EPOCH
ENVIRONMENTAL
GROUP

February 7, 2001

Mr. David Oakes
Minnesota Pollution Control Agency
Detroit Lakes Office
714 Lake Avenue
Lake Avenue Plaza, Suite 220
Detroit Lakes, MN 56501

RE: Annual Monitoring Report
Pete's Place
7040 Highway 2 West
Bemidji, MN
MPCA Leak #10754

Dear Mr. Oakes:

Enclosed please find a copy of the Annual Monitoring Report for the Pete's Place site. In this report, EPOCH Environmental Group, LLC (EPOCH) is requesting closure of the site based on the limited extent and stable nature of petroleum impacts at the site.

If you have any questions please call me at (651) 490-2905.

Sincerely,
EPOCH Environmental Group, LLC.

Darius Szewczak
Staff Scientist

Enclosures:

cc: Ms. LaVerne Mistic, Pete's Place

Leaking Petroleum Storage Tanks

Minnesota Pollution Control Agency

http://www.pca.state.mn.us/programs/lust_p.html

Annual Monitoring Report

Fact Sheet 3.26

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After the Corrective Action Design (CAD) has been approved, update and submit this worksheet annually. If a remedial system has been installed, submit fact sheet 3.31 *CAD System Monitoring Worksheet* along with this worksheet.

Under certain circumstances Minnesota Pollution Control Agency (MPCA) staff may request submittal of the monitoring information on a quarterly schedule. This should be conducted according to fact sheet 3.25, *Quarterly Monitoring Report*.

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MPCA Site ID: Leak00010754 Date: 1/23/01

Responsible Party: Pete's Place R.P. phone #: (218) 751-1218

Consultant: EPOCH Environmental Group, LLC Consultant phone #: (651) 490-2905

Facility Name: Pete's Place

Facility Address: 7040 Highway 2 West (Figure 1) City: Bemidji

County: Beltrami Zip Code: 56601

Site location (**UTM required**: refer to http://www.pca.state.mn.us/pca_files/handbook/standard/std17-1.html for spatial data standards): UTM coordinates: 5263896.0 350789.6

Other location information

LAT: 47° 30' 48" LONG: 94°58' 54"

State Plane coordinates:

Reporting Period: December 1999 to November 2000

Section 1. GROUND WATER MONITORING

Discuss the groundwater monitoring results, including water level measurements and analytical results, performed since the remedial investigation (RI) report or the last progress report submitted.

Introduction

Services on this project were performed by DAHL & Associates, Inc. through September 15, 2000. On that date, EPOCH Environmental Group, LLC purchased certain assets of DAHL, including the rights to the trade name DAHL & Associates, Inc., and DAHL's rights under its client contract for this project. For the purposes of this report, the name DAHL is used to reference any work conducted by DAHL & Associates, Inc. prior to that date and EPOCH is used for work completed by EPOCH Environmental Group, LLC after September 15, 2000.

This report includes work performed at the site between December 1999 and November 2000. During that time, DAHL and EPOCH collected four rounds of ground water samples from the monitoring wells on-site, and one set of ground water samples from water supply wells located within a 500-foot radius of the impacted area (previously identified in the RI).

Monitoring Well Sampling

Since the submission of the RI report in January 2000, DAHL collected ground water samples from the five monitoring wells on-site on February 28, May 26, and August 15, 2000. EPOCH collected a fourth set of ground water samples on November 1, 2000 (Table 1 and Figure 2).

Samples collected from the wells were sent to an analytical laboratory for BTEX (benzene, toluene, ethyl benzene and xylene), MTBE, GRO and DRO analyses (Appendix A).

Private Well Sampling

On September 13, 2000, DAHL collected ground water samples from four private wells located within a 500-foot radius of the site (Figure 2). Three of the wells (the gas station well, the restaurant well and the propane store well). are located upgradient or side-gradient of the impacted area. The fourth well (the car wash well) is located downgradient of the impacted area.

Ground water samples collected from the private wells were sent to an analytical laboratory for volatile organic compounds (VOC), GRO and DRO analyses (Appendix A).

Ground Water Gradient and Water Table Elevations

The ground water gradient is to the south. The average gradient, calculated from the well data collected over the reporting period, is 1.4×10^{-3} (Figures 3, 4, 5 and 6). This is consistent with the ground water gradient reported in the RI (February 2000).

The seasonal fluctuation in water table elevation identified in the RI report is less apparent with the addition of the elevation data collected from the 2000 sampling events. Water table elevations over the last year appear less variable than the previous year (Table 2 and Figure 7).

Ground Water Analytical Results- Monitoring Wells

BTEX

During all four sampling events, BTEX compounds were detected above MPCA Health Risk Limits (HRLs) in monitoring well MW-1 (Table 3). Benzene concentrations in the well ranged from 5,200 ug/L in February to 16,000 ug/L in November (the HRL is 10 ug/l). Ethylbenzene concentrations ranged from 2,500 ug/L in May, to 3,000 ug/L in August (the HRL is 700 ug/L). Toluene concentrations ranged from 14,000 ug/L in February, to 20,000 ug/L in November (the HRL is 1,000 ug/L). Xylene concentrations ranged from 17,300 ug/L in May, to 18,900 ug/L in February (the HRL is 10,000 ug/L) (Table 3).

There were no BTEX compounds detected above HRLs in any other monitoring well (MW-2, MW-3, MW-4 or MW-5) during the reporting period (Table 3). Xylene and/or benzene were detected in monitoring well MW-5 during the February and May sampling events, but below HRLs. Neither compound was detected during the last two sampling events (August and November).

Toluene was detected in samples collected from MW-2, MW-3 and MW-4 during the May sampling event, however the laboratory performing the sample analysis also identified toluene at similar concentrations in the field and trip blanks from that sampling event (Table 3 and Appendix A). Therefore, the presence of toluene in those monitoring well samples appears to be a laboratory error.

GRO and DRO

GRO and DRO compounds were identified in MW-1 during all four sampling events (Table 3). The highest concentration of GRO detected in MW-1 was 85 mg/L, the highest DRO concentration was 12 mg/L, both were detected in November 2000. GRO and DRO do not have an HRL. Neither compound was detected in any other monitoring well during the reporting period.

MTBE

MTBE was detected in MW-1 during the February, May and November sampling events, and in MW-5 during the February and May sampling events (Table 3). The highest concentrations in both wells were detected during the May sampling event (MW-1- 460 ug/L, MW-5 -2.9 ug/L). There is no HRL for MTBE. MTBE was not detected in any other well during the monitoring period.

Ground Water Analytical Results- Private Wells

There were no VOC, GRO or DRO compounds identified above laboratory detection limits in any of the private well samples (Table 4).

Field Analytical Chemical Data

Subsurface conditions appear to be favorable for bioremediation, which is consistent with the data collected prior to the submission of the RI report. Temperature and pH levels are within the optimal range for biological activity. With the exception of MW-1, conditions in the saturated zone indicate a slightly oxidizing environment. Dissolved oxygen levels are high, pH levels are around neutral to slightly basic, ferrous iron is low and sulfide (S^{-2}) levels are below detection limits (Table 5).

Ground Water Data Analysis

During the reporting period (December 1999 to November 2000) there was no apparent overall trend in petroleum hydrocarbon concentrations detected in MW-1. Benzene, toluene and GRO concentrations in MW-1 increased slightly; ethyl benzene, xylene, and DRO concentrations remained relatively stable; and MTBE concentrations declined (Figures 8 and 9).

Over the longer term (November 1998 to November 2000), petroleum hydrocarbon concentrations in MW-1, as a group, have decreased from their highest levels, detected in mid to late 1999, and appear to be more stable (Figures 8 and 9).

Elevated concentrations of benzene, xylene, MTBE, GRO and DRO were detected in MW-5 in late 1999 (November 1999). Since then, concentrations in MW-5 have decreased to non-detect levels (Figures 10 and 11).

The fluctuation of petroleum hydrocarbon concentrations in MW-1 and MW-5 may correlate to changes in water table elevation. In both wells, the highest petroleum hydrocarbon concentrations were detected during the sampling following a dramatic increase in water table elevation. Petroleum compound concentrations subsequently decreased as the water table elevation lowered (Figures 7 through 11).

Over the past year, water table elevations have appeared more stable, as have the concentrations of most of the petroleum compounds detected on-site (Figures 7 through 11).

(Note, in this report, EPOCH included graphs of BTEX, MTBE, GRO and DRO concentrations versus time for monitoring wells MW-1 and MW-5 only. EPOCH did not include the same graphs for monitoring wells MW-2 MW-3, and MW-4, because no significant concentrations of petroleum-related compounds have been identified in these wells.)

Section 2. VAPOR IMPACT MONITORING

If vapor impacts were detected during previous assessments, discuss the results of follow-up vapor monitoring. Include in your discussion the sampling instrument and sampling method.
Not Applicable. No vapor monitoring performed.

NOTE: If vapor concentrations exceed 10 percent of the lower explosive limit, exit the building and contact the local fire department immediately. Then contact the Minnesota Duty Officer (24 hours) at 651/649-5451 (metro and outside Minnesota) or 1-800/422-0798 (Greater Minnesota). TTY users call 651/297-5353 (V/TTY) or 1-800/627-3529 (V/TTY). **Vapor mitigation is required.**

Section 3. RECOMMENDATIONS

Discuss your recommendations. Your recommendation should be based on fact sheet #3.1, *Leaking Underground Storage Tank Program.*

If additional corrective action is recommended, please provide your justification.

If significant reduction of risk has been achieved at the site, recommendations and rationale for the reduction or termination of corrective actions may be presented.

If additional monitoring is recommended, indicate the proposed monitoring schedule and frequency.

If closure is recommended, summarize significant site investigative events and describe how site specific risk issues have been adequately addressed or minimized to acceptable low risk levels.

Recommendation for Closure of the Site.
As stated in the Remedial Investigation Report submitted last year, the site appears to be congruous with a "Low Risk Resource Aquifer Scenario." The three drinking water wells the site (the gas station, restaurant and propane store wells) are located up gradient or side gradient from the petroleum release source area, and a safe distance away (the closest drinking water well is approximately 60 feet away) (Figure 2).

Recent ground water samples collected from the four private wells at the site (three drinking water wells plus the car wash well) did not identify any VOC, GRO or DRO compounds above laboratory detection limits (Table 4).

The most recent monitoring well data indicate that the petroleum plume is stable (or decreasing) and remains 110 feet or less in the downgradient direction (Table 3 and Figure 2). Petroleum-related compounds in the ground water at concentrations exceeding MPCA HRLs appear to be confined to MW-1, which is located in the area immediately adjacent to the suspected source (a gasoline dispenser island). Since the submission of the RI report, there have been no compounds detected above HRLs in any other monitoring well on-site (MW-2, MW-3, MW-4 or MW-5). During the last two sampling events, there were no compounds identified above laboratory detection limits in monitoring wells MW-2, MW-3, MW-4 or MW-5 (Table 3).

