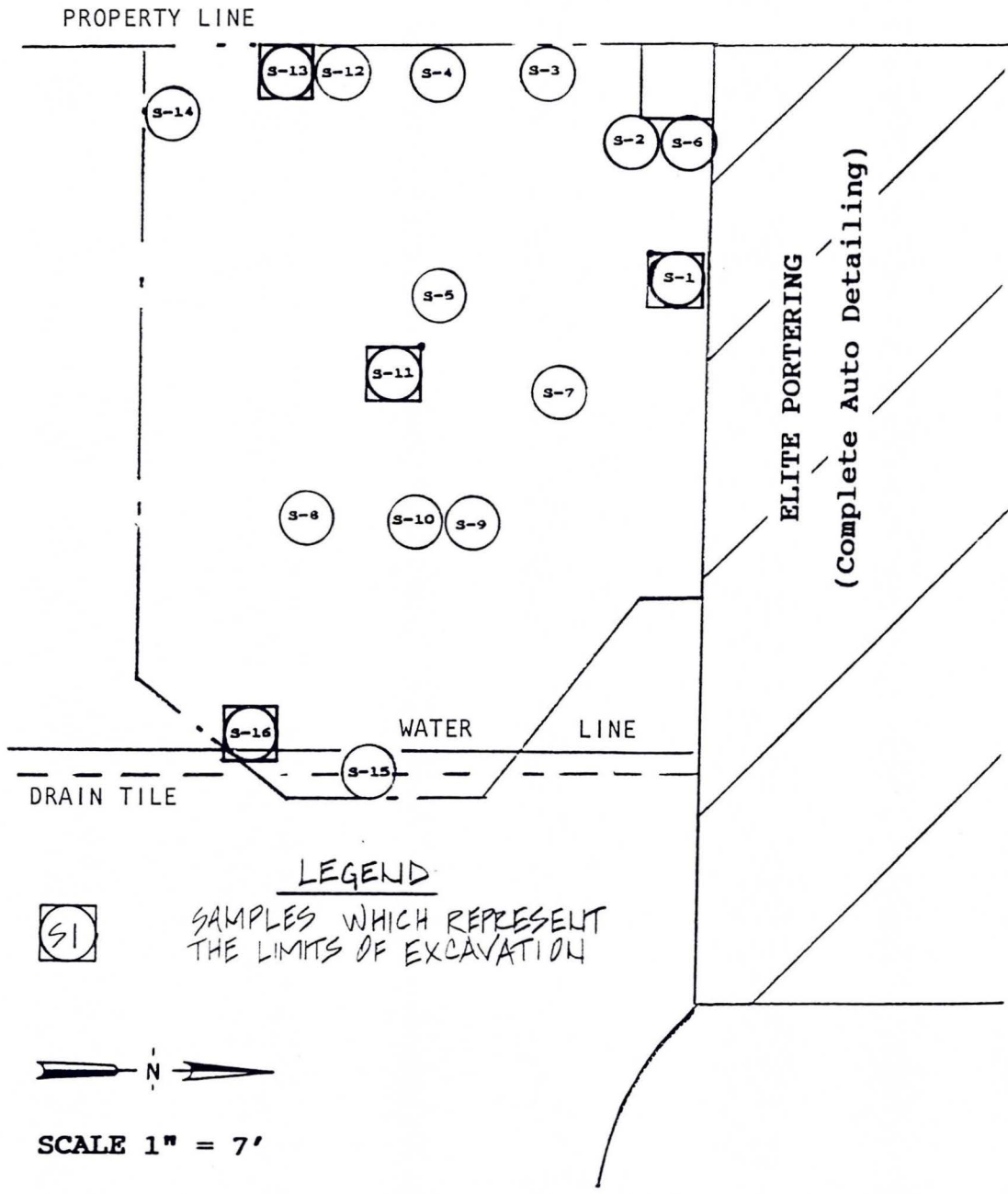
On February 14 and 15, a TLV meter (manufactured by Bacharach Instruments) was used to monitor soil samples in the field. Results are reported as parts per million on a volume basis (ppmv) as hexane. When samples were returned to the laboratory, they were screened with a photo-ionization detector (HNU meter with 10.2 eV lamp). The results were expressed in parts per million on a volume basis (ppmv) as equivalent benzene.

On February 18, both field and laboratory screening of soil samples was conducted using the HNU meter. Locations of soil samples collected are illustrated on **Figures 3 and 4--Soil Sample Location Plans**. **Soil Vapor Survey Results** are presented in the **Appendix**.

4.2.2 Limits of Excavation

The limits of excavation were determined by physical constraints or where a significant reduction in contamination levels was encountered, as indicated by vapor analysis in the field. In total, approximately 390 cubic yards of soil were excavated from the site.

West Excavation: The property line marks the western limit of the west excavation, and drain tile and water lines mark the eastern limit (refer to **Photo #1** in the **Appendix**). The excavation continued to the north to the building foundation and to the south until low vapor readings were attained. Noticeable contamination (soil discoloration, odor, and relatively high vapor readings) still remained along the west and east limits of the excavation.



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JOB NO. 10712E4 5-10-91

FIGURE 3. SOIL SAMPLE LOCATION PLAN-WEST EXCAVATION

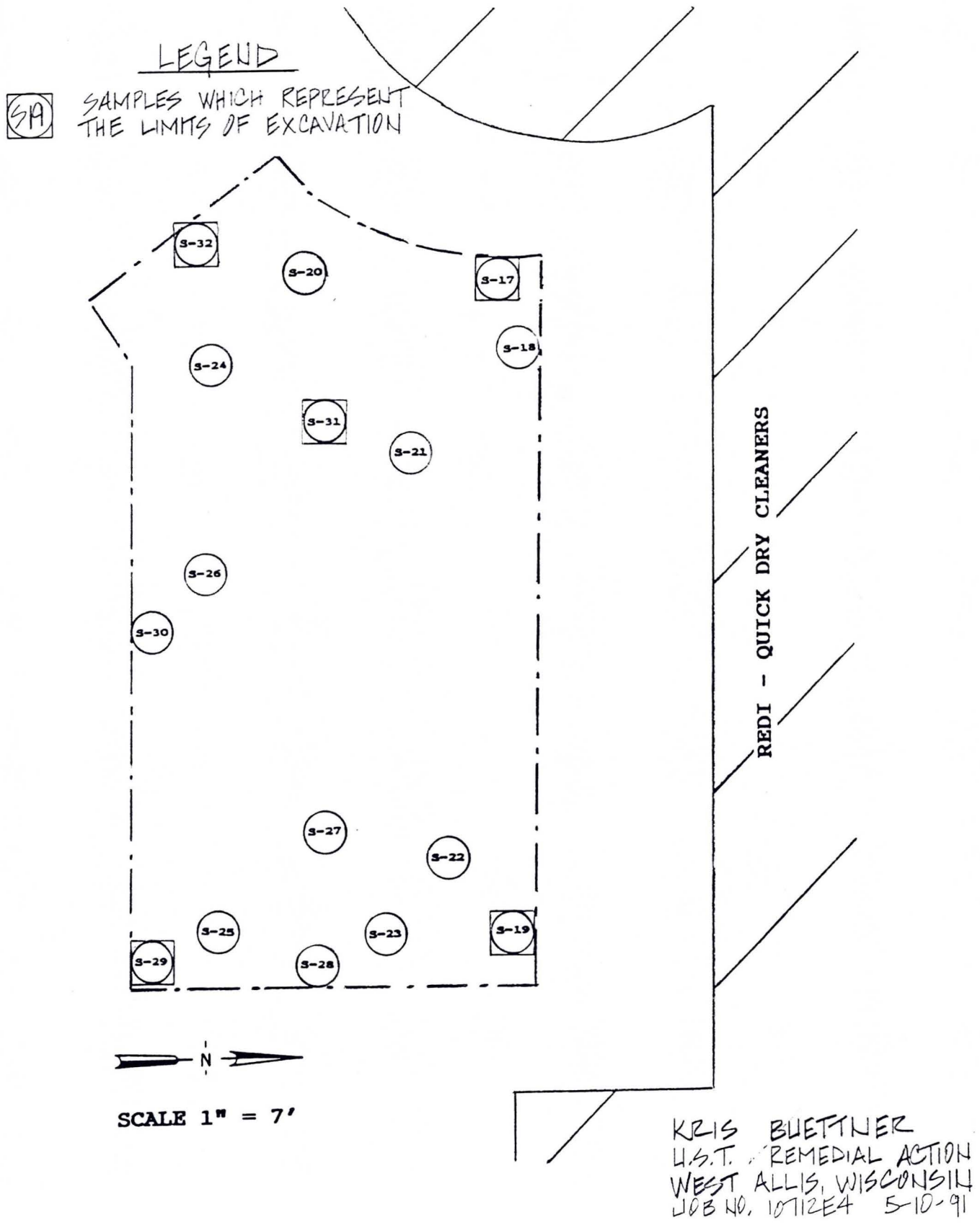


FIGURE 4. SOIL SAMPLE LOCATION PLAN-EAST EXCAVATION

East Excavation: All limits of the east excavation were attained by low vapor readings.

The excavations varied in depth from 9.5 to 11 1/2 feet. Prior to backfilling the excavations, a sump was installed in each excavation and the clay bottoms were sloped toward the sump to aid in future ground water recovery.

4.2.3 Analytic Testing

Duplicate samples were collected at the limits of each excavation, packed in Teflon-sealed glass jars, and placed in ice-packed coolers. These samples were transported to ORTEK Environmental Laboratory, Green Bay, Wisconsin, and analyzed for TPH (kerosene, gasoline, and diesel), total lead, and VOCs.

Nine samples were tested for TPH concentrations using the California Method. In addition, five of these samples were tested for VOCs using EPA Method 8021. **Laboratory Analysis Reports** are presented in the **Appendix**, and are summarized in **Table 1**. Sample locations are keyed to **Figures 3 and 4**.

TABLE 1

ANALYTIC TEST RESULTS--WEST EXCAVATION--FINAL LIMITS

<u>Sample</u>	<u>Date</u>	<u>Depth (ft)</u>	<u>Location</u>	<u>TPH(ppm)</u>
S1	2-14-91	7	North wall by building footing	13 (gas)
S11	2-14-91	10.5	Bottom center	ND
S13	2-14-91	5.5	West wall, 15 feet from building	92 (gas)
S16	2-14-91	4	East wall, 18 feet from building	ND

ND = Not detected

TABLE 2

ANALYTIC TPH TEST RESULTS--EAST EXCAVATION--FINAL LIMITS

<u>Sample</u>	<u>Date</u>	<u>Depth (ft)</u>	<u>Location</u>	<u>TPH (ppm)</u>
S17	2-15-91	5	West wall by footing	ND
S19	2-15-91	7.5	North wall by NE corner	ND
S29	2-18-91	8	East wall (center)	ND
S31	2-18-91	11	Bottom near west end	ND
S32	2-18-91	10.5	Southwest wall	ND

Samples S1 and S13 contained concentrations of TPH in excess of the State of Wisconsin Reporting Limit of 10 ppm.

4.2.4 Evaluation

Field vapor (HNU) readings and laboratory analytic test (TPH) results indicate that soil excavation was successful in removing the majority of the contaminated soils. Some contamination still remains along the east and west wall of the west excavation where the excavation was terminated due to physical constraints. Little or no contamination appears to remain in the east excavation. A detailed description of the conditions at the limits of the excavations is found in the following paragraphs.

West Excavation: On February 14, 1991, the west excavation was excavated to the limits shown on Figure 3. Six soil samples from the west wall were field screened using a TLV meter. Meter readings ranged from 60 to 1,700 ppmv indicating that contamination was still present. Additional excavation could not take place along this wall due to property constraints. One sample (S-13) was sent to ORTEK Lab for TPH analysis. The lab report (refer to Appendix) indicated a TPH

(gasoline standard) of 92 ppm. Since boring B5 and monitoring well M-4 (refer to Figure 2) both had clean soils, it appears that the remaining contamination is limited in extent (refer to Figure 3 for the estimated extent of soil contamination and to Miller Engineers' Remedial Investigation Report #10712E1-90).

The northern limit of the west excavation extends to the existing building foundation. One soil sample (S-1) from below the foundation was submitted for analytic testing. The TPH level recorded for this sample was 13 ppm. This contamination level is low and, since the soil under the building is a lean clay, soil contamination probably does not extend under the building more than a few feet (refer to Figure 3).

Samples (S-11 and S-16) collected from the east wall and the bottom of the excavation had no detectable TPH level.

VOC analysis of Sample S-11 indicated detectable concentrations of benzene, butylbenzene, and naphthalene.

VOC analysis of Sample S-13 indicated detectable levels of butylbenzene, ethylbenzene, isopropylbenzene, isopropyltoluene, propylbenzene, styrene, toluene, trimethylbenzene, and xylenes. Analytic test reports for the VOC analysis are included in the Appendix.

The sand backfill that surrounds the drain tile, marking the east limit of excavation, may have acted as a conduit for product movement. The drain tile was damaged during excavation on February 14 and repaired on the morning of February 15. Most of the overlying sand backfill was removed because it had a slight gas odor. After the tile was repaired, clean sand was replaced over the tile prior to backfilling the excavation. Field vapor screening was completed on a soil sample (S-9) collected from the removed sand backfill. Head space analysis was conducted in the field using a TLV meter and in the lab using a HNu meter. The meters registered readings of 1,250 ppmv (TLV) and 95 ppmv (HNu).

Soil sample S-16 collected from the native clay adjacent to this sand, had no detectable TPH (gas, diesel, or kerosene).

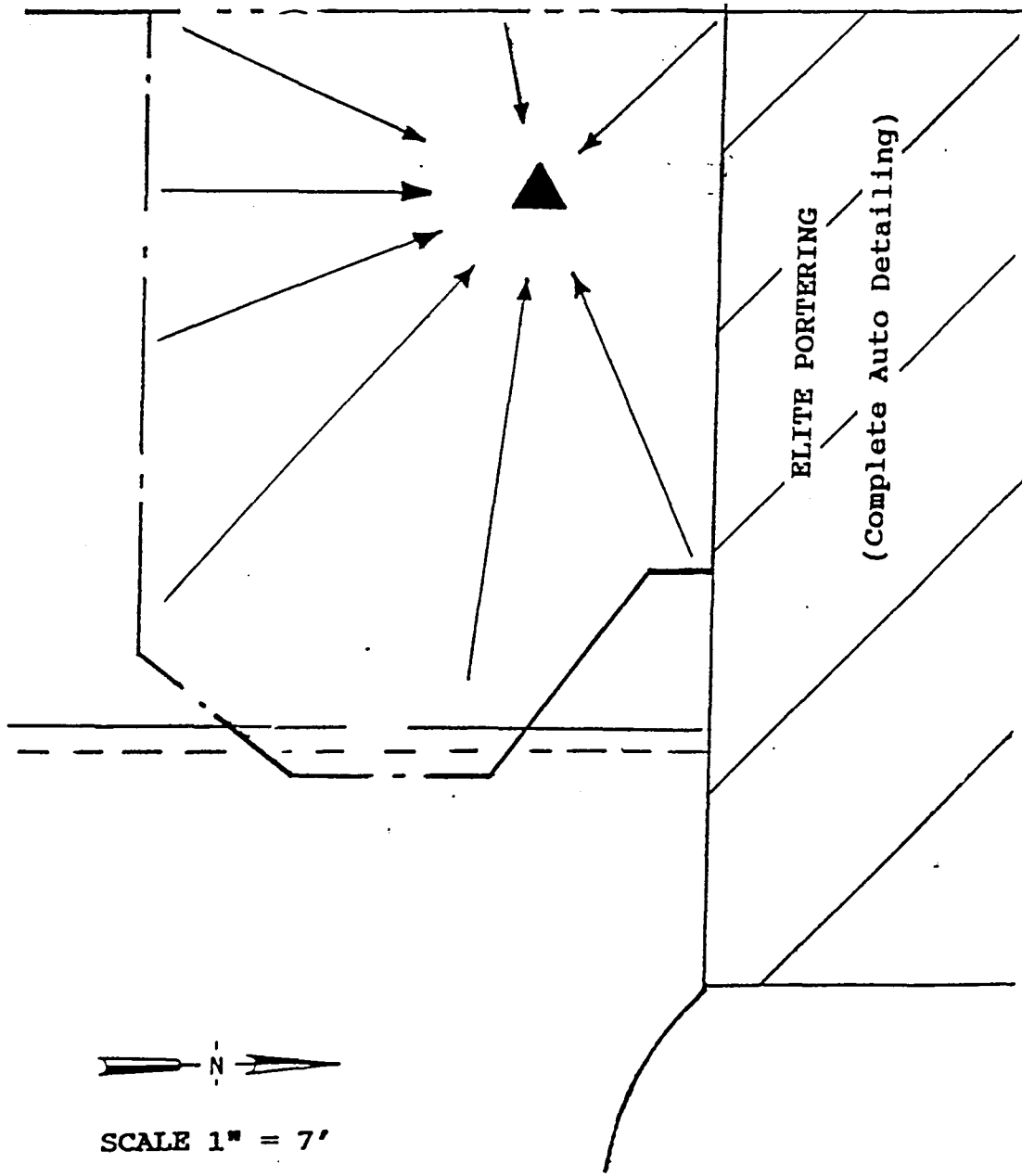
East Excavation: The limits of east excavation were extended until low vapor readings (HNU) were encountered. Sixteen soil samples (S-17 through S-32) were collected from the east excavation for field vapor screening. Locations of each sample and field screening data can be found on **Figure 4**. Five samples were sent to ORTEK Lab for TPH analysis. Three of these samples were also analyzed for VOCs and total lead. All five samples indicated no detectable levels of TPH, and only low levels of lead and VOCs. **Table 2** and **Figure 4** summarize the TPH results and show soil sample locations for the east excavation (refer to the **Appendix** for the complete lab analysis for the soil samples).

It appears that over-excavation of contaminated soils was successful in eliminating the majority of soil contamination in the east excavation.

4.3 Installation of Remedial Systems

Following excavation, Miller Engineers recommended the installation of ground water monitoring and recovery systems in each excavation (refer to **Figures 5 and 6--Recovery Sump Installations**). The systems were constructed and installed in the open excavation before backfilling (refer to **Photos #2 through #4** in the Appendix). A detailed description of the recovery sump installations is provided in the following paragraphs.

West Excavation: Following excavation of contaminated soil, the bottom of the excavation was sloped to the north (refer to **Figure 5**). A six-inch diameter recovery sump was installed 7 feet from the building and 7 feet from the west wall of the excavation. This sump can be used for either ground water monitoring or ground water recovery.



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U.S.T. REMEDIAL ACTION
WEST ALLIS, WISCONSIN
HOB NO. 10712EA 5-10-91

FIGURE 5. RECOVERY SUMP INSTALLATION (WEST EXCAVATION)

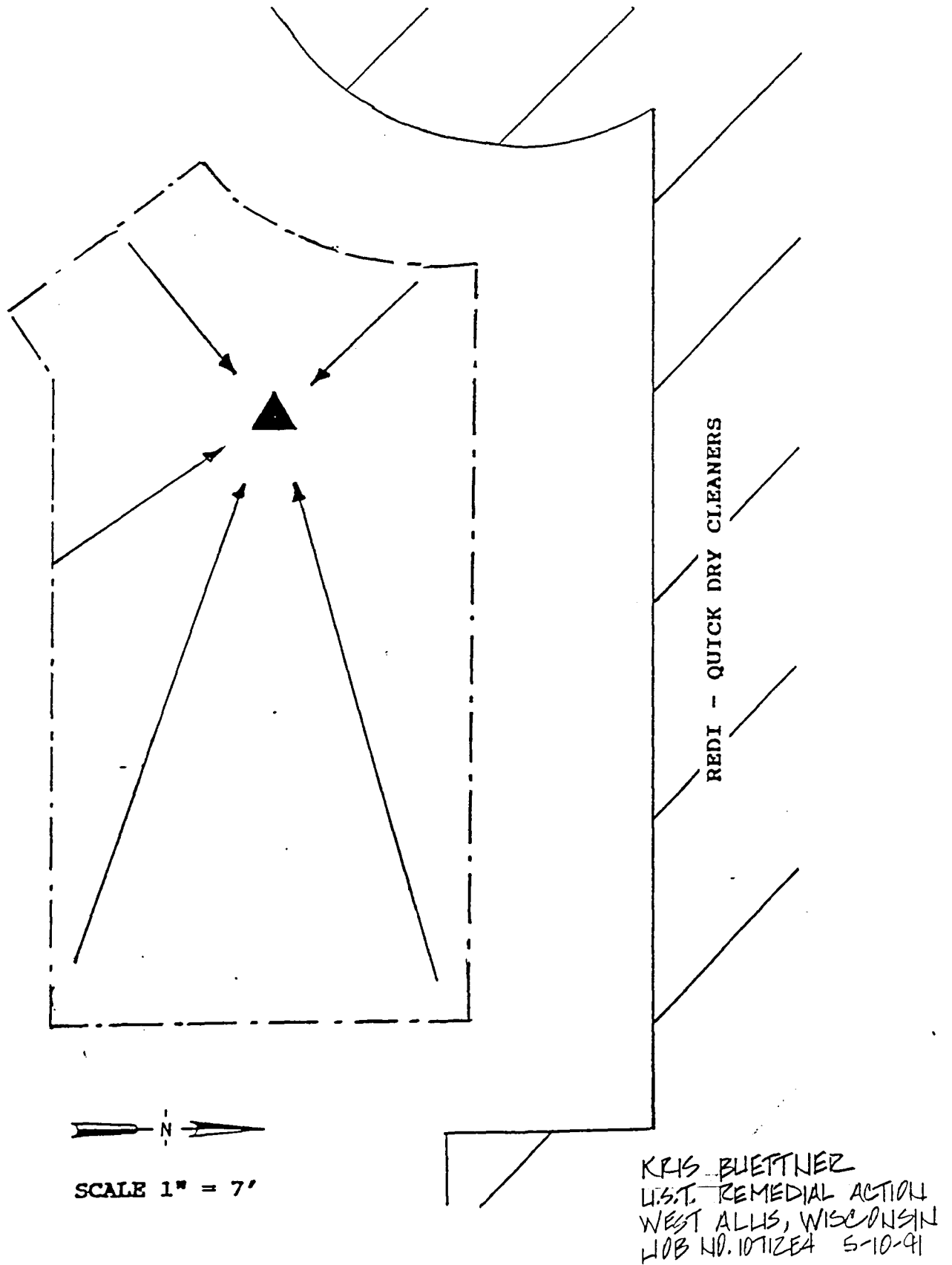


FIGURE 6. RECOVERY SUMP INSTALLATION (EAST EXCAVATION)