The ground water gradient is slight at $1.4x\ 10^{-3}$ (Figures 3 through 6).

Subsurface conditions continue to be favorable for bioremediation. Temperature and pH levels are within the optimal range for biological activity. With the exception of MW-1, conditions in the saturated zone indicate a slightly oxidizing environment. Dissolved oxygen levels are high, pH levels are around neutral to slightly basic, ferrous iron is low and sulfide (S^{-2}) levels are below detection limits (Table 5).

EPOCH will continue to perform quarterly ground water monitoring at the site for BTEX, MTBE, GRO and DRO parameters during MPCA review of this report. Beyond the sampling schedule mentioned above, EPOCH will collect a ground water sample from MW-1 for VOC compound analysis during the next ground water sampling event (February 2001), as per the request of the MPCA. The results of the VOC analysis will be sent to MPCA as an addendum to this report.

TABLE 3

GROUNDWATER LABORATORY ANALYTICAL DATA

Pete's Place (Leak10754)

WELL #	DATE	benzene	ethyl-benzene	toluene	xylenes (total)	MTBE	GRO (mg/l)	DRO (mg/l)
HRL		10	700	1,000	10,000	NE	NE	NE
MW-1	11/5/98	**16,000**	**1,800**	**27,000**	**11,900**	960	100	11
	2/10/99	**25,000**	**3,000**	**37,000**	**17,500**	860	110	26
	5/25/99	**23,000**	**2,500**	**37,000**	**26,800**	1,400	150	19
	8/18/99	**18,000**	**1,800**	**34,000**	**17,000**	990	110	20
	11/17/99	**20,000**	**3,200**	**39,000**	**25,500**	400	140	11
	2/28/00	**5,200**	**2,800**	**14,000**	**18,900**	330	61	8.5
	5/26/00	**10,000**	**2,500**	**17,000**	**17,300**	460	77	8.4
	8/15/00	**15,000**	**3,000**	**19,000**	**18,800**	<100	85	8.3
	11/1/00	**16,000**	**2,600**	**20,000**	**17,000**	120	85	12
	2/24/01	**21,000**	**2900**	**30,000**	**17,700**	**190**	**110**	**14**
MW-2	11/5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	2/10/99	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	5/25/99	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	8/18/99	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	11/17/99	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	2/28/00	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	5/26/00	<1.0	<1.0	1.1*	<1.0	<1.0	<0.1	<0.1
	8/15/00	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	11/1/00	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
MW-3	11/5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	2/10/99	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	5/25/99	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	8/18/99	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	0.4
	11/17/99	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	0.18
	2/28/00	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	5/26/00	<1.0	<1.0	1.2*	<1.0	<1.0	<0.1	<0.1
	8/15/00	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	11/1/00	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
MW-4	11/5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	2/10/99	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	5/25/99	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	8/18/99	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	0.48
	11/17/99	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.11
	2/28/00	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	5/26/00	<1.0	<1.0	1.1*	<1.0	<1.0	<0.1	<0.1
	8/15/00	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	11/1/00	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
MW-5	5/25/99	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	8/18/99	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	11/17/99	140	<1.0	2.4	15.4	9.5	0.2	0.23
	2/28/00	5	<1.0	<1.0	<1.0	2.8	<0.1	<0.1
	5/26/00	4.9	<1.0	<1.0	1.3	2.9	<0.1	<0.1
	8/15/00	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
	11/1/00	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1
Field blan	2/28/00	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	NA
	5/26/00	<1.0	<1.0	1.8	<1.0	<1.0	<0.1	NA
	8/15/00	1.1	<1.0	2.3	<1.0	<1.0	<0.1	<0.1
	11/1/00	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	NA
Trip blank	2/28/00	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	NA
	5/26/00	<1.0	<1.0	1.1	<1.0	<1.0	<0.1	NA
	8/15/00	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	NA
	11/1/00	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	NA

Explanation: values expressed in ug/l unless specified otherwise

DRO= Diesel Range Organics
GRO= Gasoline Range Organics
NA= Not Analyzed
NE= Not Established

HRL= Health Risk Limit
Bold Values= concentration above HRL
* = toluene also detected in field and trip blanks

EPOCH

TABLE 4
GROUNDWATER VOC ANALYTICAL DATA
Pete's Place (Leak10754)

	Car Wash	**Gas Station**	**Restaurant**	**Propane**
SAMPLE DATE:	09/13/00	09/13/00	09/13/00	9/13/00
COMPOUND				
Gasoline Range Organics	<100	<100	<100	<100
Diesel Range Organics	<100	<100	<100	<100
Benzene	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	<1.0	<1.0	<1.0
Toluene	<1.0	<1.0	<1.0	<1.0
o-Xylene	<1.0	<1.0	<1.0	<1.0
m+p-Xylene	<1.0	<1.0	<1.0	<1.0
Acetone	<20	<20.0	<20.0	<20.0
Allyl Chloride	<1.0	<1.0	<1.0	<1.0
Bromochloromethane	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0	<1.0
Bromoform	<5.0	<5.0	<5.0	<5.0
Bromobenzene	<1.0	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0	<1.0
2-Butanone	<10	<10	<10	<10
sec-Butylbenzene	<1.0	<1.0	<1.0	<1.0
tert-Butylbenzene	<1.0	<1.0	<1.0	<1.0
n-Butylbenzene	<1.0	<1.0	<1.0	<1.0
Carbon tetrachloride	<1.0	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0	<1.0
Chloromethane	<1.0	<1.0	<1.0	<1.0
2-Chlorotoluene	<1.0	<1.0	<1.0	<1.0
4-Chlorotoluene	<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	<1.0	<1.0	<1.0	<1.0
Dibromomethane	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	<1.0	<1.0	<1.0	<1.0
Dichlorofluoromethane	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0

TABLE 4
GROUNDWATER VOC ANALYTICAL DATA
Pete's Place (Leak10754)

SAMPLE DATE:	Car Wash 09/13/00	Gas Station 09/13/00	Restaurant 09/13/00	Propane 9/13/00
COMPOUND				
1,1-Dichloroethane	<1.0	<1.0	<1.0	<1.0
1,3-Dichloropropane	<5.0	<5.0	<5.0	<5.0
2,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0
1,1-Dichloropropene	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0
Ethyl Ether	<1.0	<1.0	<1.0	<1.0
Fluorotrichloromethane	<1.0	<1.0	<1.0	<1.0
Hexachlorobutadiene	<1.0	<1.0	<1.0	<1.0
Isopropylbenzene	<1.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	<1.0	<1.0	<1.0	<1.0
Methylene chloride	<5.0	<5.0	<5.0	<5.0
4-Methyl-2-pentanone	<5.0	<5.0	<5.0	<5.0
Methyl-tert-butyl-ether (MTBE)	<1.0	<1.0	<1.0	<1.0
Naphthalene	<1.0	<1.0	<1.0	<1.0
n-Propylbenzene	<1.0	<1.0	<1.0	<1.0
Styrene	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0	<1.0
1,1,1,2-Tetrachloroethane	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	<2.0	<2.0	<2.0	<2.0
1,2,3-Trichlorobenzene	<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichlorotrifluoroethane	<1.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene	<1.0	<1.0	<1.0	<1.0
Trichloroethene	<1.0	<1.0	<1.0	<1.0
1,2,3-Trichloropropane	<1.0	<1.0	<1.0	<1.0
Tetrahydrofuran	<5.0	<5.0	<5.0	<5.0
1,3,5-Trimethylbenzene	<1.0	<1.0	<1.0	<1.0
Vinyl chloride	<1.0	<1.0	<1.0	<1.0

Explanation:

All values are expressed in ug/L which is equivalent to parts-per-billion (ppb).

Non detect results are expressed as "less than laboratory reporting limit."

NA - parameter not analyzed

TABLE 5
FIELD ANALYTICAL CHEMICAL DATA
Pete's Place (Leak10754)

WELL #	DATE	Temp °C	pH	Dissolved oxygen (mg/l)	Nitrate (mg/l)	Fe II (mg/l)	S^{-2} (mg/l)	Conductivity (umhos)	Eh (mV)
MW-1	11/05/98	12.0	7.85	0.70	NA	NA	NA	1,650	5.1
	02/10/99	7.6	6.76	1.80	ND	>10	ND	1,773	13.8
	05/25/99	10.0	6.65	0.40	NA	NA	NA	1,125	17.6
	08/18/99	15.6	6.71	0.30	ND	>10	ND	1,000	14.1
	11/17/99	11.6	6.63	NA	ND	10.0	ND	625	10.8
	02/28/00	7.8	6.45	0.30	NA	10.0	ND	520	32.5
	05/26/00	10.1	5.57	1.10	ND	10.0	ND	810	45.6
	08/15/00	14.0	6.91	0.00	ND	10.0	ND	880	10.3
	11/01/00	13.4	6.59	2.90	ND	1.0	ND	1,060	-14.1
MW-2	11/05/98	13.1	7.90	4.20	NA	NA	NA	1,100	0.7
	02/10/99	7.3	7.10	6.20	2.0	ND	ND	1,182	-3.5
	05/25/99	9.7	7.23	2.40	NA	NA	NA	781	-10.9
	08/18/99	15.6	7.30	3.80	2.5	<1.0	ND	750	-18.1
	11/17/99	12.1	7.19	NA	1.0	1.0	ND	625	-16.6
	02/28/00	6.6	8.51	1.70	0.9	2.0	ND	400	-61.3
	05/26/00	9.7	7.10	2.80	2.0	2.0	ND	740	-19.3
	08/15/00	15.3	7.43	2.60	1.0	1.0	ND	980	-17.8
	11/01/00	14.4	6.80	4.00	3.0	1.0	ND	710	-29.8
MW-3	11/05/98	12.2	7.63	0.70	NA	NA	NA	750	13.5
	02/10/99	6.5	7.10	2.40	ND	6.0	ND	591	-3.3
	05/25/99	9.1	7.05	6.00	NA	NA	NA	456	-4.6
	08/18/99	16.8	7.12	2.50	0.4	<1.0	ND	313	-8.7
	11/17/99	11.9	7.59	NA	ND	0.6	ND	350	-35.5
	02/28/00	6.9	8.01	5.30	NA	0.6	ND	240	-40.6
	05/26/00	9.0	7.30	2.20	1.0	2.0	ND	570	-16.3
	08/15/00	15.7	7.35	3.20	ND	1.0	ND	430	-1.7
	11/01/00	12.8	7.07	8.40	1.0	0.6	ND	540	-37.9
MW-4	11/05/98	13.3	8.12	1.50	NA	NA	NA	983	9.7
	02/10/99	7.9	7.02	4.30	3.5	0.6	ND	1,182	0.9
	05/25/99	10.1	6.75	0.50	NA	NA	NA	688	2.3
	08/18/99	16.6	7.08	4.00	4.0	0.6	ND	1,281	-5.5
	11/17/99	11.8	7.29	NA	1.0	0.6	ND	750	-21.2
	02/28/00	8.0	7.79	5.30	NA	0.2	ND	613	-28.7
	05/26/00	9.1	7.43	5.00	1.5	0.3	ND	740	-34
	08/15/00	14.2	7.35	1.60	1.0	0.3	ND	610	-13.2
	11/01/00	13.9	6.70	2.90	3.0	1.0	ND	620	-29
MW-5	05/25/99	9.5	7.54	4.80	3.5	ND	NA	563	-29.9
	08/18/99	15.8	6.93	4.80	5.0	0.6	ND	1,000	3.7
	11/17/99	11.3	6.85	NA	2.0	0.6	ND	1,375	0.7
	02/28/00	7.5	6.89	2.80	1.0	0.1	ND	933	11.1
	05/26/00	9.6	7.26	4.90	0.4	ND	ND	1,010	-28.7
	08/15/00	16.6	6.51	3.20	1.0	ND	ND	820	24.6
	11/01/00	14.6	6.80	2.50	4.5	ND	ND	860	-25.5