An area approximately 3 feet square was excavated to a depth of about 1 1/2 feet below the bottom of the excavation in the place where the sump was installed. This extra excavation along with the sloping of the excavation floor will promote ground water flow in the direction of the sump. Three-quarter inch washed gravel was used to fill the bottom 4 to 6 feet of the excavation and was mounded around the sump to cover the slotted zone of the PVC pipe. The remainder of the excavation was filled with poorly sorted road gravel and compacted.

East Excavation: Following excavation of contaminated soil, the bottom of the excavation was sloped to the northwest (refer to **Figure 6**). An eight-inch diameter recovery sump was installed at the northwest end of the excavation. Before the sump was installed, a 3 foot square area was excavated about 1 1/2 feet below the bottom of the excavation. The recovery sump was placed in this excavated area. This sump can also be employed as a ground water monitoring point. After installation of the sump, the excavation was backfilled with the same procedure as described for the west excavation.

4.4 Disposal of Contaminated Soil

On December 11, 1990, a soil sample was collected for waste characterization analysis to prepare for contaminated soil disposal. The sample was delivered to Robert E. Lee & Associates for analytic testing. **Analytic Reports** for these tests are included in the Appendix.

Approximately 390 cubic yards of soil were excavated during the February remediation efforts. Soil was trucked to and disposed of at the Parkview Landfill Management Center, Menomonee Falls, Wisconsin as the excavation progressed.

V. SUMMARY/CONCLUSIONS

Site remediation consisting of excavation of contaminated soil was carried out at Redi-Quik Dry Cleaners, 9510 West Greenfield Avenue, West Allis, Wisconsin, during the month of February 1991. To accomplish this, the following tasks were performed:

1. **West Excavation:** Excavation was performed to the extent practical. Excavation to the south and east was continued until low concentrations of hydrocarbons were reached. Excavation to the west and north was terminated due to physical constraints.
2. **East Excavation:** Excavation was performed to the extent of low concentrations of hydrocarbons in all directions.
3. Selected soil samples collected at the limits of the excavations were submitted for analytic testing (TPH, VOC, and lead). Testing confirmed that the over-excavation process was quite successful in removing contamination. However, some contamination of soil remains at the north and west limits of the west excavation, where excavation was not practical.
4. To allow for further site remediation, a ground water recovery sump was installed in each of the excavations. If remediation of ground water becomes necessary, the ground water recovery system installed during excavation efforts can be utilized. This process will also require the permitting, design, and installation of a pumping and discharge system.
5. Approximately 390 cubic yards of excavated soil were disposed of at Parkview Landfill Management Center.

VI. RECOMMENDATIONS

Measures should be taken to determine the quality of ground water on this site. We recommend that the ground water recovery sumps installed in each excavation, and all monitoring wells constructed during the earlier Remedial Investigation, be sampled on a quarterly basis for one year beginning in June of 1991. Samples should be analyzed for VOCs per EPA Method 8021.

Water quality data should be reviewed to provide information on the need for further remedial action. If the ground water sample contains VOC concentrations above state water quality standards, we recommend that the ground water be periodically pumped from the recovery sumps to prevent movement of contaminated ground water off site.

VII. CLOSURE

Miller Engineers appreciates the opportunity to provide professional engineering services on your behalf. If you have any questions or comments concerning this proposal, your call or letter will receive our prompt response.

Sincerely

MILLER ENGINEERS

Todd W. Grunwald
Todd W. Grunwald
Engineering Geologist/
Hydrogeologist

Roger G. Miller
Roger G. Miller, P.E.
Vice President--
Environmental Engineering

Kristine K. Gallagher
Kristine K. Gallagher
Environmental Scientist

TWG/pm

BUET12E4.RAR

APPENDIX

PROJECT CONTACT INFORMATION SHEET	(WHITE SHEET)
SOIL PARTICLE SIZE ANALYSIS	(GREEN SHEET)
PLASTICITY CHART (ATTERBERG LIMITS)	(YELLOW SHEET)
FIELD SAMPLING TECHNIQUES AND VAPOR MONITORING OF SOIL	(GOLDENROD SHEET)
SOIL VAPOR SURVEY RESULTS	(GREEN SHEET)
QUALIFICATIONS OF SOIL/ WATER SAMPLING PERSONNEL	(WHITE SHEETS)
ANALYTIC TEST RESULTS--SOIL AND CHAIN OF CUSTODY RECORDS	(TAN SHEETS)
SITE PHOTOGRAPHS	(WHITE SHEETS)

PROJECT CONTACT INFORMATION SHEET

OWNER

Ruth Barkenkow

(Direct inquiries
to Owner's Agent
below)

OWNER'S AGENT

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Elkhart Lake, WI 53020
(414) 876-3218

CONTRACTOR

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CONSULTANT

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(414) 458-6164

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King Jr. Drive
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Milwaukee, WI 53212
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SOIL DISPOSAL

Parkview Recycling &
Disposal Facilities
N96W13475 County Line
Menominee Falls, WI
53051
Attn: Peggy Slind
(414) 253-8626

PARTICLE SIZE ANALYSIS

PROJECT: REDI-QUICK
 CLIENT : KRIS BUETTNER

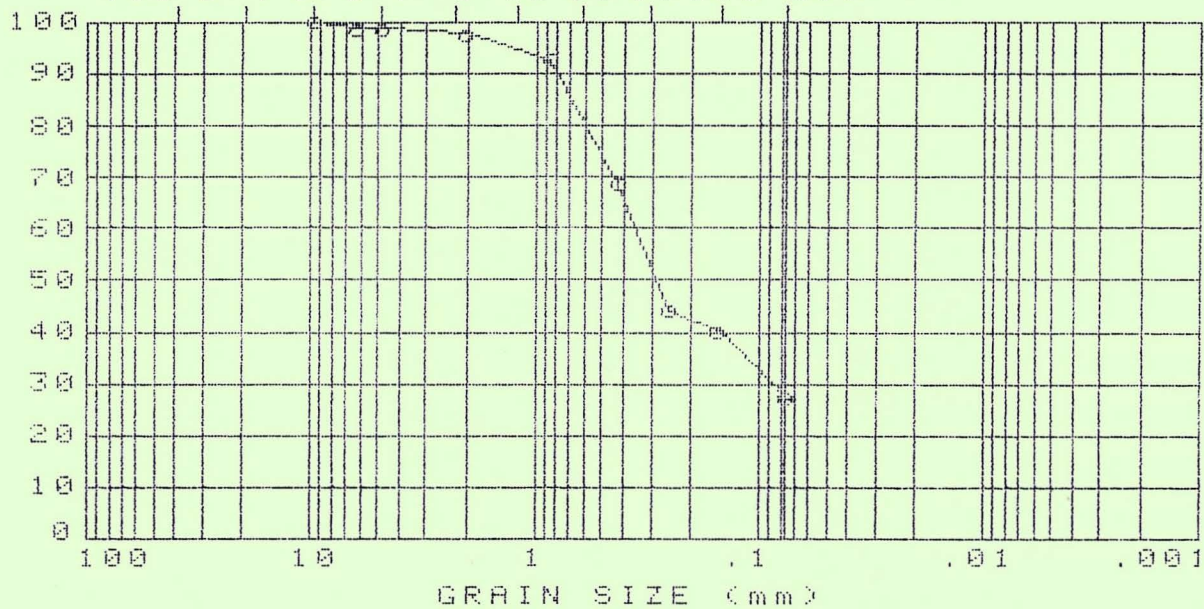
JOB NO.: 10712E.4

SAMPLE NO.: S-15
 SOURCE :
 SAMPLED BY: MILLER ENG.

TEST DATE: 2/21/91
 TESTED BY: SUE
 REVIEWED BY: KG

U.S. Standard Sieve Sizes

(inches) (nos)
 1.5 3/4 3/8 4 8 16 30 50 100 200



COARSE GRAVEL	FINE GRAVEL	CRSE SAND	MEDIUM SAND	FINE SAND	SILT	CLAY
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UNIFIED SOIL CLASSIFICATION

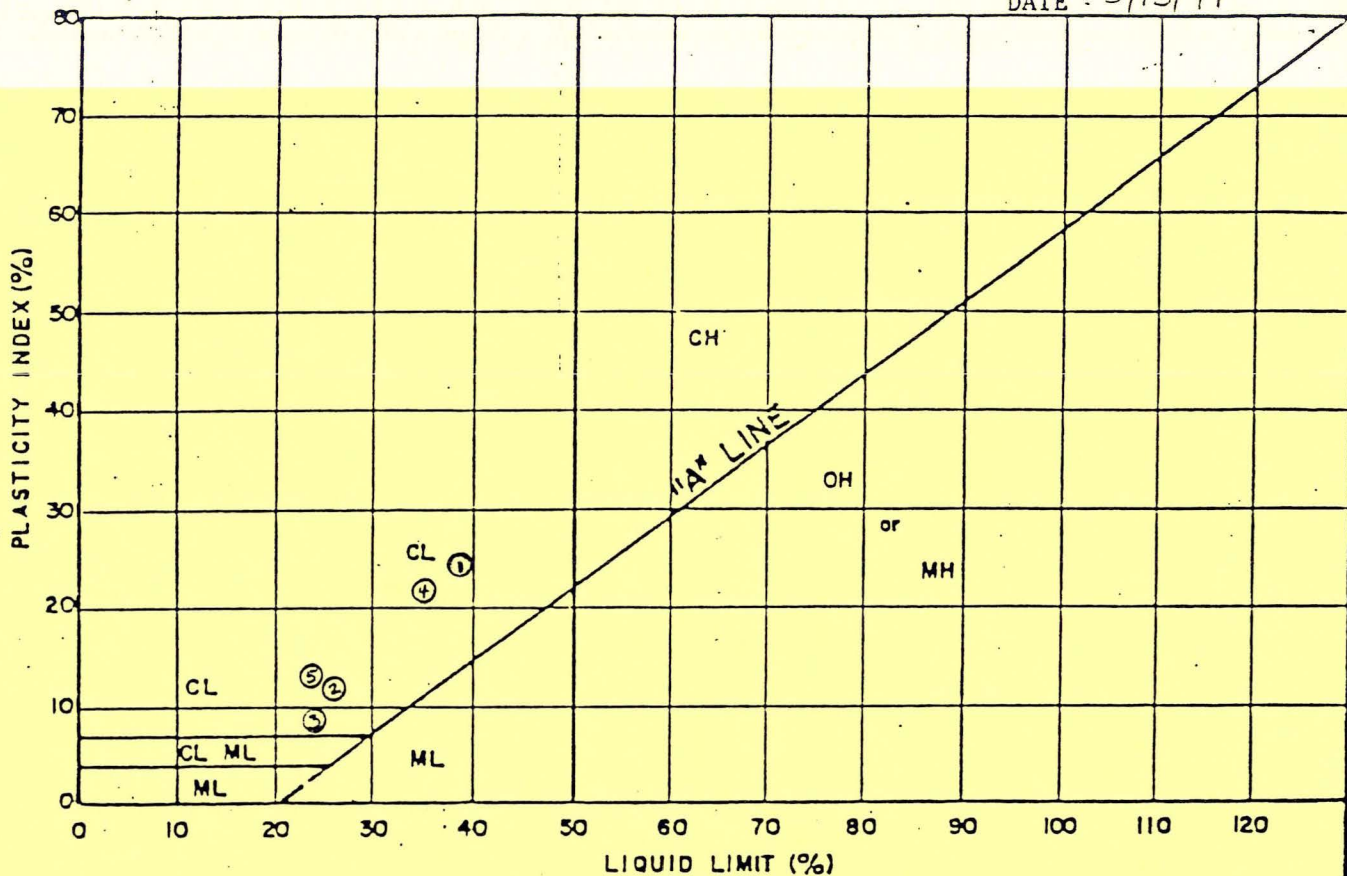
PERCENT GRAVEL : 1.3
 PERCENT SAND : 71.4
 PERCENT SILT & CLAY : 27.4

SAMPLE DESCRIPTION : SILTY SAND

PLASTICITY CHART

BY KG

DATE 5/13/91



PLASTICITY DATA

TEST No.	SAMPLE	DEPTH (feet)	NATURAL WATER CONTENT W (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	SHRINKAGE LIMIT	UNIFIED SOIL CLASSIFICATION SYMBOL
1	S11	10.5	—	15.2	39.5	24.3	—	CL
2	S13	5.5	—	16.7	23.9	7.2	—	CL
3	S19	7.5	—	13.4	27.2	13.8	—	CL
4	S31	11	—	15.0	36.5	21.5	—	CL
5	S32	10.5	—	14.6	26.6	12.0	—	CL

ATTERBERG LIMITS—PLASTICITY DATA

PROJECT Remedial Action

CLIENT Buettner

JOB NO. 10712E4

FIELD SAMPLING TECHNIQUES AND VAPOR MONITORING OF SOIL

PID's, FID's and portable GC's may be used to screen soil samples using the "headspace" method for the purpose of reducing the number of samples which must be lab analyzed. The following procedures should be followed if field instruments are used for this purpose:

- A. All field instruments must be "zeroed" in the field at the location the head analysis is performed.
- B. If a sample location is to be screened using a field instrument, two samples must be collected from each sampling location. The first sample must be collected, labeled and cooled in accordance with laboratory and regulatory requirements for soil samples to be lab analyzed.
- C. The second sample must be immediately placed in a clean quart mason jar or equivalent soil sampling jar obtained from an environmental laboratory; the sample jar should be filled halfway with soil. If you are not sure the jars are free of organic vapors before adding the soil, then first sample the atmosphere inside the jar with the field instrument prior to adding the soil.
- D. Cover the mouth of the sample jar immediately with heavy duty aluminum foil and a tight-fitting cap. Agitate the sample to break up any clumps. If the sample does not break up into small particles, pierce the foil with a clean knife or other similar clean instrument to break up the sample. Cover the mouth of the sample jar with a second layer of foil to prevent unnecessary volatilization of the sample.
- E. Allow the sample jar to stand for at least 15 minutes in a location above 60° F. out of the direct sunlight.
- F. Pierce the foil with the tip of the field instrument probe and insert the tip into the headspace above the soil sample, recording the highest reading obtained. Care should be taken to avoid contacting the soil with the tip of the instrument.
- G. Observe the manufacturer's operating procedures concerning maintenance, battery care and calibration.

FLDSAMP.STD

SOIL VAPOR SURVEY RESULTS

Sample #	Depth	Location	Limit of Excavation	*Field HNU (ppmv)	*Field TLV (ppmv)	** TPH Gas (ppm)
February 14, 1991						
S-1	7 ft.	North Wall	yes		560	13
S-2	7 ft.	West Wall	yes		400	
S-3	5 ft.	West Wall	yes		60	
S-4	3 ft.	Southwest Corner	no		1700	
S-5	8 ft.	Bottom	no		240	
S-6	3 ft.	West Wall	yes		320	
S-7	9.25 ft.	Bottom	no		340	
S-8	4 ft.	South Wall	no		500	
S-9	3 ft.	East Wall	no		1250	ND
S-10	6 ft.	East Wall	no		390	
S-11	10.5 ft.	Bottom	yes		200	ND
S-12	7.5 ft.	West Wall	yes		200	
S-13	5.5 ft.	West Wall	yes		1100	92
S-14	5 ft.	South Wall	yes		950	
S-15	5 ft.	East Wall	yes		80	
S-16	4 ft.	East Wall	yes		100	ND
February 15, 1991						
S-17	5 ft.	West Wall	yes		120	ND
S-18	5 ft.	North Wall	yes		25	
S-19	7.5 ft.	North Wall	yes		42	ND
S-20	9.5 ft.	West Wall	no		100	
S-21	9.5 ft.	Bottom	no		58	
S-22	9.5 ft.	Bottom	no		100	
S-23	9 ft.	East Wall	no		70	
S-24	9.5 ft.	South Wall	no		700	
S-25	9.5 ft.	East Wall	no		300	
S-26	10 ft.	South Wall	no		100	
S-27	10.5 ft.	Bottom	yes		80	
February 18, 1991						
S-28	10.5 ft.	East Wall	yes	4		
S-29	10.5 ft.	South Wall	yes	3		ND
S-30	11 ft.	South Wall	yes	0		
S-31	11 ft.	Bottom	yes	1		ND
S-32	10.5 ft.	South West Wall	yes	1		ND

*"Headspace" analysis of vapors in sealed containers with HNU and TLV meters.
Expressed on volume basis as equivalent benzene and hexane respectively.

**Analytic Test Results (refer to attached reports) for Total Petroleum Hydrocarbon Concentrations (California Test Method).

QUALIFICATIONS OF SOIL/WATER SAMPLING PERSONNEL

Monitoring of field conditions and soil sampling was performed by Ms. Kristine K. Gallagher, a trained scientist and employee of Miller Engineers. Ms. Gallagher's qualifications are summarized below:

EDUCATION:

B.S. - Education-General Science
University of Wisconsin
Platteville, 1983

B.S. - Biology
University of Wisconsin
Platteville, 1980

SPECIAL TRAINING:

40 Hour EPA/OSHA Health & Safety Training (Certificate)

EMPLOYMENT HISTORY:

1988 - Present Staff Scientist
 Miller Engineers
 Sheboygan, Wisconsin

1984 - 1988 Life Science/Earth Science Teacher
 Cedar Grove-Belgium Schools
 Cedar Grove, Wisconsin

AREAS OF SPECIALTY:

- 1) Laboratory and Field Screening of Soil and Water for Contamination
- 2) Hydrogeologic Evaluations

EXPERIENCE:

Ms. Gallagher's experience at Miller Engineers has included conducting a wide range of soil physical tests as well as acting in a project management position. Her primary responsibilities have been in the earth science and environmental disciplines.

Past projects include numerous underground tank abandonment closure assessments, remedial investigations and preacquisition site assessments.

QSSP-KG.FRM

QUALIFICATIONS OF SOIL SAMPLING PERSONNEL

Monitoring of field conditions and soil sampling was performed by Mr. Todd W. Grunwald, a trained hydrogeologist and employee of Miller Engineers. Mr. Grunwald's qualifications are summarized below:

EDUCATION:

- M.S. Geology/Hydrogeology
New Mexico State University
Las Cruces, New Mexico, 1990
- B.S. Geology
University of Wisconsin
Platteville, Wisconsin, 1988

SPECIAL TRAINING:

40 Hour EPA/OSHA Health & Safety Training (Certificate)

EMPLOYMENT HISTORY:

1991--Present	Miller Engineers Sheboygan, Wisconsin
1989--1990	New Mexico State University Las Cruces, New Mexico

AREAS OF SPECIALTY:

Hydrogeology and Geology

EXPERIENCE:

Mr. Grunwald has managed a number of environmental projects including closure assessments for underground storage tank abandonment and remedial investigations. His experience includes monitor well design, construction, and sampling, in addition to analysis and interpretation of ground water quality and behavior. Mr. Grunwald also has knowledge of soil sampling and handling techniques, field screening techniques utilizing PID's, soil classification, and interpretation of subsurface conditions.