Notes: ND= Not Detected
NA= Not Analyzed

EPOCH

NORTH

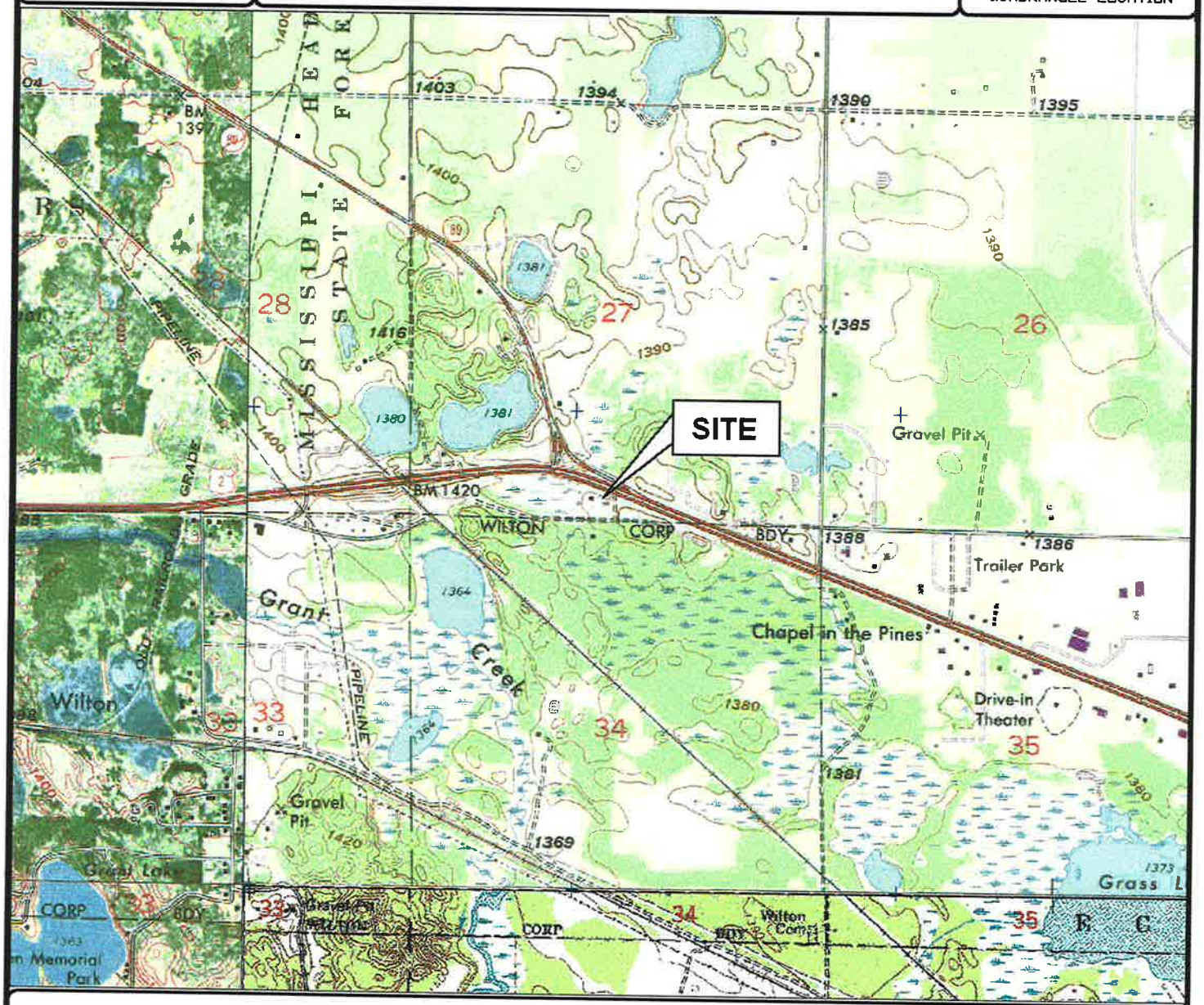
W E

S

LAT. N. 47° 30' 49"	T. 147N
LONG. W. 94° 58' 55"	R. 34W
UTM 5263927.4 350769.5 15	SEC. 27

BASED ON U.S.G.S. 7.5 MINUTE SERIES (TOPOGRAPHIC) MAP
PETERSON LAKE, MINN.

QUADRANGLE LOCATION



SCALE 1:24000

1000 0 1000 2000 3000 4000 5000 6000 FEET

1 5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET

Heavy duty ——— Light duty ———

Medium duty ——— Unimproved dirt = = = = =

Interstate Route U.S. Route State Route

PROJECT NUMBER	24-5796
DRAWING NUMBER	B- 01 -A
AutoCAD FILE NAME	5796-01A
PLOT SCALE	1"=2000'
DRAWN BY	D. Reeder
APPROVED BY	

EPOCH ENVIRONMENTAL GROUP

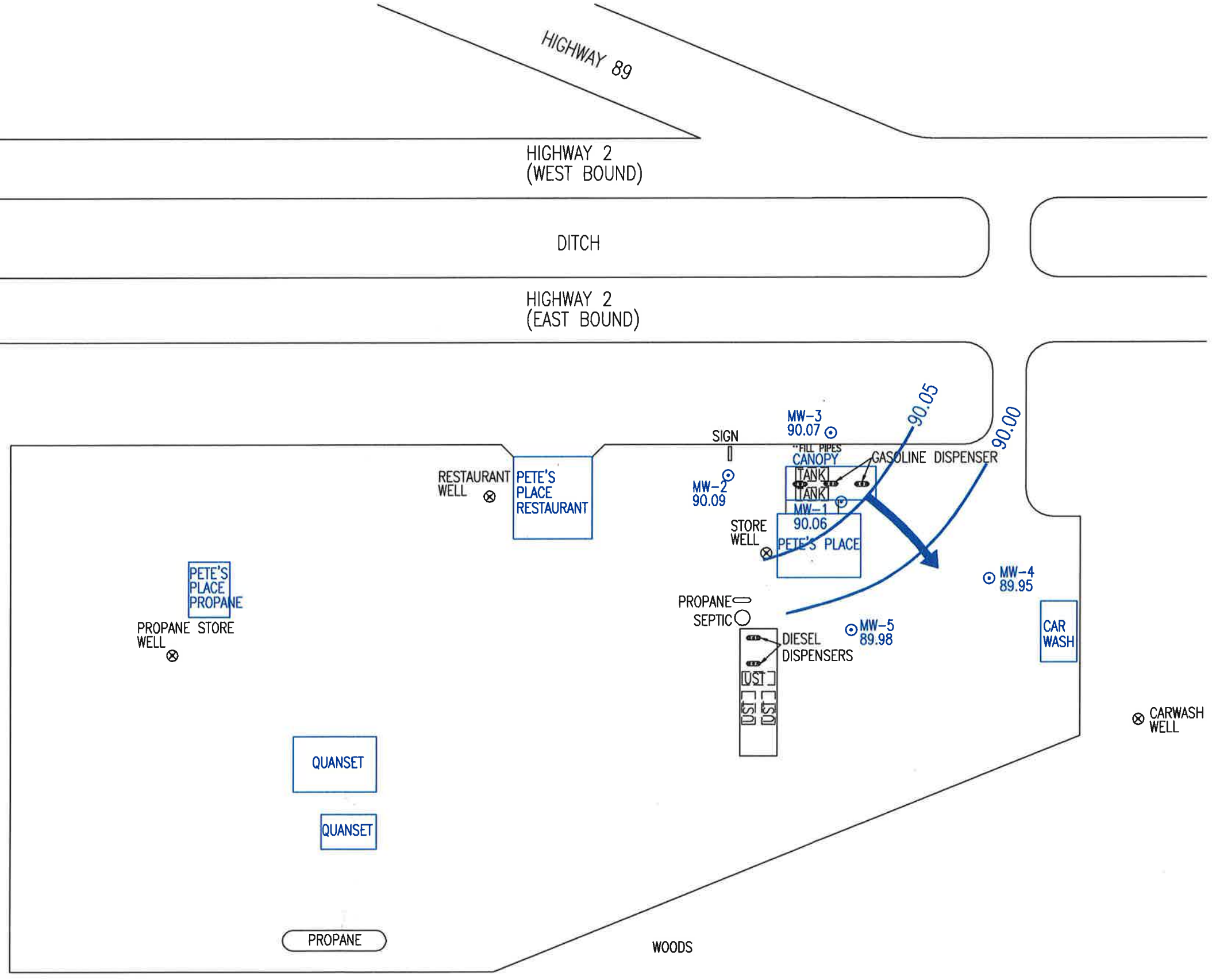
Offices: Lino Lakes, MN – Bettendorf, IA
Ann Arbor, MI – Fort Worth, TX – Charlotte, NC

SITE LOCATION MAP

PETE'S PLACE

7040 HIGHWAY 2 WEST
BEMIDJI, MINNESOTA

EPOCH STD. NO.	P:\5000\5796\DRAFTING\	DATE DRAWN	02 / 06 / 01	PLOT DATE	02/07/01	FIGURE NUMBER	1



EXPLANATION

NOTE:
THIS DRAWING (INCLUDING PROPERTY LINES, STRUCTURES, AND LOCATIONS OF BURIED UTILITIES) IS NOT EXACT. FOR PRECISE LOCATIONS, CONSUT A REGISTERED LAND SURVEYOR AND APPROPRIATE UTILITY COMPANY.