QSSP-TG.FRM

ORTEK
2496 West Mason Street
P.O. Box 12435
Green Bay, WI 54307-2435

Client: Miller Engineers
Address: 5308 South 12th Street
Sheboygan, WI 53081

Attn.: K. Gallagher
Telephone No.: (414) 458-6164

LABORATORY ANALYSIS RESULTS
Page 1 of 2

Sample ID: S-11
Sample Desc: Soil
Date Collected: 02/14/91
Date Received: 02/20/91
Sampled By: K. Gallagher
Report to: K. Gallagher
Results Sheet #: 0023
Job #: 1002057

PRIORITY POLLUTANT VOLATILE ORGANIC SOIL ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS *
Benzene	6	58	ug/kg
Bromobenzene	25	ND	ug/kg
Bromochloromethane	25	ND	ug/kg
Bromodichloromethane	25	ND	ug/kg
Bromoform	25	ND	ug/kg
Bromomethane	25	ND	ug/kg
n-Butylbenzene	25	8 D	ug/kg
sec-Butylbenzene	25	ND	ug/kg
tert-Butylbenzene	25	ND	ug/kg
Carbon Tetrachloride	25	ND	ug/kg
Chlorobenzene	30	ND	ug/kg
Chloroethane	25	ND	ug/kg
Chloroform	25	ND	ug/kg
Chloromethane	25	ND	ug/kg
2-Chlorotoluene	25	ND	ug/kg
4-Chlorotoluene	25	ND	ug/kg
Dibromochloromethane	25	ND	ug/kg
1,2-Dibromo-3-chloropropane	25	ND	ug/kg
1,2-Dibromomethane	25	ND	ug/kg
Dibromomethane	25	ND	ug/kg
1,2-Dichlorobenzene	30	ND	ug/kg
1,3-Dichlorobenzene	30	ND	ug/kg
1,4-Dichlorobenzene	30	ND	ug/kg
Dichlorodifluoromethane	30	ND	ug/kg
1,1-Dichloroethane	25	ND	ug/kg
1,2-Dichloroethane	25	ND	ug/kg
1,1-Dichloroethene	25	ND	ug/kg
cis-1,2-Dichloroethene	25	ND	ug/kg
trans-1,2-Dichloroethene	25	ND	ug/kg
1,2-Dichloropropane	25	ND	ug/kg
1,3-Dichloropropane	25	ND	ug/kg
2,2-Dichloropropane	25	ND	ug/kg
1,1-Dichloropropene	25	ND	ug/kg
Ethylbenzene	15	ND	ug/kg
EDB (Ethylenedibromide)	50	ND	ug/kg
Hexachlorobutadiene	25	ND	ug/kg
p-Isopropylbenzene	25	ND	ug/kg

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LABORATORY ANALYSIS RESULTS
Page 2 of 2

Client: Miller Engineers
Address: 5308 South 12th Street
Sheboygan, WI 53081

Sample ID: S-11
Sample Desc: Soil
Date Collected: 02/14/91
Date Received: 02/20/91
Sampled By: K. Gallagher
Report to: K. Gallagher
Results Sheet #: 0023
Job #: 1002057

Attn.: K. Gallagher
Telephone No.: (414) 458-6164

PRIORITY POLLUTANT VOLATILE ORGANIC SOIL ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS *
Isopropyltoluene	25	ND	ug/kg
Methylene Chloride	25	ND	ug/kg
Methyl-t-butyl Ether	25	ND	ug/kg
Naphthalene	25	3.1 D	ug/kg
n-Propylbenzene	25	ND	ug/kg
Styrene	25	ND	ug/kg
1,1,1,2-Tetrachloroethane	25	ND	ug/kg
1,1,2,2-Tetrachloroethane	25	ND	ug/kg
Tetrachloroethene	25	ND	ug/kg
Toluene	20	ND	ug/kg
1,2,3-Trichlorobenzene	25	ND	ug/kg
1,2,4-Trichlorobenzene	25	ND	ug/kg
1,1,1-Trichloroethane	25	ND	ug/kg
1,1,2-Trichloroethane	25	ND	ug/kg
Trichloroethene	25	ND	ug/kg
Trichlorofluoromethane	25	ND	ug/kg
1,2,3-Trichloropropane	25	ND	ug/kg
1,2,4-Trimethylbenzene	25	ND	ug/kg
1,3,5-Trimethylbenzene	25	ND	ug/kg
Vinyl Chloride	25	ND	ug/kg
m,p-Xylene	15	ND	ug/kg
o-Xylene	10	ND	ug/kg

ND = Not Detected

D = Compound detected but below detection limit

* = Dry Weight Basis

Comments: Lab Sample ID: 9102173 - 109521
Date Analyzed: 02/28/91
Analyzed by GC Method 8021.

Signed : Jeffrey J. Bushman

Date: 3/22/91

ORTEK
 2496 West Mason Street
 P.O. Box 12435
 Green Bay, WI 54307-2435

Client: Miller Engineers
 Address: 5308 South 12th Street
 Sheboygan, WI 53081

Sample ID: S-13
 Sample Desc: Soil
 Date Collected: 02/14/91
 Date Received: 02/20/91
 Sampled By: K. Gallagher
 Report to: K. Gallagher
 Results Sheet #: 0023
 Job #: 1002057

Attn.: K. Gallagher
 Telephone No.: (414) 458-6164

PRIORITY POLLUTANT VOLATILE ORGANIC SOIL ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS *
Benzene	6	ND	ug/kg
Bromobenzene	25	ND	ug/kg
Bromochloromethane	25	ND	ug/kg
Bromodichloromethane	25	ND	ug/kg
Bromoform	25	ND	ug/kg
Bromomethane	25	ND	ug/kg
n-Butylbenzene	25	43	ug/kg
sec-Butylbenzene	25	41	ug/kg
tert-Butylbenzene	25	1190	ug/kg
Carbon Tetrachloride	25	ND	ug/kg
Chlorobenzene	30	ND	ug/kg
Chloroethane	25	ND	ug/kg
Chloroform	25	ND	ug/kg
Chloromethane	25	ND	ug/kg
2-Chlorotoluene	25	ND	ug/kg
4-Chlorotoluene	25	ND	ug/kg
Dibromochloromethane	25	ND	ug/kg
1,2-Dibromo-3-chloropropane	25	ND	ug/kg
1,2-Dibromomethane	25	ND	ug/kg
Dibromomethane	25	ND	ug/kg
1,2-Dichlorobenzene	30	ND	ug/kg
1,3-Dichlorobenzene	30	ND	ug/kg
1,4-Dichlorobenzene	30	ND	ug/kg
Dichlorodifluoromethane	30	ND	ug/kg
1,1-Dichloroethane	25	ND	ug/kg
1,2-Dichloroethane	25	ND	ug/kg
1,1-Dichloroethene	25	ND	ug/kg
cis-1,2-Dichloroethene	25	ND	ug/kg
trans-1,2-Dichloroethene	25	ND	ug/kg
1,2-Dichloropropane	25	ND	ug/kg
1,3-Dichloropropane	25	ND	ug/kg
2,2-Dichloropropane	25	ND	ug/kg
1,1-Dichloropropene	25	ND	ug/kg
Ethylbenzene	15	753	ug/kg
EDB (Ethylenedibromide)	50	ND	ug/kg
Hexachlorobutadiene	25	ND	ug/kg
p-Isopropylbenzene	25	696	ug/kg

ORTEK
2496 West Mason Street
P.O. Box 12435
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Telephone No.: (414) 498-2222

LABORATORY ANALYSIS RESULTS
Page 2 of 2

Client: Miller Engineers
Address: 5308 South 12th Street
Sheboygan, WI 53081

Attn.: K. Gallagher
Telephone No.: (414) 458-6164

Sample ID: S-13
Sample Desc: Soil
Date Collected: 02/14/91
Date Received: 02/20/91
Sampled By: K. Gallagher
Report to: K. Gallagher
Results Sheet #: 0023
Job #: 1002057

PRIORITY POLLUTANT VOLATILE ORGANIC SOIL ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS*
Isopropyltoluene	25	4860	ug/kg
Methylene Chloride	25	ND	ug/kg
Methyl-t-butyl Ether	25	ND	ug/kg
Naphthalene	25	ND	ug/kg
n-Propylbenzene	25	10800	ug/kg
Styrene	25	1500	ug/kg
1,1,1,2-Tetrachloroethane	25	ND	ug/kg
1,1,2,2-Tetrachloroethane	25	ND	ug/kg
Tetrachloroethene	25	ND	ug/kg
Toluene	20	516	ug/kg
1,2,3-Trichlorobenzene	25	ND	ug/kg
1,2,4-Trichlorobenzene	25	ND	ug/kg
1,1,1-Trichloroethane	25	ND	ug/kg
1,1,2-Trichloroethane	25	ND	ug/kg
Trichloroethene	25	ND	ug/kg
Trichlorofluoromethane	25	ND	ug/kg
1,2,3-Trichloropropane	25	ND	ug/kg
1,2,4-Trimethylbenzene	25	3030	ug/kg
1,3,5-Trimethylbenzene	25	10000	ug/kg
Vinyl Chloride	25	ND	ug/kg
m,p-Xylene	15	9300	ug/kg
o-Xylene	10	5880	ug/kg

ND = Not Detected

D = Compound detected but below detection limit

* = Dry Weight Basis

Comments: Lab Sample ID: 9102173 - 109522
Date Analyzed: 02/28/91
Analyzed by GC Method 8021.

Signed : Jeffrey J. Buslman

Date: 3/22/91

ORTEK
2496 West Mason Street
P.O. 12435
Green Bay, WI 54307-2435

Client: Miller Engineers
Address: 5308 South 12th Street
Sheboygan, WI 53081

Attn.: K. Gallagher
Telephone No.: (414) 458-6164

LABORATORY ANALYSIS RESULTS
Page 1 of 2

Sample ID: S-19
Sample Desc: Soil
Date Collected: 02/14/91
Date Received: 02/20/91
Sampled By: K. Gallagher
Report to: K. Gallagher
Results Sheet #: 0023
Job #: 1002057

PRIORITY POLLUTANT VOLATILE ORGANIC SOIL ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS*
Benzene	6	ND	ug/kg
Bromobenzene	25	ND	ug/kg
Bromochloromethane	25	ND	ug/kg
Bromodichloromethane	25	ND	ug/kg
Bromoform	25	ND	ug/kg
Bromomethane	25	ND	ug/kg
n-Butylbenzene	25	111	ug/kg
sec-Butylbenzene	25	ND	ug/kg
tert-Butylbenzene	25	ND	ug/kg
Carbon Tetrachloride	25	ND	ug/kg
Chlorobenzene	30	ND	ug/kg
Chloroethane	25	ND	ug/kg
Chloroform	25	ND	ug/kg
Chloromethane	25	ND	ug/kg
2-Chlorotoluene	25	ND	ug/kg
4-Chlorotoluene	25	ND	ug/kg
Dibromochloromethane	25	ND	ug/kg
1,2-Dibromo-3-chloropropane	25	ND	ug/kg
1,2-Dibromomethane	25	ND	ug/kg
Dibromomethane	25	ND	ug/kg
1,2-Dichlorobenzene	30	ND	ug/kg
1,3-Dichlorobenzene	30	ND	ug/kg
1,4-Dichlorobenzene	30	ND	ug/kg
Dichlorodifluoromethane	30	ND	ug/kg
1,1-Dichloroethane	25	ND	ug/kg
1,2-Dichloroethane	25	ND	ug/kg
1,1-Dichloroethene	25	ND	ug/kg
cis-1,2-Dichloroethene	25	ND	ug/kg
trans-1,2-Dichloroethene	25	ND	ug/kg
1,2-Dichloropropane	25	ND	ug/kg
1,3-Dichloropropane	25	ND	ug/kg
2,2-Dichloropropane	25	ND	ug/kg
1,1-Dichloropropene	25	ND	ug/kg
Ethylbenzene	15	ND	ug/kg
EDB (Ethylenedibromide)	50	ND	ug/kg
Hexachlorobutadiene	25	ND	ug/kg
p-Isopropylbenzene	25	ND	ug/kg