WELL LOCATION	UNIQUE WELL #
PROPANE STORE	552396
RESTAURANT	456678
STORE	412814
CARWASH	480151

⊙ MW– MONITORING WELL

GROUNDWATER GRADIENT DATA:
* BASED ON DATA COLLECTED ON 02/28/2000
AVERAGE GRADIENT= 1.0×10^{-3}

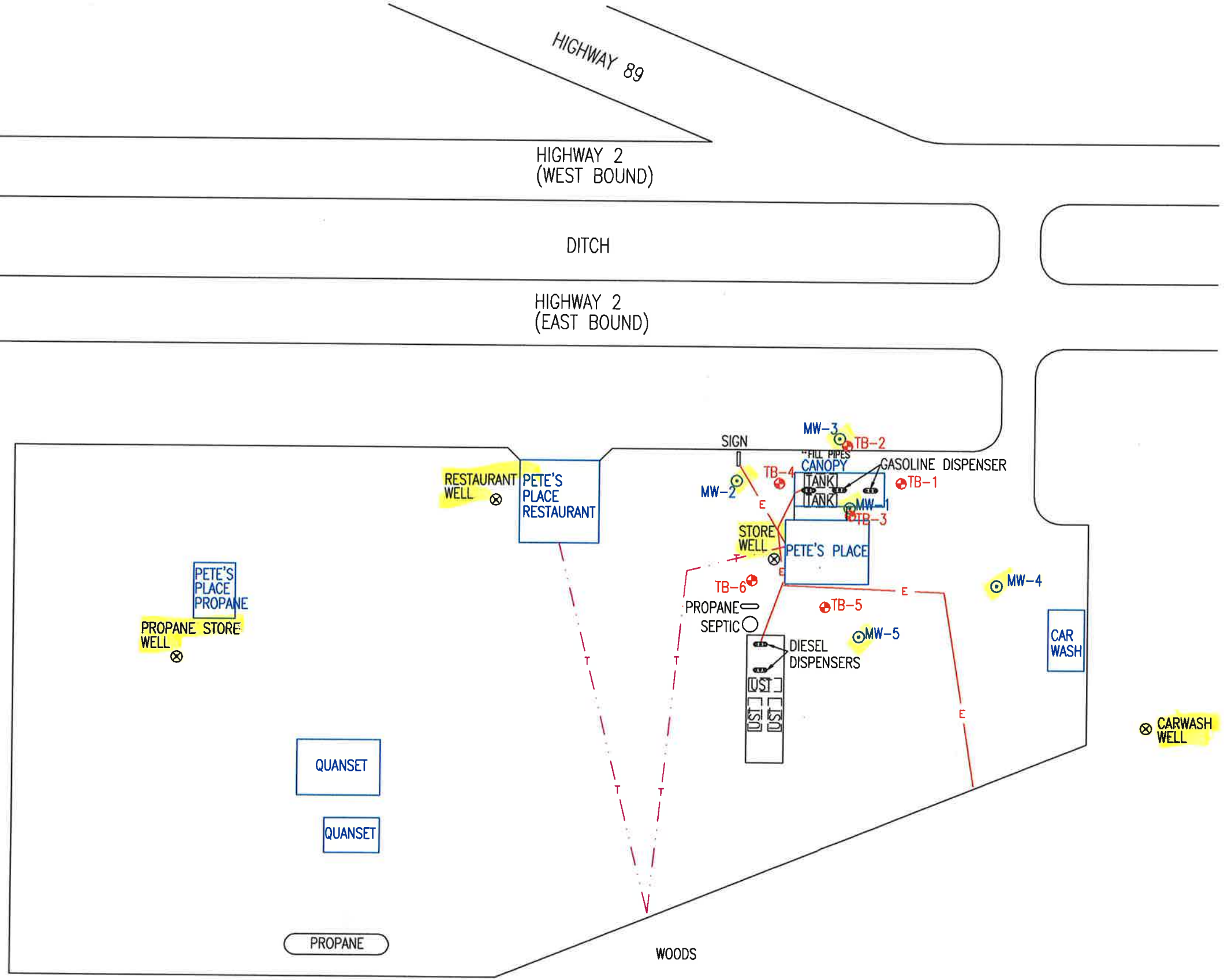
SCALE: 0 1" 0 40' 80'

NORTH

GROUNDWATER GRADIENT
02/28/2000
PETE'S PLACE
7040 HIGHWAY 2 WEST
BEMIDJI, MINNESOTA

DATE DRAWN	02 / 06 / 01	PLOT DATE	02/07/01
PROJECT NUMBER	24-5796		
DRAWING NUMBER	B- 15 -B		
AutoCAD FILE NAME	5796-15B		
PLOT SCALE	1" = 80'		
DRAWN BY	D. Reeder		
APPROVED BY			
EPOCH STD. NO.	P:\5000\5796\DRAFTING\	FIGURE NUMBER	3

EPOCH ENVIRONMENTAL GROUP
Offices: Lino Lakes, MN – Bettendorf, IA
Ann Arbor, MI – Fort Worth, TX – Charlotte, NC



EXPLANATION

NOTE:
THIS DRAWING (INCLUDING PROPERTY LINES, STRUCTURES, AND LOCATIONS OF BURIED UTILITIES) IS NOT EXACT. FOR PRECISE LOCATIONS, CONSUT A REGISTERED LAND SURVEYOR AND APPROPRIATE UTILITY COMPANY.

WELL LOCATION	UNIQUE WELL #
PROPANE STORE	552396
RESTAURANT	456678
STORE	412814
CARWASH	480151

TB– TEST BORING
MW– MONITORING WELL

E UNDERGROUND ELECTRIC
T TELEPHONE LINE

SCALE:
0 1"
0 40' 80'

NORTH
W E
S

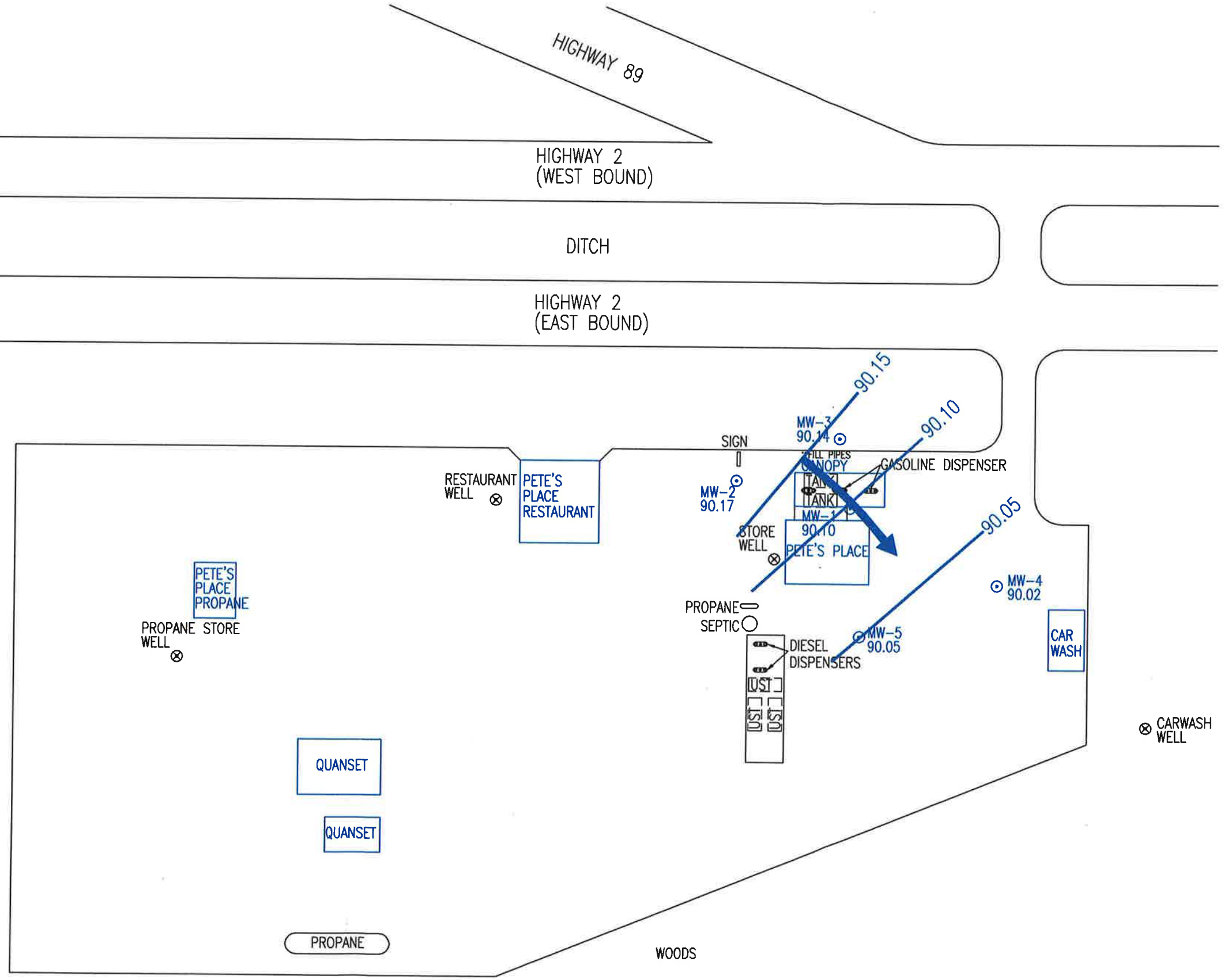
MONITORING WELL AND TEST BORING LOCATION MAP

PETE'S PLACE

7040 HIGHWAY 2 WEST
BEMIDJI, MINNESOTA

DATE DRAWN	02 / 06 / 01	PROJECT NUMBER	24-5796
PLOT DATE	02/07/01	DRAWING NUMBER	B - 07 - A
		AutoCAD FILE NAME	5796-07A
		PLOT SCALE	1 " = 80 '
		DRAWN BY	D. Reeder
		APPROVED BY	
EPOCH STD. NO.	P:\5000\5796\DRAFTING\	FIGURE NUMBER	2

EPOCH ENVIRONMENTAL GROUP
Offices: Lino Lakes, MN – Bettendorf, IA
Ann Arbor, MI – Fort Worth, TX – Charlotte, NC



EXPLANATION

NOTE:
THIS DRAWING (INCLUDING PROPERTY LINES, STRUCTURES, AND LOCATIONS OF BURIED UTILITIES) IS NOT EXACT. FOR PRECISE LOCATIONS, CONSUT A REGISTERED LAND SURVEYOR AND APPROPRIATE UTILITY COMPANY.

WELL LOCATION	UNIQUE WELL #
PROPANE STORE	552396
RESTAURANT	456678
STORE	412814
CARWASH	480151

⊙ MW– MONITORING WELL

GROUNDWATER GRADIENT DATA:
* BASED ON DATA COLLECTED ON 05/26/2000
AVERAGE GRADIENT= 8.3×10^{-4}

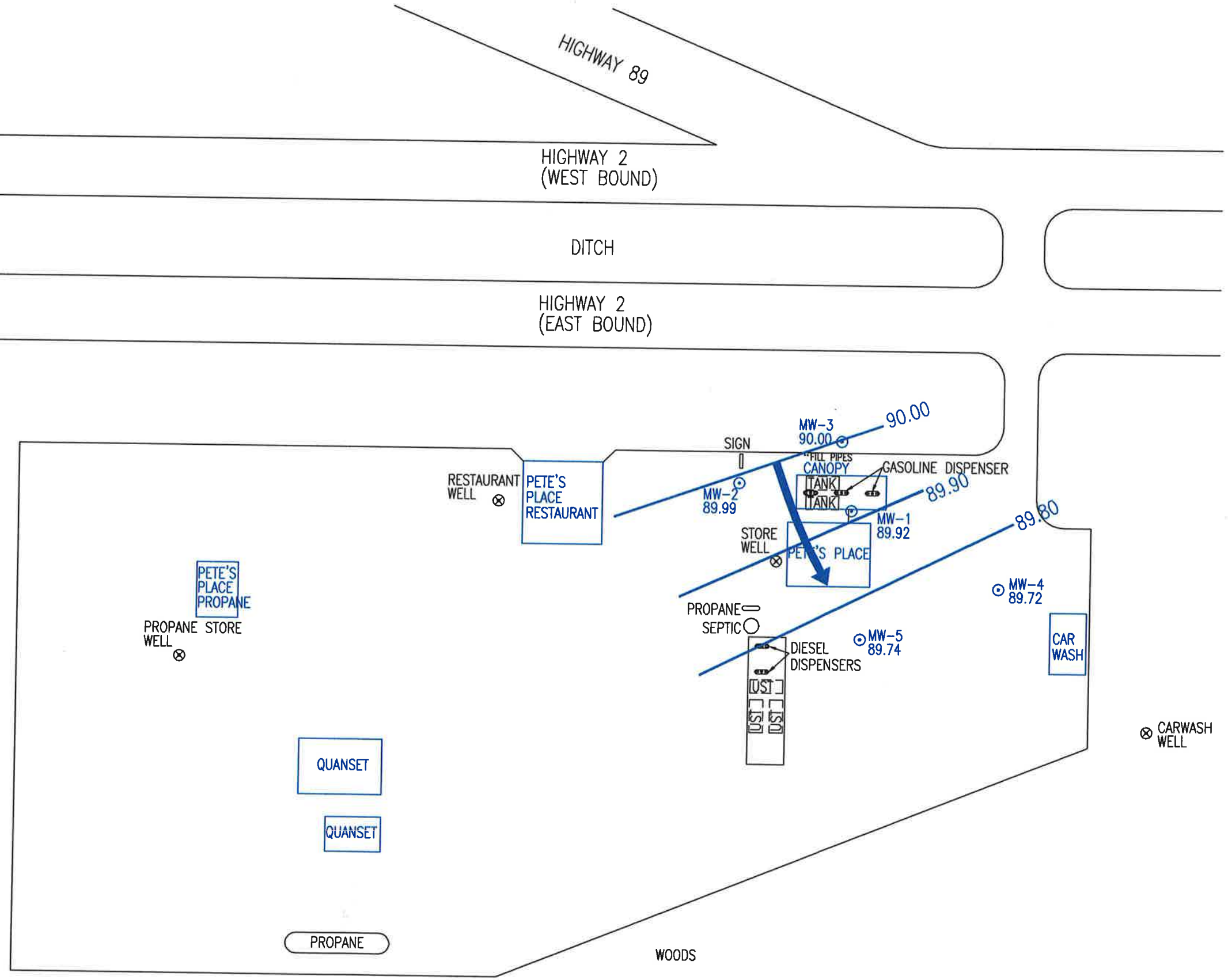
SCALE:
0 1"
0 40' 80'

NORTH

GROUNDWATER GRADIENT
05/26/2000
PETE'S PLACE
7040 HIGHWAY 2 WEST
BEMIDJI, MINNESOTA

DATE DRAWN	02 / 06 / 01	PLOT DATE	02/07/01
PROJECT NUMBER	24-5796		
DRAWING NUMBER	B- 15 -C		
AutoCAD FILE NAME	5796-15C		
PLOT SCALE	1 " = 60 '		
DRAWN BY	D. Reeder		
APPROVED BY			
EPOCH STD. NO.	P:\5000\5796\DRAFTING\	FIGURE NUMBER	4

EPOCH ENVIRONMENTAL GROUP
Offices: Lino Lakes, MN – Bettendorf, IA
Ann Arbor, MI – Fort Worth, TX – Charlotte, NC



EXPLANATION

NOTE:

THIS DRAWING (INCLUDING PROPERTY LINES, STRUCTURES, AND LOCATIONS OF BURIED UTILITIES) IS NOT EXACT. FOR PRECISE LOCATIONS, CONSUT A REGISTERED LAND SURVEYOR AND APPROPRIATE UTILITY COMPANY.

WELL LOCATION	UNIQUE WELL #
PROPANE STORE	552396
RESTAURANT	456678
STORE	412814
CARWASH	480151

⊙ MW– MONITORING WELL

GROUNDWATER GRADIENT DATA:

* BASED ON DATA COLLECTED ON 08/15/2000

AVERAGE GRADIENT=1.6 × 10^{-3}

SCALE: 0 1" 0 40' 80'

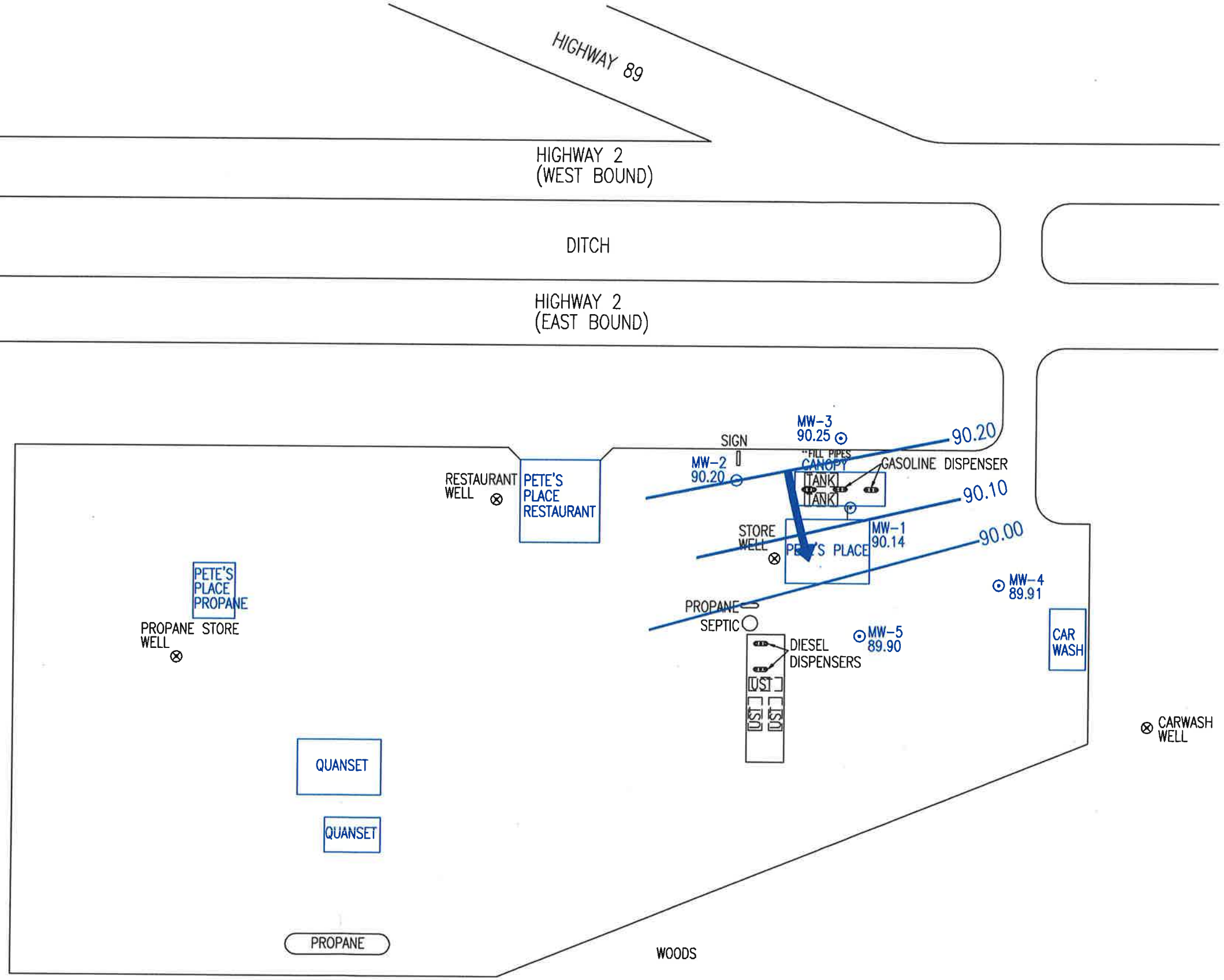
NORTH

GROUNDWATER GRADIENT
08/15/2000
PETE'S PLACE
7040 HIGHWAY 2 WEST
BEMIDJI, MINNESOTA

DATE DRAWN	02 / 06 / 01	PROJECT NUMBER	24-5796
PLOT DATE	02/07/01	DRAWING NUMBER	B - 15 - D
		AutoCAD FILE NAME	5796-15D
		PLOT SCALE	1" = 80'
		DRAWN BY	D. Reeder
		APPROVED BY	
EPOCH BTD. NO.	P:\5000\5796\DRAFTING\	FIGURE NUMBER	5

EPOCH ENVIRONMENTAL GROUP

Offices: Lino Lakes, MN – Bettendorf, IA
Ann Arbor, MI – Fort Worth, TX – Charlotte, NC



EXPLANATION

NOTE:
THIS DRAWING (INCLUDING PROPERTY LINES, STRUCTURES, AND LOCATIONS OF BURIED UTILITIES) IS NOT EXACT. FOR PRECISE LOCATIONS, CONSUT A REGISTERED LAND SURVEYOR AND APPROPRIATE UTILITY COMPANY.