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P.O. Box 12435
Green Bay, WI 54307-2435

Client: Miller Entineers
Address: 5308 South 12th Street
Sheboygan, WI 53081

Attn.: K. Gallagher
Telephone No.: (414) 458-6164

LABORATORY ANALYSIS RESULTS
Page 2 of 2

Sample ID: S-19
Sample Desc: Soil
Date Collected: 02/14/91
Date Received: 02/20/91
Sampled By: K. Gallagher
Report to: K. Gallagher
Results Sheet #: 0023
Job #: 1002057

PRIORITY POLLUTANT VOLATILE ORGANIC SOIL ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS*
Isopropyltoluene	25	ND	ug/kg
Methylene Chloride	25	ND	ug/kg
Methyl-t-butyl Ether	25	ND	ug/kg
Naphthalene	25	ND	ug/kg
n-Propylbenzene	25	ND	ug/kg
Styrene	25	ND	ug/kg
1,1,1,2-Tetrachloroethane	25	ND	ug/kg
1,1,2,2-Tetrachloroethane	25	ND	ug/kg
Tetrachloroethene	25	ND	ug/kg
Toluene	20	ND	ug/kg
1,2,3-Trichlorobenzene	25	ND	ug/kg
1,2,4-Trichlorobenzene	25	ND	ug/kg
1,1,1-Trichloroethane	25	ND	ug/kg
1,1,2-Trichloroethane	25	ND	ug/kg
Trichloroethene	25	ND	ug/kg
Trichlorofluoromethane	25	ND	ug/kg
1,2,3-Trichloropropane	25	ND	ug/kg
1,2,4-Trimethylbenzene	25	ND	ug/kg
1,3,5-Trimethylbenzene	25	86	ug/kg
Vinyl Chloride	25	ND	ug/kg
m,p-Xylene	15	242	ug/kg
o-Xylene	10	ND	ug/kg

ND = Not Detected

D = Compound detected but below detection limit

* = Dry Weight Basis

Comments: Lab Sample ID: 9102173 - 109525
Date Analyzed: 02/28/91
Analyzed by GC Method 8021.

Signed : Jeffrey J. Bushman

Date: 3/22/91

ORTEK
2496 West Mason Street
P.O. Box 12435
Green Bay, WI 54307-2435

Client: Miller Engineers
Address: 5308 South 12th Street
Green Bay, WI 53081

Attn.: K. Gallagher
Telephone No.: (414) 458-6164

LABORATORY ANALYSIS RESULTS
Page 1 of 2

Sample ID: S-31
Sample Desc: Soil
Date Collected: 02/14/91
Date Received: 02/20/91
Sampled By: K. Gallagher
Report to: K. Gallagher
Results Sheet #: 0023
Job #: 1002057

PRIORITY POLLUTANT VOLATILE ORGANIC SOIL ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS	*
Benzene	6	ND	ug/kg	
Bromobenzene	25	ND	ug/kg	
Bromochloromethane	25	ND	ug/kg	
Bromodichloromethane	25	ND	ug/kg	
Bromoform	25	ND	ug/kg	
Bromomethane	25	ND	ug/kg	
n-Butylbenzene	25	26	ug/kg	
sec-Butylbenzene	25	ND	ug/kg	
tert-Butylbenzene	25	85	ug/kg	
Carbon Tetrachloride	25	ND	ug/kg	
Chlorobenzene	30	ND	ug/kg	
Chloroethane	25	ND	ug/kg	
Chloroform	25	ND	ug/kg	
Chloromethane	25	ND	ug/kg	
2-Chlorotoluene	25	ND	ug/kg	
4-Chlorotoluene	25	ND	ug/kg	
Dibromochloromethane	25	ND	ug/kg	
1,2-Dibromo-3-chloropropane	25	ND	ug/kg	
1,2-Dibromomethane	25	ND	ug/kg	
Dibromomethane	25	ND	ug/kg	
1,2-Dichlorobenzene	30	ND	ug/kg	
1,3-Dichlorobenzene	30	ND	ug/kg	
1,4-Dichlorobenzene	30	ND	ug/kg	
Dichlorodifluoromethane	30	ND	ug/kg	
1,1-Dichloroethane	25	ND	ug/kg	
1,2-Dichloroethane	25	ND	ug/kg	
1,1-Dichloroethene	25	ND	ug/kg	
cis-1,2-Dichloroethene	25	ND	ug/kg	
trans-1,2-Dichloroethene	25	ND	ug/kg	
1,2-Dichloropropane	25	ND	ug/kg	
1,3-Dichloropropane	25	ND	ug/kg	
2,2-Dichloropropane	25	ND	ug/kg	
1,1-Dichloropropene	25	ND	ug/kg	
Ethylbenzene	15	89	ug/kg	
EDB (Ethylenedibromide)	50	ND	ug/kg	
Hexachlorobutadiene	25	ND	ug/kg	
p-Isopropylbenzene	25	ND	ug/kg	

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Sheboygan, WI 53081

Attn.: K. Gallagher
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LABORATORY ANALYSIS RESULTS
Page 2 of 2

Sample ID: S-31
Sample Desc: Soil
Date Collected: 02/14/91
Date Received: 02/20/91
Sampled By: K. Gallagher
Report to: K. Gallagher
Results Sheet #: 0023
Job #: 1002057

PRIORITY POLLUTANT VOLATILE ORGANIC SOIL ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS*
Isopropyltoluene	25	ND	ug/kg
Methylene Chloride	25	ND	ug/kg
Methyl-t-butyl Ether	25	ND	ug/kg
Naphthalene	25	40	ug/kg
n-Propylbenzene	25	ND	ug/kg
Styrene	25	ND	ug/kg
1,1,1,2-Tetrachloroethane	25	ND	ug/kg
1,1,2,2-Tetrachloroethane	25	ND	ug/kg
Tetrachloroethene	25	ND	ug/kg
Toluene	20	ND	ug/kg
1,2,3-Trichlorobenzene	25	ND	ug/kg
1,2,4-Trichlorobenzene	25	ND	ug/kg
1,1,1-Trichloroethane	25	ND	ug/kg
1,1,2-Trichloroethane	25	ND	ug/kg
Trichloroethene	25	ND	ug/kg
Trichlorofluoromethane	25	ND	ug/kg
1,2,3-Trichloropropane	25	ND	ug/kg
1,2,4-Trimethylbenzene	25	ND	ug/kg
1,3,5-Trimethylbenzene	25	ND	ug/kg
Vinyl Chloride	25	ND	ug/kg
m,p-Xylene	15	ND	ug/kg
o-Xylene	10	ND	ug/kg

ND = Not Detected

D = Compound detected but below detection limit

* = Dry Weight Basis

Comments: Lab Sample ID: 9102173 - 109527
Date Analyzed: 02/28/91
Analyzed by GC Method 8021.

Signed: *Jeffrey J. Bushman*

Date: 3/22/91

ORTEK
2496 West Mason Street
P.O. Box 12435
Green Bay, WI 54307-2435

Client: Miller Engineers
5308 South 12th Street
Sheboygan, WI 53081

Attn.: K. Gallagher
Telephone No.: (414) 458-6164

LABORATORY ANALYSIS RESULTS
Page 1 of 2

Sample ID: S-32
Sample Desc: Soil
Date Collected: 02/14/91
Date Received: 02/20/91
Sampled By: K. Gallagher
Report to: K. Gallagher
Results Sheet #: 0023
Job #: 1002057

PRIORITY POLLUTANT VOLATILE ORGANIC SOIL ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS	*
Benzene	6	ND	ug/kg	
Bromobenzene	25	ND	ug/kg	
Bromochloromethane	25	ND	ug/kg	
Bromodichloromethane	25	ND	ug/kg	
Bromoform	25	ND	ug/kg	
Bromomethane	25	ND	ug/kg	
n-Butylbenzene	25	29	ug/kg	
sec-Butylbenzene	25	ND	ug/kg	
tert-Butylbenzene	25	ND	ug/kg	
Carbon Tetrachloride	25	ND	ug/kg	
Chlorobenzene	30	ND	ug/kg	
Chloroethane	25	ND	ug/kg	
Chloroform	25	ND	ug/kg	
Chloromethane	25	ND	ug/kg	
2-Chlorotoluene	25	ND	ug/kg	
4-Chlorotoluene	25	ND	ug/kg	
Dibromochloromethane	25	ND	ug/kg	
1,2-Dibromo-3-chloropropane	25	ND	ug/kg	
1,2-Dibromomethane	25	ND	ug/kg	
Dibromomethane	25	ND	ug/kg	
1,2-Dichlorobenzene	30	ND	ug/kg	
1,3-Dichlorobenzene	30	ND	ug/kg	
1,4-Dichlorobenzene	30	ND	ug/kg	
Dichlorodifluoromethane	30	ND	ug/kg	
1,1-Dichloroethane	25	ND	ug/kg	
1,2-Dichloroethane	25	ND	ug/kg	
1,1-Dichloroethene	25	ND	ug/kg	
cis-1,2-Dichloroethene	25	ND	ug/kg	
trans-1,2-Dichloroethene	25	ND	ug/kg	
1,2-Dichloropropane	25	ND	ug/kg	
1,3-Dichloropropane	25	ND	ug/kg	
2,2-Dichloropropane	25	ND	ug/kg	
1,1-Dichloropropene	25	ND	ug/kg	
Ethylbenzene	15	ND	ug/kg	
EDB (Ethylenedibromide)	50	ND	ug/kg	
Hexachlorobutadiene	25	ND	ug/kg	
p-Isopropylbenzene	25	ND	ug/kg	

ORTEK
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Client: Miller Engineers
5308 South 12th Street
Sheboygan, WI 53081

Attn.: K. Gallagher
Telephone No.: (414) 458-6164

LABORATORY ANALYSIS RESULTS
Page 2 of 2

Sample ID: S-32
Sample Desc: Soil
Date Collected: 02/14/91
Date Received: 02/20/91
Sampled By: K. Gallagher
Report to: K. Gallagher
Results Sheet #: 0023
Job #: 1002057

PRIORITY POLLUTANT VOLATILE ORGANIC SOIL ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS *
Isopropyltoluene	25	ND	ug/kg
Methylene Chloride	25	ND	ug/kg
Methyl-t-butyl Ether	25	ND	ug/kg
Naphthalene	25	17 D	ug/kg
n-Propylbenzene	25	ND	ug/kg
Styrene	25	ND	ug/kg
1,1,1,2-Tetrachloroethane	25	ND	ug/kg
1,1,2,2-Tetrachloroethane	25	ND	ug/kg
Tetrachloroethene	25	ND	ug/kg
Toluene	20	ND	ug/kg
1,2,3-Trichlorobenzene	25	ND	ug/kg
1,2,4-Trichlorobenzene	25	ND	ug/kg
1,1,1-Trichloroethane	25	ND	ug/kg
1,1,2-Trichloroethane	25	ND	ug/kg
Trichloroethene	25	ND	ug/kg
Trichlorofluoromethane	25	ND	ug/kg
1,2,3-Trichloropropane	25	ND	ug/kg
1,2,4-Trimethylbenzene	25	ND	ug/kg
1,3,5-Trimethylbenzene	25	ND	ug/kg
Vinyl Chloride	25	ND	ug/kg
m,p-Xylene	15	ND	ug/kg
o-Xylene	10	ND	ug/kg

ND = Not Detected

D = Compound detected but below detection limit

* = Dry Weight Basis

Comments: Lab Sample ID: 9102173 - 109528
Date Analyzed: 02/28/91
Analyzed by GC Method 8021.