WELL LOCATION	UNIQUE WELL #
PROPANE STORE	552396
RESTAURANT	456678
STORE	412814
CARWASH	480151

⊙ MW– MONITORING WELL

GROUNDWATER GRADIENT DATA:
* BASED ON DATA COLLECTED ON 11/01/2000
AVERAGE GRADIENT= 2.2×10^{-3}

SCALE:
0 1"
0 40' 80'

NORTH

GROUNDWATER GRADIENT
11/01/2000
PETE'S PLACE
7040 HIGHWAY 2 WEST
BEMIDJI, MINNESOTA

DATE DRAWN	02 / 06 / 01	PLOT DATE	02/07/01	PROJECT NUMBER	24-5796
				DRAWING NUMBER	B- 15 -E
				AutoCAD FILE NAME	5796-15E
				PLOT SCALE	1 " = 80 '
				DRAWN BY	D. Reeder
				APPROVED BY	
EPOCH STD. NO.	P:\5000\5796\DRAFTING\			FIGURE NUMBER	6

EPOCH ENVIRONMENTAL GROUP
Offices: Lino Lakes, MN – Bettendorf, IA
Ann Arbor, MI – Fort Worth, TX – Charlotte, NC

Client:	Epoch Environmental Group	**Laboratory:**	Braun Intertec Corporation	**Date Sampled:**	11/01/00
Log-in:	00-08552	**Lab Contact/Phone:**	W. Scruton/952-942-4946	**Date Received:**	11/03/00
Project Number:	CVXX-95-129K	**Sampler:**	Client	**Date Reported:**	11/14/00
PO Number:		**% Moisture:**	Not Applicable		
Client Reference:	2498-5796 Pete's Place	**MDL:**	Method Detection Limit		
Matrix:	Liquid	**RL:**	Reporting Limit		
Lab Sample ID:	00-08552-01				

Client Sample ID/Description: MW-1

Compound	Extract Method	Extract Date	Analysis Method	Analysis Date	Dilution Factor	MDL	RL	Sample Result		
Volatile Organic Compounds										
Benzene	SW-846 5030	-	SW-846 8020	11/10/00	100	0.046	100	**16000**	ug/l	
Ethyl Benzene	SW-846 5030	-	SW-846 8020	11/10/00	100	0.035	100	**2600**	ug/l	
Methyl-tert-Butyl Ether	SW-846 5030	-	SW-846 8020	11/10/00	100	0.10	100	**120**	ug/l	
Toluene	SW-846 5030	-	SW-846 8020	11/10/00	100	0.095	100	**20000**	ug/l	
m,p-Xylenes	SW-846 5030	-	SW-846 8020	11/10/00	100	0.035	100	**12000**	ug/l	
o-Xylene	SW-846 5030	-	SW-846 8020	11/10/00	100	0.054	100	**5000**	ug/l	
Extractable Range Organics										
Diesel Range Organics	WI DRO	11/06/00	WI DRO	11/08/00	10	22	1000	**12000**	ug/l	hn
Volatile Range Organics										
Gasoline Range Organics	SW-846 5030	-	WI GRO	11/10/00	100	9.8	10000	**85000**	ug/l	hij

hij The sample chromatogram indicates the presence of lower and higher boiling hydrocarbons than expected in a gasoline range chromatogram.
hn The sample chromatogram indicates the presence of lower boiling hydrocarbons than expected in a diesel range chromatogram.

(Report continued on next page)

Client:	Epoch Environmental Group	**Laboratory:**	Braun Intertec Corporation	**Date Sampled:**	11/01/00
Log-in:	00-08552	**Lab Contact/Phone:**	W. Scruton/952-942-4946	**Date Received:**	11/03/00
Project Number:	CVXX-95-129K	**Sampler:**	Client	**Date Reported:**	11/14/00
PO Number:		**% Moisture:**	Not Applicable		
Client Reference:	2498-5796 Pete's Place	**MDL:**	Method Detection Limit		
Matrix:	Liquid	**RL:**	Reporting Limit		
Lab Sample ID:	00-08552-02				

Client Sample ID/Description: MW-2

Compound	Extract Method	Extract Date	Analysis Method	Analysis Date	Dilution Factor	MDL	RL	Sample Result	
Volatile Organic Compounds									
Benzene	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.046	1.0	<1.0	ug/l
Ethyl Benzene	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.035	1.0	<1.0	ug/l
Methyl-tert-Butyl Ether	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.10	1.0	<1.0	ug/l
Toluene	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.095	1.0	<1.0	ug/l
m,p-Xylenes	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.035	1.0	<1.0	ug/l
o-Xylene	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.054	1.0	<1.0	ug/l
Extractable Range Organics									
Diesel Range Organics	WI DRO	11/06/00	WI DRO	11/08/00	1.0	22	100	<100	ug/l
Volatile Range Organics									
Gasoline Range Organics	SW-846 5030	-	WI GRO	11/10/00	1.0	9.8	100	<100	ug/l

(Report continued on next page)

Client:	Epoch Environmental Group	**Laboratory:**	Braun Intertec Corporation	**Date Sampled:**	11/01/00
Log-in:	00-08552	**Lab Contact/Phone:**	W. Scruton/952-942-4946	**Date Received:**	11/03/00
Project Number:	CVXX-95-129K	**Sampler:**	Client	**Date Reported:**	11/14/00
PO Number:		**% Moisture:**	Not Applicable		
Client Reference:	2498-5796 Pete's Place	**MDL:**	Method Detection Limit		
Matrix:	Liquid	**RL:**	Reporting Limit		
Lab Sample ID:	00-08552-03				

Client Sample ID/Description: MW-3

Compound	Extract Method	Extract Date	Analysis Method	Analysis Date	Dilution Factor	MDL	RL	Sample Result	
Volatile Organic Compounds									
Benzene	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.046	1.0	<1.0	ug/l
Ethyl Benzene	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.035	1.0	<1.0	ug/l
Methyl-tert-Butyl Ether	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.10	1.0	<1.0	ug/l
Toluene	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.095	1.0	<1.0	ug/l
m,p-Xylenes	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.035	1.0	<1.0	ug/l
o-Xylene	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.054	1.0	<1.0	ug/l
Extractable Range Organics									
Diesel Range Organics	WI DRO	11/06/00	WI DRO	11/08/00	1.0	22	100	<100	ug/l
Volatile Range Organics									
Gasoline Range Organics	SW-846 5030	-	WI GRO	11/10/00	1.0	9.8	100	<100	ug/l

(Report continued on next page)

Client: Epoch Environmental Group
Log-in: 00-08552
Project Number: CVXX-95-129K
PO Number:
Client Reference: 2498-5796 Pete's Place
Matrix: Liquid
Lab Sample ID: 00-08552-04

Laboratory: Braun Intertec Corporation
Lab Contact/Phone: W. Scruton/952-942-4946
Sampler: Client
% Moisture: Not Applicable
MDL: Method Detection Limit
RL: Reporting Limit

Date Sampled: 11/01/00
Date Received: 11/03/00
Date Reported: 11/14/00

Client Sample ID/Description: MW-4

Compound	Extract Method	Extract Date	Analysis Method	Analysis Date	Dilution Factor	MDL	RL	Sample Result	
Volatile Organic Compounds									
Benzene	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.046	1.0	<1.0	ug/l
Ethyl Benzene	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.035	1.0	<1.0	ug/l
Methyl-tert-Butyl Ether	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.10	1.0	<1.0	ug/l
Toluene	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.095	1.0	<1.0	ug/l
m,p-Xylenes	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.035	1.0	<1.0	ug/l
o-Xylene	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.054	1.0	<1.0	ug/l
Extractable Range Organics									
Diesel Range Organics	WI DRO	11/06/00	WI DRO	11/08/00	1.0	22	100	<100	ug/l
Volatile Range Organics									
Gasoline Range Organics	SW-846 5030	-	WI GRO	11/10/00	1.0	9.8	100	<100	ug/l

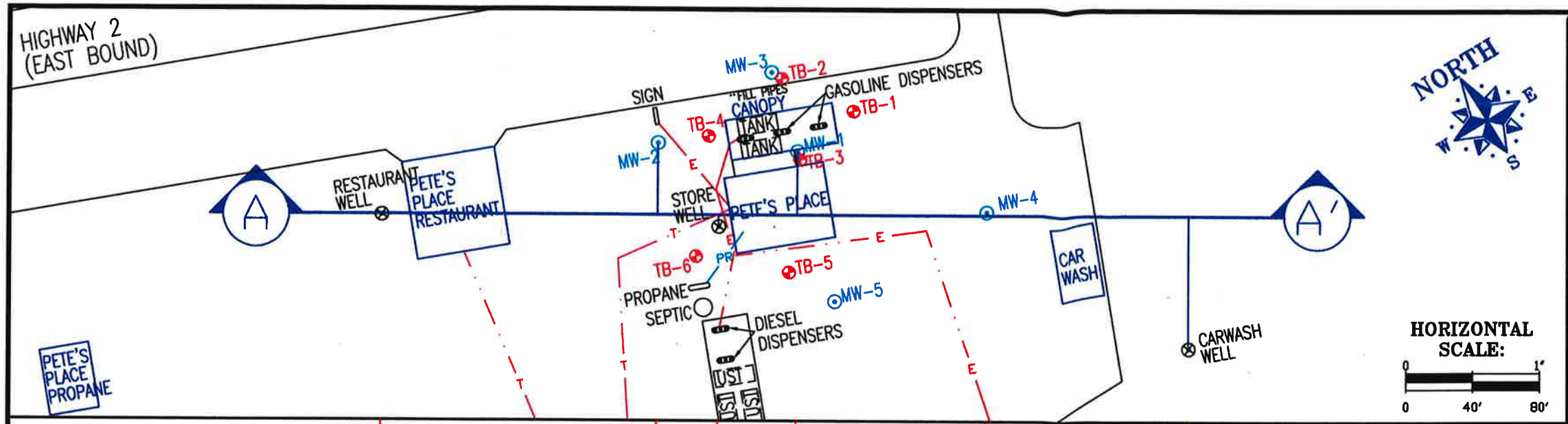
(Report continued on next page)

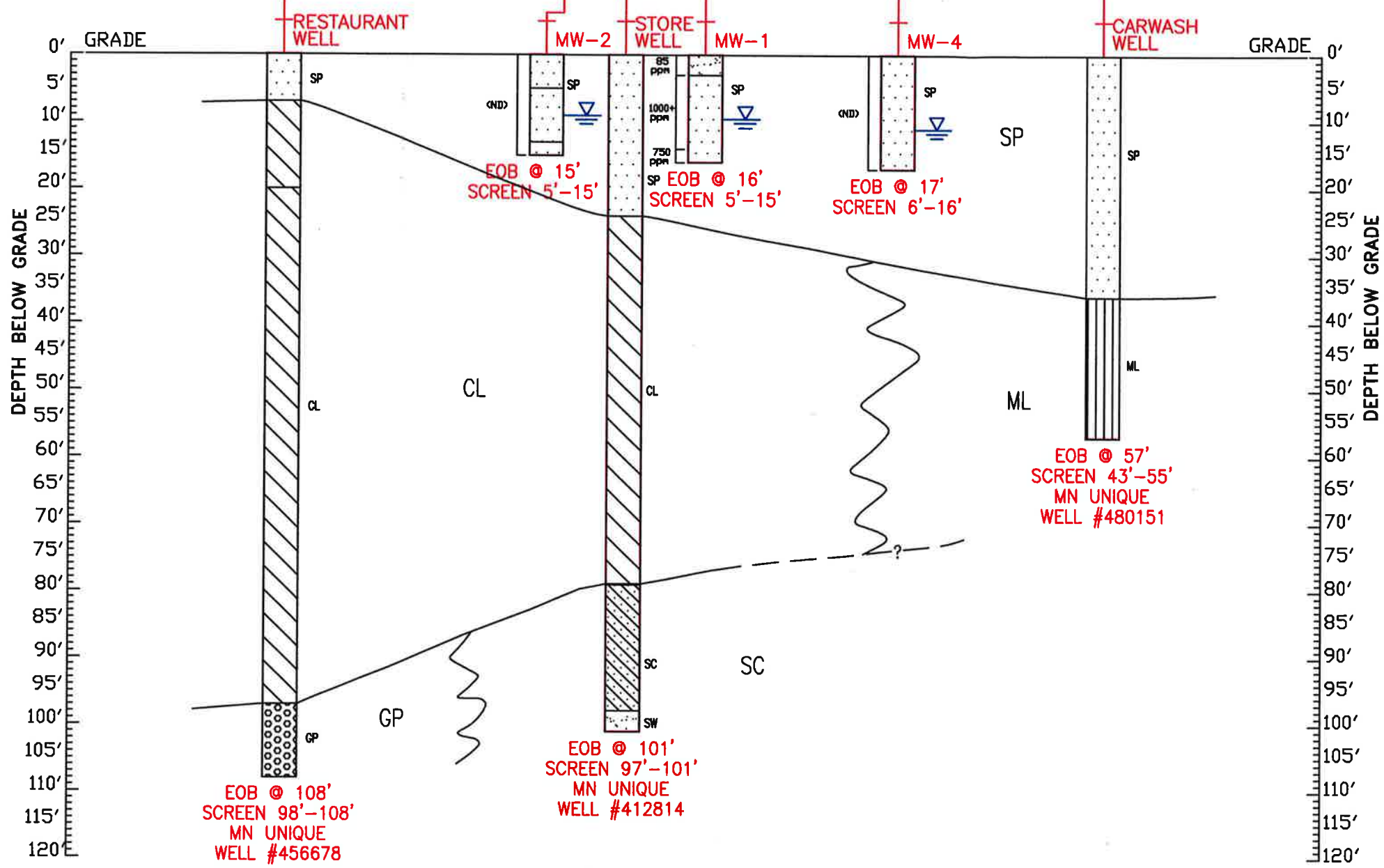
Client:	Epoch Environmental Group	**Laboratory:**	Braun Intertec Corporation	**Date Sampled:**	11/01/00
Log-in:	00-08552	**Lab Contact/Phone:**	W. Scruton/952-942-4946	**Date Received:**	11/03/00
Project Number:	CVXX-95-129K	**Sampler:**	Client	**Date Reported:**	11/14/00
PO Number:		**% Moisture:**	Not Applicable		
Client Reference:	2498-5796 Pete's Place	**MDL:**	Method Detection Limit		
Matrix:	Liquid	**RL:**	Reporting Limit		
Lab Sample ID:	00-08552-05				

Client Sample ID/Description: MW-5

Compound	Extract Method	Extract Date	Analysis Method	Analysis Date	Dilution Factor	MDL	RL	Sample Result	
Volatile Organic Compounds									
Benzene	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.046	1.0	<1.0	ug/l
Ethyl Benzene	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.035	1.0	<1.0	ug/l
Methyl-tert-Butyl Ether	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.10	1.0	<1.0	ug/l
Toluene	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.095	1.0	<1.0	ug/l
m,p-Xylenes	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.035	1.0	<1.0	ug/l
o-Xylene	SW-846 5030	-	SW-846 8020	11/10/00	1.0	0.054	1.0	<1.0	ug/l
Extractable Range Organics									
Diesel Range Organics	WI DRO	11/06/00	WI DRO	11/08/00	1.0	22	100	<100	ug/l
Volatile Range Organics									
Gasoline Range Organics	SW-846 5030	-	WI GRO	11/10/00	1.0	9.8	100	<100	ug/l

(Report continued on next page)





EXPLANATION

NOTE :
This drawing (including property lines, structures, and locations of buried utilities) is not exact. For precise locations, consult a registered land surveyor and appropriate utility company.

- TB- TEST BORING
- WATER LEVEL
- SAMPLE INTERVAL with FID Values IN PARTS PER MILLION (ppm)
- CL INORGANIC SILT, SILTY CLAY, & SANDY CLAY
- GP POORLY GRADED GRAVEL, GRAVEL-SAND MIX
- ML INORGANIC SILT & SANDY SILTS
- SC CLAYEY SAND MIX
- SP POORLY GRADED SAND, LITTLE FINES
- SW WELL GRADED SAND, LITTLE FINES

VERTICAL SCALE:
0
10'
20'

DAHL
& Associates, Inc.
Environmental Consultants, Contractors & Engineers
Offices: Lino Lakes, MN - Bettendorf, IA - Ann Arbor, MI
Fort Worth, TX - Charlotte, NC

DAHL STD NO. P:\5000\5796\DRAFTING\

PLOT SCALE 1" = 20'

GEOLOGIC CROSS SECTION A - A'

PETE'S PLACE
7040 HIGHWAY 2 WEST
BEMIDJI, MINNESOTA

AutoCAD FILE NAME 5796-11A

PLOT DATE 01/28/00

DATE DRAWN	12/14/99
DRAWN BY	D. Reeder
APPROVED BY	
DRAWING NUMBER	B- 11 -A
PROJECT NUMBER	24985796
FIGURE NUMBER	6B

DAHL & ASSOCIATES, INC.

Geologic Report: SOIL BORING LOG

Project Name: PETE'S PLACE
Job Number: 2498-5796

HOLE ID: MW-1
Geologist: E-LIESTMAN

DATE: 9/9/98
Driller/Co.: BOART

Depth (feet)	Sample #	Sample type	Description of Material: General	USCS	PID/FID (ppm)	Blow Counts	H2O
1-3	1	SS	Light brown, fine to coarse grained, well graded sand slightly moist	SW	85		
3-5	2	SS	Light brown, medium grained, poorly graded sand, slightly moist, petroleum odor	SP	1000+		
5-7	3	SS	MINIMAL recovery. Same soil	SP	1000+		
7-9	4	SS	Light brown, fine to medium grained, poorly graded sand, slightly moist to moist, petroleum odor	SP	1000+		
9-11	5	SS	Same soil, groundwater at 9.5'	SP	1000+		
11-13	6	SS	Greenish gray fine to medium grained, poorly graded sand, wet	SP	1000+		
13-15	7	SS	Same soil, wet	SP	750		
			EOB at 16'				
			Collected soil samples at 9-11' and 13-15' for laboratory analysis of , BTEX, GRO, DRO, MTBE				
			Well screen set at 5-15'				

DRILLING SUMMARY

Drill/Method: HSA
Time Start:
Time Complete:
Total Time:
Drilling Rate:

PID/FID INFORMATION

Make: FOXBORO
Model: OVA 128
Unit ID:
ppm Span Gas:
Time of Calibration:

ELEVATION DATA

Surveyed:
Surface Elevation:

WATER LEVEL:

Water level indicated on log: *
Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.

Geologic Report: SOIL BORING LOG

Project Name: PETE'S PLACE | HOLE ID: MW-2 | DATE: 9/9/98
Job Number: 2498-5796 | Geologist: E-LIESTMAN | Driller/Co.: BOART

Depth (feet)	Sample #	Sample type	Description of Material General	USCS	PID/FID (ppm)	Blow Counts	H2O
1-3	1	SS	Light reddish brown, fine to medium grained poorly graded sand, slightly moist	SP	ND		
3-5	2	SS	Same soil	SP	ND		
6-8	3	SS	Light brown, fine to medium grained, poorly graded sand, slightly moist	SP	ND		
8-10	4	SS	Same soil, moist to wet, Groundwater at 9'	SP	ND		
11-13	5	SS	Same soil, wet	SP	ND		
13-15	6	SS	Light brown, medium grained, poorly graded sand, wet	SP	ND		
			Collected soil samples at 8-10' and 13-15' for laboratory analysis of BTEX, GRO, DRO, MTBE,				
			Well screen set 5-15'				

DRILLING SUMMARY

Drill/Method: HSA
Time Start:
Time Complete:
Total Time:
Drilling Rate:

PID/FID INFORMATION

Make: FOXBORO
Model: OVA-128
Unit ID:
ppm Span Gas:
Time of Calibration:

ELEVATION DATA

Surveyed:
Surface Elevation:

WATER LEVEL:

Water level indicated on log: *
Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.

Geologic Report: SOIL BORING LOG

Project Name: PETE'S PLACE
Job Number: 2498-5796

HOLE ID: MW-3
Geologist: E-LIESTMAN

DATE: 9/10/98
Driller/Co.: BOART

Depth (feet)	Sample #	Sample type	Description of Material: General	USCS	PID/FID (ppm)	Blow Counts	H2O
1-3	1	SS	Light reddish-brown, medium grained, poorly graded sand, slightly moist	SP	ND		
3-5	2	SS	Same soil	SP	ND		
6-8	3	SS	Light brown fine to medium grained, poorly graded sand, slightly moist to moist at 8'	SP	ND		
8-10	4	SS	Light brown, fine to medium grained, poorly graded sand, wet, groundwater at 8.5'				
10-13	5	SS	Same soil	SP	ND		
13-15	6	SS	Light brown, medium grained, poorly graded sand, wet	SP	ND		
			Collected soil samples at 8-10' and 13-15' for laboratory analysis of BTEX, GRO, DRO, MTBE				
			EOB at 16'				
			Well screen set 5-15'				

DRILLING SUMMARY

Drill/Method: HSA
Time Start:
Time Complete:
Total Time:
Drilling Rate:

PID/FID INFORMATION

Make: FOXBORO
Model: OVA 108
Unit ID:
ppm Span Gas:
Time of Calibration:

ELEVATION DATA

Surveyed:
Surface Elevation:

WATER LEVEL:

Water level indicated on log: *
Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.