Signed : Jeffrey J. Bushner

Date: 3/22/91



ENVIRONMENTAL LABORATORY

414-498-2222

FAX: 414-498-4067

2496 West Mason Street

P.O. Box 12435

Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: MILLER ENGINEERS
5308 S 12TH STREET
SHEBOYGAN WI 53081

Attn: KRIS GALLAGHER

Batch ID : 9102173
Our lab # : 109521
Your sample ID: S-11
Sample Matrix : SOIL

Report Date: 03/21/91

COLLECTION INFORMATION

Date/Time/By: 02/14/91 12:50 K G
Location : REDI QUIK CLEANERS

Lab#	Test	Result	Units
109521	Lead	8.5	MG/KG
	Total Solids	82.5	%

Signed *Mark Melberg*

Date 3-21-91

Signed _____

Date _____



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- SAMPLE ANALYSIS REPORT -

To: MILLER ENGINEERS
5308 S 12TH STREET
SHEBOYGAN WI 53081

Attn: KRIS GALLAGHER

Batch ID : 9102173
Our lab # : 109522
Your sample ID: S-13
Sample Matrix : SOIL

Report Date: 03/21/91

COLLECTION INFORMATION

Date/Time/By: 02/14/91 14:25 K G
Location : REDI QUIK CLEANERS

Lab#	Test	Result	Units
109522	Lead	11	MG/KG
	Total Solids	85.2	%

Signed Neil K. Melberry Date 3-21-91
 Signed David J. DeCarlo Date 3-22-91



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- SAMPLE ANALYSIS REPORT -

To: MILLER ENGINEERS
5308 S 12TH STREET
SHEBOYGAN WI 53081

Attn: KRIS GALLAGHER

Batch ID : 9102173
Our lab # : 109525
Your sample ID: S-19
Sample Matrix : SOIL

Report Date: 03/21/91

COLLECTION INFORMATION

Date/Time/By: 02/15/91 14:40 K G
Location : REDI QUIK CLEANERS

Lab#	Test	Result	Units
109525	Lead	6.5	MG/KG
	Total Solids	86.4	%

Signed Neil K. Mulvey

Date 3-21-91

Signed David J. DeCarlo

Date 3-22-91



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- SAMPLE ANALYSIS REPORT -

To: MILLER ENGINEERS
5308 S 12TH STREET
SHEBOYGAN WI 53081

Attn: KRIS GALLAGHER

Batch ID : 9102173
Our lab # : 109527
Your sample ID: S-31
Sample Matrix : SOIL

Report Date: 03/21/91

COLLECTION INFORMATION

Date/Time/By: 02/18/91 09:15 K G
Location : REDI QUIK CLEANERS

Lab#	Test	Result	Units
109527	Lead	6.4	MG/KG
	Total Solids	84.3	%

Signed *Nick Miller* Date 3-21-91
 Signed *David J DeCarlo* Date 3-22-91



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- SAMPLE ANALYSIS REPORT -

To: MILLER ENGINEERS
5308 S 12TH STREET
SHEBOYGAN WI 53081

Attn: KRIS GALLAGHER

Batch ID : 9102173
Our lab # : 109528
Your sample ID: S-32
Sample Matrix : SOIL

Report Date: 03/21/91

COLLECTION INFORMATION

Date/Time/By: 02/18/91 10:30 K G
Location : REDI QUIK CLEANERS

Lab#	Test	Result	Units
109528	Lead	7.3	MG/KG
	Total Solids	86.6	%

Signed

Neil V. Milberg

Date

3-21-91

Signed

David J. DeCarlo

Date

3-22-91



ENVIRONMENTAL LABORATORY

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Green Bay, WI 54307-2435

LABORATORY ANALYSIS RESULTS

Wisconsin Certification No.
405099530

Client: MILLER ENGINEERS
Address: 5308 S 12TH STREET
SHEBOYGAN, WI 53081

Sample ID: S-1
Date Collected: 02/14/91
Date Received: 02/20/91
Location: REDI QUIK CLEANERS

Attn: KRIS GALLAGHER
Telephone No.: (414) 458-6164

CALIFORNIA METHOD TPH ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS*
Kerosene	5.0	ND	mg/kg
Gasoline	5.0	13	mg/kg
Diesel	5.0	ND	mg/kg

ND = Not detected
* = Dry Weight Basis

Comments Lab Sample ID: 9102173:109520
Date Analyzed: 2/23/91
Analyzed by GC/FID on a DB-5 Capillary column

Signed: Jeffrey J. Bushner

Date: 03/11/91



ENVIRONMENTAL LABORATORY

414-498-2222

FAX: 414-498-4067

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P.O. Box 12435

Green Bay, WI 54307-2435

LABORATORY ANALYSIS RESULTS

Wisconsin Certification No.
405099530

Client: MILLER ENGINEERS
Address: 5308 S 12TH STREET
SHEBOYGAN, WI 53081

Sample ID: S-11
Date Collected: 02/14/91
Date Received: 02/20/91
Location: REDI QUIK CLEANERS

Attn: KRIS GALLAGHER
Telephone No.: (414) 458-6164

CALIFORNIA METHOD TPH ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS*
Kerosene	5.0	ND	mg/kg
Gasoline	5.0	ND	mg/kg
Diesel	5.0	ND	mg/kg

ND = Not detected
* = Dry Weight Basis

Comments Lab Sample ID: 9102173:109521
Date Analyzed: 2/23/91
Analyzed by GC/FID on a DB-5 Capillary column

Signed: William J. Bushner

Date: 03/11/91



ENVIRONMENTAL LABORATORY

414-498-2222

FAX: 414-498-4067

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Green Bay, WI 54307-2435

LABORATORY ANALYSIS RESULTS

Wisconsin Certification No.
405099530

Client: MILLER ENGINEERS
Address: 5308 S 12TH STREET
SHEBOYGAN, WI 53081

Sample ID: S-13
Date Collected: 02/14/91
Date Received: 02/20/91
Location: REDI QUIK CLEANERS

Attn: KRIS GALLAGHER
Telephone No.: (414) 458-6164

CALIFORNIA METHOD TPH ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS *
Kerosene	5.0	ND	mg/kg
Gasoline	5.0	92	mg/kg
Diesel	5.0	ND	mg/kg

ND = Not detected

* = Dry Weight Basis

Comments Lab Sample ID: 9102173:109522
Date Analyzed: 2/23/91
Analyzed by GC/FID on a DB-5 Capillary column

Signed: Jeffrey J. Bush

Date: 03/11/91



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LABORATORY ANALYSIS RESULTS

Wisconsin Certification No.
405099530

Client: MILLER ENGINEERS
Address: 5308 S 12TH STREET
SHEBOYGAN, WI 53081

Sample ID: S-16
Date Collected: 02/14/91
Date Received: 02/20/91
Location: REDI QUIK CLEANERS

Attn: KRIS GALLAGHER
Telephone No.: (414) 458-6164

CALIFORNIA METHOD TPH ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS *
Kerosene	5.0	ND	mg/kg
Gasoline	5.0	ND	mg/kg
Diesel	5.0	ND	mg/kg

ND = Not detected

* = Dry Weight Basis

Comments Lab Sample ID: 9102173:109523
Date Analyzed: 2/23/91
Analyzed by GC/FID on a DB-5 Capillary column

Signed: Jeffrey J. Bohmer

Date: 03/11/91



ENVIRONMENTAL LABORATORY

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LABORATORY ANALYSIS RESULTS

Wisconsin Certification No.
405099530

Client: MILLER ENGINEERS
Address: 5308 S 12TH STREET
SHEBOYGAN, WI 53081

Sample ID: S-17
Date Collected: 02/15/91
Date Received: 02/20/91
Location: REDI QUIK CLEANERS

Attn: KRIS GALLAGHER
Telephone No.: (414) 458-6164

CALIFORNIA METHOD TPH ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS *
Kerosene	5.0	ND	mg/kg
Gasoline	5.0	ND	mg/kg
Diesel	5.0	ND	mg/kg

ND = Not detected

* = Dry Weight Basis

Comments Lab Sample ID: 9102173:109524
Date Analyzed: 2/23/91
Analyzed by GC/FID on a DB-5 Capillary column

Signed: Jeffrey J. Bushner

Date: 03/11/91



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LABORATORY ANALYSIS RESULTS

Wisconsin Certification No.
405099530

Client: MILLER ENGINEERS
Address: 5308 S 12TH STREET
SHEBOYGAN, WI 53081

Sample ID: S-19
Date Collected: 02/15/91
Date Received: 02/20/91
Location: REDI QUIK CLEANERS

Attn: KRIS GALLAGHER
Telephone No.: (414) 458-6164

CALIFORNIA METHOD TPH ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS*
Kerosene	5.0	ND	mg/kg
Gasoline	5.0	ND	mg/kg
Diesel	5.0	ND	mg/kg

ND = Not detected

* = Dry Weight Basis

Comments Lab Sample ID: 9102173:109525
Date Analyzed: 2/23/91
Analyzed by GC/FID on a DB-5 Capillary column

Signed: Jeffrey J. Bushner

Date: 03/11/91



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LABORATORY ANALYSIS RESULTS

Wisconsin Certification No.
405099530

Client: MILLER ENGINEERS
Address: 5308 S 12TH STREET
SHEBOYGAN, WI 53081

Sample ID: S-29
Date Collected: 02/18/91
Date Received: 02/20/91
Location: REDI QUIK CLEANERS

Attn: KRIS GALLAGHER
Telephone No.: (414) 458-6164

CALIFORNIA METHOD TPH ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS *
Kerosene	5.0	ND	mg/kg
Gasoline	5.0	ND	mg/kg
Diesel	5.0	ND	mg/kg

ND = Not detected
* = Dry Weight Basis

Comments Lab Sample ID: 9102173:109526
Date Analyzed: 2/23/91
Analyzed by GC/FID on a DB-5 Capillary column