Geologic Report: SOIL BORING LOG

Project Name: PETE'S PLACE | HOLE ID: MW-4 | DATE: 9/9/98
Job Number: 2498-5796 | Geologist: E-LIESTMAN | Driller/Co.: BOART

Depth (feet)	Sample #	Sample type	Description of Material General	USCS	PID/FID (ppm)	Blow Counts	H2O
1-3	1	SS	Light reddish-brown, medium grained, poorly graded sand, slightly moist	SP	ND		
3-5	2	SS	Same soil	SP	ND		
6-8	3	SS	Light brown, fine to medium grained poorly graded sand, slightly, moist	SP	ND		
8-10	4	SS	Same soil	SP	ND		
10-12	5	SS	Same soil, wet, groundwater at 11'	SP	ND		
13-15	6	SS	Same soil	SP	ND		
15-17	7	SS	Light brown, medium grained, pooorly graded sand, wet	SP	ND		
			EOB at 17'				
			Well screen set from 6-16'				
			Collected soil samples at 10-12' and 15-17' for laboratory analysis of BTEX, GRO, DRO, MTBE				

DRILLING SUMMARY

Drill/Method: HSA
Time Start:
Time Complete:
Total Time:
Drilling Rate:

PID/FID INFORMATION

Make: FOXBORO
Model: OVA-128
Unit ID:
ppm Span Gas:
Time of Calibration:

ELEVATION DATA

Surveyed:
Surface Elevation:
WATER LEVEL:
Water level indicated on log: *
Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.

Geologic Report: SOIL BORING LOG

Project Name: PETE'S PLACE | HOLE ID: MW-5 | DATE: 5/11/99
Job Number: 2497-5796 | Geologist: T-BECKER | Driller/Co.: VALNES

Depth (feet)	Sample #		Description of Material General	USCS	PID/FID (ppm)	Blow Counts	H2O
0			4" Asphalt				
.3		SS	Brown and light brown, very fine to fine sand, mostly quartz, well rounded	SW	0		
2		SS	Brown and red brown, very fine to fine sand, mostly quartz, well rounded	SW	0		
4							
4		SS	Same soil	SW	0		
6		SS	Same soil, with occasional medium grained sand lenses and trace organics	SW	0		
8	1	SS	Same soil, moist at 9.5', occasionally medium grained	SW	0		
10							
10		SS	Brown, very fine to fine sand, mostly quartz, well rounded, moist	SW	0		
13	2	SS	Brown and gray brown, fine to coarse sand; trace gravel, round to subangular, mostly quartz, trace carbonates, wet	SP	0		*
15							
			EOB at 15'				
20			Screen set 5'-15'				
25							

DRILLING SUMMARY

Drill/Method:	ROTARY
Time Start:	10:30
Time Complete:	11:30
Total Time:	1.0
Drilling Rate:	

PID/FID INFORMATION

Make:	FOXBORO
Model:	CENTURY OVA 108
Unit ID:	6
ppm Span Gas:	100PPM ISO.
Time of	10:20

ELEVATION DATA

Surveyed:
Surface Elevation:
WATER LEVEL: 13'
Water level indicated on log: *

DAHL & ASSOCIATES, INC.

Geologic Report: SOIL BORING LOG

Project Name: PETE'S PLACE
Job Number: 2498-5796

HOLE ID: TB-1
Geologist: J-RYAN

DATE: 7/13/98
Driller/Co.: MATRIX

Depth (feet)	Sample #	Sample type	Description of Material General	USCS	PID/FID (ppm)	Blow Counts	H2O
0-4	1	GP	Brown medium sand slightly moist	SP	0		
4-8	2	GP	Same soil, slightly moist	SP	0		
8-12	3	GP	Same soil, wet at 9'	SP	3.0		*
12-14	4	GP	Same sand, wet	SP	2.0		
			Groundwater sample collected for BTEX, GRO, MTBE				

DRILLING SUMMARY

Drill/Method: GEOPROBE
Time Start: 11:45
Time Complete: 12:15
Total Time:
Drilling Rate:

PID/FID INFORMATION

Make: PID
Model: MINI RAE
Unit ID:
ppm Span Gas:
Time of Calibration:

ELEVATION DATA

Surveyed:
Surface Elevation:

WATER LEVEL:

Water level indicated on log: *
Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.

Geologic Report: SOIL BORING LOG

Project Name: PETE'S PLACE
Job Number: 2498-5796

HOLE ID: TB-2
Geologist: J-RYAN

DATE: 7/13/98
Driller/Co.: MATRIX

Depth (feet)	Sample #	Sample type	Description of Material General	USCS	PID/FID (ppm)	Blow Counts	H2O
0-4	1	GP	Brown medium sand, slightly moist	SP	0		
4-8	2	GP	Same sand, slightly moist	SP	12.5		
8-12	3	GP	Same sand, wet at 8'	SP	1.0		*
12-14	4	GP	Same sand, wet	SP	0		

DRILLING SUMMARY

Drill/Method: GEOPROBE
Time Start: 12:25
Time Complete: 1:00
Total Time:
Drilling Rate:

PID/FID INFORMATION

Make: PID
Model: MINI RAE
Unit ID:
ppm Span Gas:
Time of Calibration:

ELEVATION DATA

Surveyed:
Surface Elevation:

WATER LEVEL:

Water level indicated on log: *
Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.

Geologic Report: SOIL BORING LOG

Project Name: PETE'S PLACE
Job Number: 2498-5796

HOLE ID: TB-3
Geologist: J-RYAN

DATE: 7/13/98
Driller/Co.: MATRIX

Depth (feet)	Sample #	Sample type	Description of Material: General	USCS	PID/FID (ppm)	Blow Counts	H2O
0-4	1	GP	Brown medium sand, slightly moist	SP	172		
4-8	2	GP	Same soil, slightly moist	SP	200+		
8-12	3	GP	Same soil, wet at 8'	SP	200+		*
12-14	4	GP	Grey discolored medium sand weathered gasoline odor, wet	SP	200+		
16-20	5	GP	Grey-brown medium sand, wet	SP	1.3		
20-24	6	GP	Same soil, wet	SP	0		
			Groundwater sample BTEX, GRO, MTBE				

DRILLING SUMMARY

Drill/Method: GEOPROBE
Time Start: 1:15
Time Complete: 2:15
Total Time:
Drilling Rate:

PID/FID INFORMATION

Make: PID
Model: MINI RAE
Unit ID:
ppm Span Gas:
Time of Calibration:

ELEVATION DATA

Surveyed:
Surface Elevation:

WATER LEVEL:

Water level indicated on log: *
Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.

Geologic Report: SOIL BORING LOG

Project Name: PETE'S PLACE
Job Number: 2498-5796

HOLE ID: TB-4
Geologist: J-RYAN

DATE: 7-13-98
Driller/Co.: MATRIX

Depth (feet)	Sample #	Sample type	Description of Material General	USCS	PID/FID (ppm)	Blow Counts	H2O
0-4	1	GP	Brown medium sand, slightly moist	SP	0		
4-8	2	GP	Same soil, slightly moist	SP	1.0		
8-12	3	GP	Same soil, wet at 9'	SP	3.2		*
12-16	4	GP	Same soil, wet	SP	0		
			Groundwater sample BTEX, GRO, MTBE				

DRILLING SUMMARY

Drill/Method: GEOPROBE
Time Start: 2:30
Time Complete: 3:00
Total Time:
Drilling Rate:

PID/FID INFORMATION

Make: PID
Model: MINI RAE
Unit ID:
ppm Span Gas:
Time of Calibration:

ELEVATION DATA

Surveyed:
Surface Elevation:
WATER LEVEL:

Water level indicated on log: *
Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.

Geologic Report: SOIL BORING LOG

Project Name: PETE'S PLACE
Job Number: 2498-5796

HOLE ID: TB-5
Geologist: J-RYAN

DATE: 7/13/98
Driller/Co.: MATRIX

Depth (feet)	Sample #	Sample type	Description of Material General	USCS	PID/FID (ppm)	Blow Counts	H2O
0-4	1	GP	Brown medium sand, slightly moist	SP	0		
4-8	2	GP	Same soil, slightly moist	SP	0		
8-12	3	GP	Same soil, wet at 9'	SP	0		*
12-16	4	GP	Same soil, wet	SP	0		
16-18	5	GP	GW sample BTEX, GRO, MTBE				

DRILLING SUMMARY

Drill/Method:	GEOPROBE
Time Start:	3:00
Time Complete:	3:45
Total Time:	
Drilling Rate:	

PID/FID INFORMATION

Make:	PID
Model:	MINI RAE
Unit ID:	
ppm Span Gas:	
Time of Calibration:	

ELEVATION DATA

Surveyed:
Surface Elevation:

WATER LEVEL:

Water level indicated on log: *
Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.

Geologic Report: SOIL BORING LOG

Project Name: PETE'S PLACE | HOLE ID: TB-6 | DATE: 9/10/98
Job Number: 2498-5796 | Geologist: E-LIESTMAN | Driller/Co.: BOART

Depth (feet)	Sample #	Sample type	Description of Material General	USCS	PID/FID (ppm)	Blow Counts	H2O
0							
1-3	1	SS	Light reddish-brown, medium grained, poorly graded sand, slightly moist-glass and debris in sample	SP	ND		
3-5	2	SS	Same soil	SP	ND		
5							
6-8	3	SS	Light brown, medium grained, poorly graded sand, slightly moist	SP	ND		
8-10	4	SS	Light brown, medium grained, poorly graded sand, moist to wet, groundwater at 9.5'	SP	ND		
10							
11-13	5	SS	Same soil, wet	SP	ND		
13-15	6	SS	Same soil	SP	ND		
15							
18-20	7	SS	Light brown, fine to medium grained, poorly graded sand with a trace of gravel, wet	SP	ND		
20			clay hill from ~21.5 to 30 (TD)				
23-25	8	SS	Light gray sandy clay with a trace of gravel, soft, very moist	CL	3		
25							

DRILLING SUMMARY

Drill/Method: HSA
Time Start:
Time Complete:
Total Time:
Drilling Rate:

PID/FID INFORMATION

Make: FOXBORO
Model: OVA-108
Unit ID:
ppm Span Gas:
Time of Calibration:

ELEVATION DATA

Surveyed:
Surface Elevation:

WATER LEVEL:

Water level indicated on log: *
Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.

Geologic Report: SOIL BORING LOG

Project Name: PETE'S PLACE
Job Number: 2498-5796

HOLE ID: TB-6
Geologist: E-LIESTMAN

DATE: 9/10/98
Driller/Co.: BOART

Depth (feet)	Sample #	Sample type	Description of Material General	USCS	PID/FID (ppm)	Blow Counts	H2O
28-30	9	SS	Same soil	CL	3		
			Collected soil samples at 8-10' and 28-30' for laboratory analysis of BTEX, GRO, DRO, MTBE				

DRILLING SUMMARY

Drill/Method: HSA
Time Start:
Time Complete:
Total Time:
Drilling Rate:

PID/FID INFORMATION

Make: FOXBORO
Model: OVA-108
Unit ID:
ppm Span Gas:
Time of Calibration:

ELEVATION DATA

Surveyed:
Surface Elevation:

WATER LEVEL:

Water level indicated on log: *
Depth of oxidation on log: ox