Signed: Jeffrey J. Bushen

Date: 03/11/91



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LABORATORY ANALYSIS RESULTS

Wisconsin Certification No.
405099530

Client: MILLER ENGINEERS
Address: 5308 S 12TH STREET
SHEBOYGAN, WI 53081

Sample ID: S-31
Date Collected: 02/18/91
Date Received: 02/20/91
Location: REDI QUIK CLEANERS

Attn: KRIS GALLAGHER
Telephone No.: (414) 458-6164

CALIFORNIA METHOD TPH ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS *
Kerosene	5.0	ND	mg/kg
Gasoline	5.0	ND	mg/kg
Diesel	5.0	ND	mg/kg

ND = Not detected

* = Dry Weight Basis

Comments Lab Sample ID: 9102173:109527
Date Analyzed: 2/23/91
Analyzed by GC/FID on a DB-5 Capillary column

Signed: Jeffrey J. Bohner

Date: 03/11/91



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LABORATORY ANALYSIS RESULTS

Wisconsin Certification No.
405099530

Client: MILLER ENGINEERS
Address: 5308 S 12TH STREET
SHEBOYGAN, WI 53081

Sample ID: S-32
Date Collected: 02/18/91
Date Received: 02/20/91
Location: REDI QUIK CLEANERS

Attn: KRIS GALLAGHER
Telephone No.: (414) 458-6164

CALIFORNIA METHOD TPH ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION	UNITS*
Kerosene	5.0	ND	mg/kg
Gasoline	5.0	ND	mg/kg
Diesel	5.0	ND	mg/kg

ND = Not detected
* = Dry Weight Basis

Comments Lab Sample ID: 9102173:109528
Date Analyzed: 2/23/91
Analyzed by GC/FID on a DB-5 Capillary column

Signed: Jeffrey J. Bohm

Date: 03/11/91

CHAIN OF CUSTODY RECORD

No.: 3621

Client: Miller Engineers

Bottle Size | Preservative

Project No.: 10712 E4

Sampling Site: Redi Quik Cleaners
West Allis

Sampler: Kris Gallagher
9102173

Packed by: Todd W Grunwald Seal #: _____

Seal Intact Upon Receipt by Sampling Co: Yes No

Condition of Contents: _____

Sealed for Shipping by: _____

Initial Contents Temp: _____ °C Seal #: _____

Seal Intact Upon Receipt by Laboratory: Yes No

Date	Time	Sample I.D.:/Description	TPH				VOC 802/Lead				Bottle Total	Sample Type	Lab Use Only	Remarks
2/14	10:45	S1 - North Wall - West Exc.	X								1	Soil	109520	
2/14	12:50	S11 - Bottom Center - West Exc.	X	X							1	}	109521	
2/14	2:25	S13 - West Wall - West Exc.	X	X							1		109522	
2/14	3:30	S16 - East Wall - West Exc.	X								1		109523	
2/15	2:23	S17 - West Wall - East Exc.	X								1		109524	
2/15	2:40	S19 - North Wall - East Exc.	X	X							1	109525		
2/18	8:10	S29 - South Wall - East Exc.	X								1	109526		
2/18	9:15	S31 - Bottom - East Exc.	X	X							1	109527		
2/18	10:30	S32 - South West Wall - East Exc.	X	X							1	109528		

Custody Transfers

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
1. <u>Todd W Grunwald</u>	<u>2-19-91</u>	<u>3:00p</u>	_____	_____	_____
2. _____	_____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____	_____
4. _____	_____	_____	_____	_____	_____

Received for Laboratory: _____

Gloria Doytator 2/20/91 12:37

Shipping Details

Method of Shipment: UPS

Condition of Contents: OK

Contents Temperature: -0.8 °C

ORTEK Project No.: _____

ORTEK

2496 W. Mason
Green Bay, Wisconsin 54303
Phone: 414/498-2222 Fax: 414/498-4067

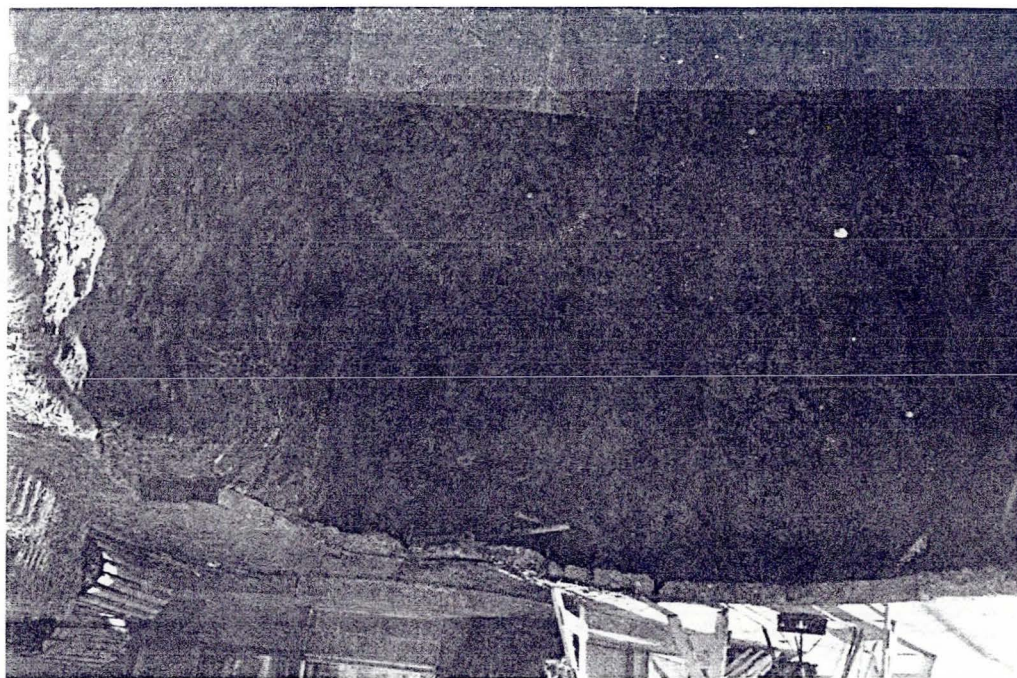


Photo #3: Northwest corner of east excavation.

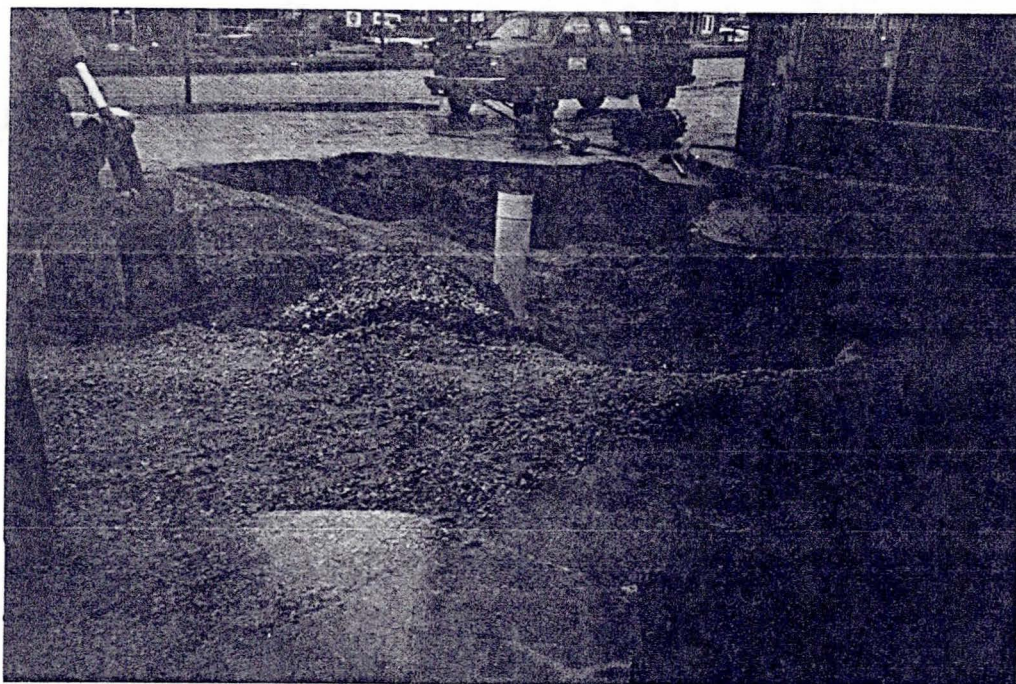


Photo #4: Installation of a recovery sump in the east excavation.

BUET712E.SP

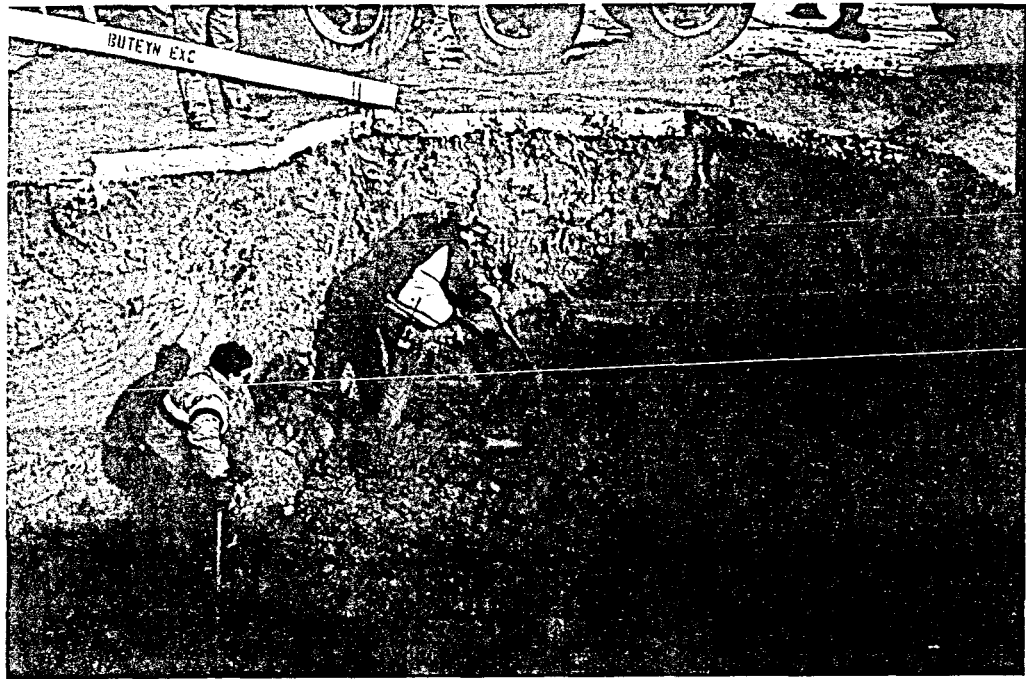


Photo #1: West Excavation--East limit of excavation where water line and drain tile are located.



Photo #2: Installation of a recovery sump in the west excavation.

BUET712E.SP